WHY GROWING UP IS HARD TO DO: INSTITUTIONAL CHALLENGES FOR INTERNET GOVERNANCE IN THE "QUARTER-LIFE CRISIS" OF THE DIGITAL REVOLUTION

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I. INTRODUCTION

A. *The Quarter-life Crises of Industrial Revolutions*

The popular press tends to mark the birthdays and anniversaries of innovations and products by the date at which they became widely available to the general public. While this standard is never precise and

there is a flow of inventions before commercialization, it is a useful benchmark for measuring social change. By that standard there is no doubt that the early years of the 21st century are a key period for the digital revolution and its most important manifestation, the Internet. The adolescence of the Internet is ending, which is typically marked by the shouldering of new, adult responsibilities. In humans it has come to be called the quarter-life crisis.

The **quarter-life crisis** is a period of life following the major changes of adolescence, usually ranging from the late teens to the early thirties, in which a person begins to feel doubtful about their own lives [sic], brought on by the stress of becoming an adult. The term was coined by analogy with mid-life crisis.[1]

The web celebrated its 20th birthday in 2011[2] and the PC its 30th.[3] The age of the Internet is also in the range of 20-30 years.[4] The Internet Society,[5] which houses the key bodies that set policy for the Internet, turned 20 in 2012. Search engines, which provide a critical function for navigating the vastness of cyberspace, are about 15 years old.[6] Broadband Internet service is in the same age range.[7] Using the dating technique of initial widespread commercial availability to calculate the

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1. *Quarter-life crisis*, WIKIPEDIA, http://en.wikipedia.org/wiki/Quarter-life_crisis (last modified Aug. 19, 2012, 10:16 PM). Given that this paper is about an advance in the generation and distribution of knowledge that may prove to be among the great economic revolutions in human history, this paper relies, to the greatest extent possible, on sources that are readily available on the Web (i.e. not behind pay walls). Since the primary purposes of citations are to allow the reader to check facts, evaluate interpretations, and add to the body of knowledge by reinterpretation and extension (remixing), the ability to make sources instantaneously available is a symbolic marker of how much has been accomplished by the digital revolution. The fact that Wikipedia, a new form of collaborative knowledge enterprise, is the most frequent single source for this paper reinforces this message, as does the fact that Wikipedia provides many live links to available resources.

2. Julia Felsenthal, Heather Murphy & Chris Wilson, *Happy 20th Birthday, World Wide Web!,* SLATE (Aug. 5, 2011, 5:54 PM), http://www.slate.com/slideshows/business _and_tech/happy-20th-birthday-world-wide-web html; *World Wide Web*, WIKIPEDIA, http://en.wikipedia.org/wiki/World_Wide_Web (last modified Sept. 30, 2012, 7:51 AM).

3. Chloe Albanesius, *On Eve of PC's 30th Birthday, IBM and Microsoft Debate Its Future*, PC MAG.COM (Aug. 11, 2011, 11:06 AM), http://www.pcmag.com/ article2/0,2817,2390897,00.asp; *Personal computer*, WIKIPEDIA, http://en.wikipedia.org/wiki/ Personal_computer (last modified Sept. 28, 2012, 6:04 PM).

4. The Internet protocol is over 40 years old. The first actual network of networks is 25 years old, and the first commercial network to join the network of networks did so 23 years ago, all of which makes the point that the adolescence of the Internet is over. *Internet*, WIKIPEDIA, http://en.wikipedia.org/wiki/Internet (last modified Sept. 25, 2012, 4:06 PM).

5. *Internet Society*, WIKIPEDIA, http://en.wikipedia.org/wiki/Internet_Society (last modified Oct. 1, 2012, 3:14 AM).

6. *History of Google*, WIKIPEDIA, http://en.wikipedia.org/wiki/History_of_Google (last modified Sept. 30, 2012, 12:43 PM).

7. *Broadband*, WIKIPEDIA, http://en.wikipedia.org/wiki/Broadband (last modified Sept. 29, 2012, 10:11 PM); *DOCSIS*, WIKIPEDIA, http://en.wikipedia.org/wiki/DOCSIS, (last modified Sept. 25, 2012, 11:06 PM).

age of wireless technologies that are playing an increasingly important role in the digital revolution we reach the same conclusion. In 2012, U.S. cellular service is about 30 years old[8] and Wi-Fi is about 20.[9]

To be a true quarter-life crisis, the life expectancy of the digital revolution would have to be about a century,[10] as proved to be the case for the first two industrial revolutions (see Figure 1-1), but the math is less important than the fact that the digital revolution is confronted with a broad range of maturation challenges in terms of new issues and concerns that are pressing on its future.

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8. *Mobile phone*, WIKIPEDIA, http://en.wikipedia.org/wiki/Mobile_phone (last modified Sept. 30, 2012, 5:14 PM).

9. *Wi-Fi*, WIKIPEDIA, http://en.wikipedia.org/wiki/Wi-Fi (last modified Sept. 29, 2012, 2:53 PM).

10. The quarter life calculation assumes a life span of a century, which is a reasonable historical period in which a technological revolution will be paramount before it is replaced by another. Thus, the "start" of the first industrial revolution is dated from the mid- to late 1700s, the second industrial revolution dates from the mid- to late 1800s, and the Internet from the mid- to late 1900s. *Industrial Revolution*, WIKIPEDIA, http://en.wikipedia.org /wiki/Industrial_Revolution (last modified Sept. 28, 2012, 4:30 PM).

Invention	Date	Socio-Political Turmoil	Primary Means Mass Communications
1st Industrial Revolution			
Flying Shuttle	1733		
Cotton Mills	1742		
Water Frame	1764		
Spinning Jenny	1765		
Steam Engine	1769		
Steam Ship	1775	Age of	
Threshing Machine	1784	Revolution	
Power Loom	1785	1775	
Cotton Gin,	1793		
Interchangeable Musket Parts	1798		
Steam Locomotive	1804	Luddism	
Steamboat Service on the Hudson River	1807		
Typewriter	1829		
Telegraph, revolver	1836		Penny Press
Sewing Machine	1844, 1851	1848	Telegraph
	1860s		Photography
2nd Industrial Revolution			
Bessemer Steel	1855		
Synthetic Dye	1856		
Machine Gun	1862		
Transatlantic Cable, dynamite	1866		
Modern Typewriter	1867		
Tungsten Steel	1868		
Barbed Wire	1873		
Telephone	1876		
Phonograph,	1877		Telephone
Incandescent Light bulb	1879		
Induction Electric Motor	1888	Progressive	
Diesel Engine	1892	Era, 1987	
Radio	1901		
Airplane	1903		
Model T Ford, Assembly Line	1908, 1913		Radio
	1930s	New Deal	
	1940s		Television
3rd Industrial Revolution			
Transistor	1947		
Integrated Circuit	1958		
Micro Computer	1968	Carterphone/	
Internet	1969	Computer Inquiries	
Microprocessor, E-mail	1971		
Modem	1997		
PC-IBM	1980		
Commercial Internet	1986		
Commercial Wireless Service	1984		
WorldWideWeb	1991		
ISOC	1992	CALEA, DMCA,	
	1996	Telecom Act	Broadband
	1998	ICANN	
	1999	COPA,	
	2000		YouTube
	2003	WSIS	
	2004		Social media
	2012	SOPA, PIPA	

FIGURE I-1: LIFE CYCLE OF INDUSTRIAL REVOLUTIONS[11]

As the discussion below shows, the maturation challenges confronting the Internet cover a host of issues, including concerns about

- the central technologies that underlie the revolution (e.g., Internet governance, communications network management, cyber security),
- the economy (e.g., antitrust, consumer protection, intellectual property),
- social issues (e.g., universal service, privacy, personal security), and
- the polity (e.g., free speech, surveillance).

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11. Various Wikipedia entries; Bradford R. Smith, *The Third Industrial Revolution: Policymaking for the Internet*, 3 COLUM. SCI. & TECH. L. REV. 1 (2001).

As suggested in Figure I-1, it can be argued that the 1st and 2nd industrial revolutions also went through similar quarter-life crises as new social institutions were developed to ensure that the emerging mode of economic production serves the broader goals of society. However, it also can be argued the quarter-life crisis of the digital revolution promises to be particularly challenging because the digital revolution involves a uniquely powerful and dynamic set of changes.[12] These changes include:

- the unique, decentralized nature of the Internet as a communications medium;
- the speed with which changes are taking place;
- the central role that communications play in modern economies;
- the scale and scope of change that is having a pervasive impact on many aspects of daily life; and
- the fundamental importance of many of the values affected.

Confronted with a challenge of this magnitude, and having a set of fully developed institutions in hand, there is a tendency to assume, or hope that "old law maps to new interactions."[13] The old law we have today was defined by the maturation challenges of the 2nd industrial revolution, which makes many of the institutions over a hundred years old.[14] Because they are old does not necessarily mean they are outdated, and it certainly does not mean the values they express and seek to implement are no longer valid; it does mean they will be challenged to change.[15] Here, too, it can be argued that the quarter-life crisis of the

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12. Comparing general purpose technologies can be misleading, especially when one is only just reaching maturity, but the evidence on information technologies supports the conclusion that the technologies are spreading quickly and evolving rapidly in terms of price declines, which have traditionally been a major measure of impact. The technologies on which the Internet is based are probably moving faster than the overall IT sector. Boyan Jovanovic & Peter L. Rousseau, *General Purpose Technologies*, *in* HANDBOOK OF ECONOMIC GROWTH 1181, 1182 (Philippe Aghion & Steven N. Durlauf eds., 2005).

13. This observation was offered in an article reporting a (rare) criminal case involving personal security on the Internet. Somini Sengupta, *Case of 8,000 Menacing Posts Tests Limits of Twitter Speech*, N.Y. TIMES, Aug. 27, 2011, at A1 (internal quotation marks omitted), *available at* http://www nytimes.com/2011/08/27/technology/man-accused-of-stalking-via-twitter-claims-free-speech html.

14. Much of the structure was put in place during the Progressive Era, which is generally dated from the 1890s, *Progressive Era*, WIKIPEDIA, http://en.wikipedia.org/wiki/Progressive_Era, (last modified Sept. 29, 2012, 9:39 PM), although the New Deal updated and extended the institutional structure. *New Deal*, WIKIPEDIA, http://en.wikipedia.org/wiki/New_Deal, (last modified Sept. 30, 2012, 10:41 PM).

15. Each of the industrial revolutions "stand[s] on the shoulders of giants," i.e. the previous industrial revolution. *Standing on the shoulders of giants*, WIKIPEDIA, http://en.wikipedia.org/wiki/Standing_on_the_shoulders_of_giants (last modified Sept. 27, 2012, 11:34 PM). But each needs a new set of institutions to support the larger structure. Economist Douglass North uses the construction metaphor "scaffolding" to describe the institution building process. DOUGLASS NORTH, UNDERSTANDING THE PROCESS OF

digital revolution is likely to pose major challenges to the existing social institutions that can be expected to be called on as the vehicles for addressing the challenges (asserting authority) for a number of reasons:

- a lack of clear lines of authority stemming from the transnational nature of the communications;
- concern that institutions that move slowly and rely on rigid rules will have difficulty addressing the challenges without undermining the economic engine at the core of the new communications system that thrives on diversity and dynamic innovation; and
- a decline in the general legitimacy and capacity of the incumbent political institutions.

B. Purpose and Outline

This paper presents a comprehensive framework for analyzing the quarter-life crisis of the digital revolution with a focus on the Internet as an important (perhaps the most important) resource system at the heart of the digital economy. The way the Internet supports the flow of communications plays a key role in the remarkable success of the digital revolution. The institutions that manage the development and operation of the Internet as a resource system are unique in many respects and have come under pressure as the digital revolution and the Internet mature. The ultimate objective of the paper is to gain insight into how the governance institutions can **adapt** to the demands of the quarter-life crisis.

I choose the word **adapt** purposely, rather than reform, because reform is frequently associated with some sort of failure – "**Reform** means the improvement or amendment of what is wrong, corrupt, unsatisfactory."[16] The characterization grounded in failure does not apply as a general proposition to the Internet and the digital revolution. This is a case where the need for change derives from remarkable success, not failure, because the dramatic growth of the resource system strains its own governance institutions and because the resource system has expanded so rapidly and penetrated so deeply into so many aspects of social life that it is having a huge impact on society. The fact that the driving force for change is a broad pattern of success, rather than failure, does not make it less urgent, but it does create a somewhat different orientation than reform driven by failure – the challenge of preserving

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ECONOMIC CHANGE ix, 52 (2005). It is interesting to note that the expression dates from the 12th century, early in what North refers to as the second economic revolution – a revolution based on knowledge. *Id.* at 87.

   16. *Reform*, WIKIPEDIA, http://en.wikipedia.org/wiki/Reform (last modified Sept. 19, 2012, 9:24 PM).

and extending what is working well is prominent, if not paramount.

The analysis covers three levels—resource system (Sections II and III), socio-ecological setting (Section IV and V), and governance institutions (Section VI and VII). The Internet governance debate has come to include all three of these levels, with social policy issues taking center stage. The extent to which the social policy issues can be separated from the resource system issues is hotly debated. This paper argues that doing so is important because preserving the technical basis of success is so important.

Section II presents an analytic framework I call new institutional analysis to explain the success of the Internet as a "focal core resource system" in the 21st century economy. It develops the framework by combining concepts from the Institutional Analysis and Development (IAD) framework of Elinor Ostrom[17] with New Institutional Economics (NIE) offered by Douglass North.[18] By identifying the aspects of the resource system that combined to create its success, the institutional analysis is a useful tool for understanding how the unintended consequences of success create internal pressures for change, in addition to outlining the ways in which the socio-ecological setting places demands on the resource system. Several leading Internet analysts approach the Internet governance debate from the point of view of network theory.[19] I argue that the network framework is virtually identical to the new institutional analysis of a resource system. I prefer the latter because of the very rich set of analytic concepts and proposition that have been built up from a long and large body of empirical analysis.

Section III discusses the speed and scope of growth of performance of the Internet in the context of the digital revolution. The penetration of communications technologies and the increase in usage are the primary measures. It identifies several key pressure points for change within the resource system.

Section IV presents an analytic framework for assessing the demands that the socio-ecological setting places on the Internet resource system. It argues that there are four realms of social structure—

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17. Ostrom's body of work is huge; her Nobel Laureate lecture provides a summary. Elinor Ostrom, Prize Lecture: Beyond Markets and States: Polycentric Governance of Complex Economic Systems (Dec. 8, 2009), *available at* http://www.nobelprize.org/nobel_prizes/economics/laureates/2009/ostrom_lecture.pdf.

18. North's body of work is huge; his Nobel Laureate lecture provides a summary, although he has continued to add to this body for well over a decade. Douglass North, Prize Lecture: Economic Performance through Time (Dec. 9, 1993), *available at* http://www nobelprize.org/nobel_prizes/economics/laureates/1993/north-lecture html.

19. *See, e.g.,* MILTON L. MUELLER, NETWORKS AND STATES: THE GLOBAL POLITICS OF INTERNET GOVERNANCE (2010); ELENA PAVAN, FRAMES AND CONNECTIONS IN THE GOVERNANCE OF GLOBAL COMMUNICATIONS: A NETWORK STUDY OF THE INTERNET GOVERNANCE FORUM (2012).

technology, economy, socio-cultural, and the polity—that are fundamentally different in nature, giving rise to different maturation challenges. It examines examples of the maturation challenges from two perspectives to provide detail and context for the discussion of Internet governance. First, it identifies the issues that fill the international debate over Internet governance.[20] Second, it offers a U.S. perspective through the debate over the "end of the public switched telephone network," in part because the telecommunications network was and still is an essential, complementary resources system with a close relationship to the Internet.[21]

Section V identifies the key dilemmas that confront the resources system in responding to the demands for change from the socio-ecological setting of the system.

Section II-V provide considerable support for the proposition that the maturation challenges are numerous and substantial and that adaptation of existing institutions is the preferable approach to balancing the goal of preserving the dynamic Internet resource system while ensuring it effectively shoulders its adult responsibilities. Section VI and VII examine possible responses to the challenges.

Section VI presents high-level principles to guide the adaptation of Internet governance. It discusses the support for multi-stakeholder approaches as the widely supported institution for responding to the maturation challenges. It then presents a review of the literature of regulatory reform, which highlights the failure of the discussion of regulatory reform to give adequate attention to participation in the governance process.

Section VII makes the case for "participatory governance" as an institutional response to the need for a 21st century governance institution to guide the digital revolution. It argues that "participatory governance," is an approach that recognizes the declining ability and value of governmental agency oversight over the complex, dynamic and global

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20. *See, e.g.,* Communiqué on Principles for Internet Policy-Making, Org. for Econ. Cooperation & Dev. [OECD], High Level Meeting: The Internet Economy: Generating Innovation and Growth (June 28-29, 2011), http://www.oecd.org/internet/innovation/48289796.pdf; Report of the Working Group on Internet Governance, Internet Governance Forum [IGF], Meeting of the Working Group on Internet Governance (June 2005), http://www.wgig.org/docs/WGIGREPORT.pdf; Code of Ethics for the Information Society Proposed by the Intergovernmental Council of the Information for All Programme (IFAP), UNESCO, General Conference: 36th Session (Oct. 10, 2011), http://unesdoc.unesco.org/images/0021/002126/212696e.pdf.

21. Mark Cooper, Statement at FCC Workshop: The Public Switched Telephone Network in Transition (December 14, 2011), *available at* http://www.fcc.gov/events/public-switched-telephone-network-transition-0 (beginning at 79:20); *see also Public switched telephone network*, WIKIPEDIA, http://en.wikipedia.org/wiki/Public_switched_telephone_network (last modified Sept. 28, 2012, 5:46 AM).

activities of the digital economy, while asserting that civil society and economic actors can be mobilized to fill the gap that is developing between the need for oversight and the inability of the state to provide it. Extending the finding that the Internet thrived because it was located between the market and the state, Section G argues that the very factors that are making it difficult for the state to oversee economic activity in the digital economy—dynamic technological change on a global scale— also make it possible to increase direct public involvement in the process of overseeing these sectors because of the dramatically increased ability of the public to communicate and organize for collective action.

II. The Success of the Internet as a Focal Core Resource System in the Digital Economy

A. *The Success of the Internet Resource System*

1. New Institutional Analysis

In this section, I describe the success of the Internet as a resource system in the context of an overall analytic framework that can be described as new institutional analysis. I argue that North and Ostrom analyze the creation, evolution, and adaptation of social institutions and social processes with similar concepts from opposite points of view.[22] North analyzes the issue from the macro level of political, economic, and social institutions focusing on the economic performance of societies across long periods of time.[23] Ostrom analyzes the issue from the micro-level performance of specific resource systems, which are embedded in social, economic, and political settings.[24] Combining the two we have

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22. The compatibility between these two schools of thought is underscored by the fact that the first person Ostrom cites in her Nobel Prize lecture is Douglass North. *See* Ostrom, *supra* note 17, at 408.

23. North, *supra* note 18, ¶¶ 3-4 ("This essay is about institutions and time. It . . . provides the initial scaffolding of an analytical framework capable of increasing our understanding of the historical evolution of economies and a necessarily crude guide to policy in the ongoing task of improving the economic performance of economies . . . . Institutions form the incentive structure of a society and the political and economic institutions, in consequence, are the underlying determinant of economic performance. Time as it relates to economic and societal change is the dimension in which the learning process of human beings shapes the way institutions evolve . . . . ").

24. Ostrom, *supra* note 17, at 432 (referring to the level at which most IAD analysis has been conducted as the "[m]icrosituational level of analysis.") The elements that constitute the analytic framework are microlevel detail. "To specify the structure of a game and predict outcomes, the theorist needs to posit the: 1. characteristics of the actors involved (including the models of human choice adopted by the theorist); 2. positions they hold (e.g. first mover or row player); 3. set of actions that actors can take at specific nodes in a decision tree; 4. amount of information available at a decision node; 5. outcomes that actors jointly affect; 6. set of functions that map actors and actions at decision nodes into intermediate or final outcomes; and 7. Benefits and costs assigned to the linkage of actions chosen and outcomes obtained." *Id.*

not only a complete conceptual framework but also a rich set of methodological tools for empirical analysis.

My goal is not to present a comprehensive account and reconciliation of the work of Ostrom and North. Rather, it is to extract the elements from these very large bodies of work that shed light on why the Internet has been so successful as an institution and what this teaches us about the direction of change that should be followed as it adapts to its maturation challenges.

To appreciate the value of putting the effort into this conceptual framing, I start with the observation that Elinor Ostrom's Nobel Prize Lecture, entitled "Beyond Markets and States: Polycentric Governance of Complex Economic Systems,"[25] describes the current state of the IAD framework as "developing a more general theory of individual choice that recognizes the central role of trust in coping with social dilemmas."[26] In fact, one of the articles she cites as capturing the recent developments of IAD argues that "it has become clear that the real 'glue' that keeps an institution alive over time are the social mechanisms, i.e. trust, legitimacy, and transparency."[27]

The policy challenges that Ostrom derives from her work on resource systems are the challenges that Internet governance faces.

> Extensive empirical research leads me to argue. . . a core goal of public policy should be to facilitate the development of institutions that bring out the best in humans. We need to ask how diverse polycentric institutions help or hinder the innovativeness, learning, adapting, trustworthiness, levels of cooperation of participants, and the achievement of more effective, equitable, and sustainable outcomes at multiple scales.[28]

This statement of the real-world challenge of building institutions to create cooperation in the face of a social dilemma fits the ongoing debate about Internet governance perfectly. The search for polycentric modes of governance that fall between the market and the state where a community self-organizes to build institutions based on trust, legitimacy, and transparency is the search for the holy grail of Internet governance.

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at 415. This description of the analytic questions leads to seven types of operational rules.)

25. Ostrom, *supra* note 17, at 408.

26. *Id.* at 409.

27. Michael Cox, Gwen Arnold & Sergio Villamayor Tomás, *A Review of Design Principles for Community-Based Natural Resource Management,* ECOLOGY & SOC'Y, Dec. 2010, Art. 38 at 12 (2010) (*quoting* Ingvild Harkes, Fisheries Co-Management, the Role of Local Institutions and Decentralization in Southeast Asia (May 15, 2006) (unpublished Ph.D. thesis, Leiden University), *available at* https://openaccess.leidenuniv nl/bitstream/handle/1887/4385/Thesis.pdf) (internal quotation marks omitted).

28. Ostrom, *supra* note 17, at 435-36.

Douglass North's framing of the purpose and focus of New Institutional Economics is very similar in spirit and substance.

> Institutions provide the basic structure by which human beings throughout history have created order and attempted to reduce uncertainty in exchange. Together with the technology employed, they determine transaction and transformation costs and hence the profitability and feasibility of engaging in economic activity. . .

> There is a different, and I think, better story. It concerns the endless struggle of human beings to solve the problems of cooperation so that they may reap the advantages not only of technology, but also of all the other facets of human endeavor that constitute civilization.[29]

> Institutions form the incentive structure of a society and the political and economic institutions, in consequence, are the underlying determinant of economic performance. Time as it relates to economic and societal change is the dimension in which the learning process of human beings shapes the way institutions evolve. That is, the beliefs that individuals, groups, and societies hold which determine choices are a consequence of learning through time. . . .[30]

2. The Conditions for the Institutional Success of the Internet

The usefulness of the analytic framework goes beyond the fact that the central institutional problem it identifies fits the current Internet governance debate well. The "clear set of findings" that are the basis for the generalizations that IAD offers to explain successful institutionalization of a resource system provides a remarkably precise understanding of why the Internet succeeded as a "focal core resource system." As shown in Table II-1, a good case can be made that the Internet possessed most, if not all, of the empirically identified characteristics that make for successful cooperation to deal with a social/economic dilemma.

In the beginning and for a significant period of development, the architects and users of the Internet were a fairly small, homogeneous set of engineers who shared norms, values, and a pragmatic problem-solving world-view. The perceived benefits expected from cooperation were quite large and non-commercial. The essential principle of the Internet was to allow local autonomy around a core set of communications protocols. The protocols were designed to resolve conflicts over resources in a low-cost manner (best effort, with the end-points

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29. DOUGLASS NORTH, INSTITUTIONS, INSTITUTIONAL CHANGE AND ECONOMIC PERFORMANCE 118, 133 (1990).

30. North, *supra* note 18, ¶ 4.

RULES, FUNCTIONS & INFLUENCES	DESIGN PRINCIPLES	FAVORABLE CONDITIONS
Structure and Units		
Boundary Rules	Clarity of Membership	Size of resource system: Very large territories are unlikely to self-
Position Rules	Clarity of Resource	organize given the high cost of defining boundaries ...
	Congruence between	monitoring use patterns and gaining ecological knowledge.
	Membership & Resource	Very small territories do not generate substantial flows of
		valuable products. Thus, moderate size is most conducive to self-
		organization.
Control		
Appropriation Rules	Fair, orderly, efficient	Predictability of system dynamics: System dynamics need to be
Provision Rules	Incentive to contribute	sufficiently predictable that users can estimate what would
	Reflect local conditions	happen if they were to particular rules or no entry territories.
	and be congruent	
Users and Uses		
Collective Choice	Participation	When users... have full autonomy at the collective choice level to
	Power to act	craft their own rules, they face lower transactions costs as well
		as lower costs in defending a resource against invasion by others.
		When some users of any type of resource system have
		entrepreneurial skill and are respected as local leaders as
		result of prior organization for other purposes, self-organization is
		more likely.
Payoff	Cost/Benefit	Users need to observe some scarcity before they invest in
		self-organization. Distribution of costs is proportional to benefits.
Governance		
Monitoring	Present	Due to the cost of observing and managing a system, self-
	Community	organization is less likely with mobile resources.
	Professional	Group size is always relevant, but its effect on self-organization
	Monitor appropriation	depends on other variables and the types of management tasks
	& condition of the resource	envisioned.
		Norms/social capital: Users of all types of resource systems who share
		moral and ethical standards regarding how to behave in groups they
		form, and thus the norms of reciprocity, and sufficient trust in one
		another to keep agreements will face lower transaction costs in
		reaching agreements and lower costs of monitoring.
Enforcement	Graduated response	Rapid, low cost arenas to resolve conflicts
	Accountable	
Information:	Local Knowledge	When users share common knowledge of relevant system
	Flow for monitoring	attributes, how their actions affect each other, and rules use
		in other systems, they will perceive lower costs of organizing.
Socio-ecological Setting		
External Drivers	Government	The long term sustainability of rules devised at a focal
	Recognition of rights	level depends on monitoring and enforcements as well as their
	to organize	not being overruled by larger government policies... Larger scale
		governance systems may either facilitate or destroy governance
		systems at a focal level.
	Economics	Market integration may effectively remove control of a resource
		from a user group... external integration alters local incentives,
		frequently by decreasing dependence on the resource used by a
		community... when members are not as dependent on the resource,
		their welfare is not as strongly tied to cooperative behavior.
	Nested enterprise	When a resource is connected to a larger socio-ecological system,
		governance activities are organized in multiple, nested layers.
		Establishing rules at one level, without rules at the other
		levels will produce an incomplete system that may not
		endure over the long term.

TABLE II-1: RESOURCE SYSTEM CHARACTERISTICS CONDUCIVE TO THE INTERNET'S SUCCESS[31]

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31. ELINOR OSTROM, UNDERSTANDING INSTITUTIONAL DIVERSITY 259 (2005); Cox et

responsible for dealing with the quality of output). The nature of the users and the resources system made it "easy" to decentralize decision-making and rely on distributed knowledge and assets to build the system.

These characteristics of the Internet resource system were reinforced by an external environment that was supportive. The most important external actor, the government, spawned the idea in the first place.[32] The Federal Communications Commission (FCC), which had regulatory authority over a closely related, essential complementary resource system on which the Internet was dependent, also made key decisions that supported the growth of an autonomous, decentralized resource system.[33] The Internet would not have functioned beyond a minimal scale without access to a key, related external resource system – the telecommunications network – that was the focal core communications resource system of the 2nd industrial revolution. The FCC instituted key policy decisions that forced the dominant incumbents in the telecommunications resource system to leave the Internet alone,[34] enabling the Internet to develop according to a radically different set of design and governance principles, while utilizing the existing communications resource system. I will elaborate on the importance of this point for the current debate over Internet governance in Section IV.

An important implication of these observations is that the unintended consequences of dramatic success can alter the internal and external relations of the resource system so much that the original conditions of success are no longer obtained. Thus, even a successful resource system must be able to adapt to change. Over the course of the youth and adolescence of the Internet resource system, its remarkable success transformed almost every one of those conditions. We now have a large number of much more diverse users spread over a vast geographic space creating an exaflood of much more complex and heterogeneous outputs. The complexity and heterogeneity challenge the predictability. Diversity reduces the sharing of norms. The expansion of the Internet as a communications resource system brings it into conflict with the telecommunications resource system on which it depended for its success. Commercialization changes the motivations of actors and their willingness to cooperate, leading some commercial interest to seek to completely overturn the constraint on telecommunications resource

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al., *supra* note 27, at 15; Ostrom, *supra* note 17, at 422.

   32. *See generally* JANET ABBATE, INVENTING THE INTERNET (1999).

   33. Robert Cannon, *The Legacy of the Federal Communications Commission's Computer Inquiries,* 55 FED. COMM. L.J.. 167, 169 (2003).

   34. Lessig puts it bluntly: "Phone companies, however, did not play these games, because they were not allowed to. And they were not allowed to because regulators stopped them." LAWRENCE LESSIG, THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD 148 (2001).

behavior that the FCC imposed.[35]

Challenges to predictability, norms, and cooperation trigger a search for new or "better" management mechanisms. Given the tendency to try to fit new relations into old laws, we should not be surprised to find many policy advocates turning to the state or the market to address the challenges. Yet, in significant measure the Internet succeeded because it was between the state and the market, utilizing tools from each to build a dynamic resource system based on a radically different communications principle.

B. The Basic Elements of Institutional Analysis

1. Building Success between the Market and the State

Both North and Ostrom locate their analytic frameworks between the market and the state based on a similar critique of neoclassic economic analysis and its overreliance on markets as the answer to every question and/or the solution to every problem.[36] Indeed, these two

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35. For a detailed outline of this conflict, *see* OPEN ARCHITECTURE AS COMMUNICATIONS POLICY: PRESERVING INTERNET FREEDOM IN THE BROADBAND ERA (Mark Cooper ed., 2003), http://cyberlaw.stanford.edu/attachments/openarchitecture.pdf

36. *See, e.g.*, AMY R. POTEETE, MARCO A. JANSSEN & ELINOR OSTROM, WORKING TOGETHER: COLLECTIVE ACTION, THE COMMONS AND MULTIPLE METHODS IN PRACTICE 217, 218, 220-22 (2010) ("The conventional theory was pristine in the simplicity of its model of human behavior but made strong assumptions about information conditions. Individuals are assumed to have complete information about the structure of the situation they are in, including the preferences of other actors, the full range of possible actions, and the probability associated with each outcome resulting from a combination of actions. Each individual is assumed to select the strategy leading to the best expected outcome for self. . . . Based on the conventional theory, many analysts thought that the *only* way to solve the commons problem was to impose a solution from the outside. Fortunately, scholars who conducted case studies of diverse resource systems all over the world were not blinded by the conventional theory. . . . The clear and unambiguous predictions derived from the conventional theory of collective action have been replaced with a range of possible outcomes, including some that are far more optimistic. . . . We need to recognize that what has come to be called rational-choice *theory* is instead one *model* in a family of models that is useful for conducting formal analyses of human decision in highly structured, competitive settings. . . . A broader theory of human behavior views humans as adaptive creatures who attempt to do well given the constraints and opportunities of the situation in which they find themselves (or the ones they seek out). Humans learn norms, heuristics, and full analytic strategies from one another, from feedback from the world, and from their own capacity to engage in self-reflection and imagine a differently structured world. They are capable of designing new tools—including institutions—that can, for good or evil purposes, change the structure of the worlds they face. . . . If, as we assume, decision making relies on learning and adaptation, other-regarding preferences and norms, and heuristics, then trust can play a central role in influencing the prospects for collective action.") (citation omitted). *See also* NORTH, *supra* note 15, at 5, 65 ("The rationality assumption has served economists (and other social scientists) well for a limited range of issues in micro theory but is a shortcoming in dealing with the issues central to this study. Indeed the uncritical acceptance of the rationality assumption is devastating for

Nobel laureates provide the bookends for over a decade of Nobel prizes in economics that were given to scholars who demonstrated that the neoclassical approach to economics that dominated much of the 20th century was far too narrow.

Each framework argues that neoclassical economic analysis is so severely limited by its assumptions as to be restricted in its usefulness and counterproductive in the search for knowledge about change and stability across time. They identify a series of important situations/challenges that are not well suited to simple market solutions. Their analyses demonstrate that humans have much greater deliberative capacity and intentional ability to build organizations and institutions to meet economic challenges, so the resulting reality of economic life is far more complex than neoclassic theory admits.

The two frameworks share a similar schizophrenia about government. They are leery of government solutions from above/outside. External mandates have a tendency to make matters worse, not better, either because the outsiders do not have the necessary local knowledge to understand how to make the resource system work (and are too arrogant to ask) or because their interests are different from the local interests. However, both frameworks also recognize that meeting the challenge of building institutions/organization to solve economic problems requires supportive government action at some level,

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most of the major issues confronting social scientists and is a major stumbling block in the path of future progress. The rationality assumption is not wrong, but such an acceptance forecloses a deeper understanding of the decision-making process in confronting the uncertainties of the complex world we have created. . . . Neo-classical economic theory provides an understanding of the operation of markets in developed economies but was never intended to explain how markets and overall economies evolved. It has three fundamental deficiencies which must be overcome to understand the process of economic change. It is frictionless, it is static, and it does not take into account human intentionality.") (footnote omitted); NORTH, *supra* note 29, at 111, 112 ("There is in economics a (largely) implicit assumption that the actors can correctly identify the reason for their predicaments (i.e., have *true* theories), know the costs and benefits of . . . choices, and know how to act upon them. Our preoccupation with rational choice and efficient market hypotheses has blinded us to the implications of incomplete information and the complexity of environments and subjective perceptions of the external world that individuals hold. There is nothing the matter with the rational actor paradigm that could not be cured by a healthy awareness of the complexity of human motivation and the problems that arise from information processing. Social scientists would then understand not only why institutions exist, but also how they influence outcomes. . . . Integrating institutional analysis into *static* neoclassical theory entails modifying the exiting body of theory. . . . Path dependence is the key to an analytic understanding of long-run economic change. . . . [I]t extends the most constructive building blocks of neoclassical theory—both the scarcity/competition postulate and incentives as the driving force—but modifies that theory by incorporating incomplete information and subjective models of *reality* and the increasing returns characteristic of institutions. The result is an approach that offers the promise of connecting microlevel economic activity with the macrolevel incentives provided by the institutional framework. The source of incremental change is the gains to be obtained by organizations and their entrepreneurs from acquiring skills, knowledge, and information that will enhance their objectives." *Id.* at 112.) (internal citation omitted).

and the larger and more complex the resource system, the greater the need for governmental policy support.[37]

North's description of how and when the supportive decisions of the state can provide critical support, rare as it is, identifies a pattern of action that I argue typified the behavior of the state in the context of the birth and youth of the Internet.

> In rare cases the government designs and enforces a set of rules of the game that encourage productive activity. . . . Because there is a widespread prejudice among many neoclassical economists that simply an absence of government intervention is a sufficient condition for good economic performance in a particular market, it is important to stress that the performance characteristics of any market are a function of the set of constraints imposed by institutions (formal rules—including those by government—informal norms, and the enforcement characteristics) that determine the incentive structure in that market. . . . The crucial point is to recognize that efficient markets are created by structuring them to have low costs of transacting and these conditions will vary with each kind of market and with each market over time. . . . Well-functioning markets require government, but not just any government will do. There must be institutions that limit the government from preying on the market. Solving the development problem therefore requires the crafting of political institutions that provide the necessary underpinnings of public goods essential for a well-functioning economy and at the same time limit the discretion and authority of government and of the individual actors within government. . . . [A]n underlying structure that credibly commits the state to a set of political rules and enforcement that protects organizations and exchange relationships.[38]

Ostrom's description of nested resource systems expresses a similar view:

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37. NORTH, *supra* note 15, at 122, 132-33 ("Economists of a libertarian persuasion have for some time labored under the delusion that there is something called laissez faire and that once there are in place 'efficient' property rights and the rule of law the economy will perform well without further adjustment. . . . Transaction costs—here measurement and enforcement costs—will vary in each case; in order to reduce such costs there must be an institutional structure that will provide incentives for the players to compete at those margins, and those margins alone, that will be socially productive. Typically this entails a set of formal (usually a mixture of laws, rules, and regulations) and informal constraints to produce the desired results. . . . The mechanisms for contract enforcement appear to have had their beginnings in internal codes of conduct of fraternal orders of guild merchants, which were enforced by the threat of ostracism. These codes evolved into merchant law and spread throughout the European trading area; gradually they became integrated with common and Roman law and enforcement was eventually taken over by the state. The last point is critical. The economic institutional structure was made possible by the evolution of polities that eventually provided a framework of law and its enforcement.")(internal citation omitted).

38. *Id.* at 67, 76-77, 85, 105.

[O]fficials and policy analysts who presume that they have the right design can be dangerous. They are likely to assume that citizens are short-sighted and motivated only by extrinsic benefits and costs. Somehow, the officials and policy analysts assume that they have different motivations and can find the optimal policy because they are not directly involved in the problem (citation omitted). They are indeed isolated from the problems. This leaves them with little capability to adapt and learn in light of information about outcomes resulting from their policies. All too often, these "optimal" policies have Leviathan-like characteristics to them. . . . While smaller-scale, community-governed resource institutions may be more effective than centralized government in achieving many aspects of sustainable development, the absence of supportive, large-scale institutional arrangements may be just as much a threat to long-term sustenance as the presence of preemptive large-scale governmental agencies. Obtaining reliable information about the effects of different uses of resource systems and resource conditions is an activity that is essential to long-term sustainability. If all local communities were to have to develop all of their own scientific information about the physical settings in which they were located, few would have the resources to accomplish this. [39]

Furthermore, the long-term stability of rules devised at a focal. . . level depends on monitoring and enforcement as well as their not being overruled by larger government policies. . . . Larger scale governance systems may either facilitate or destroy governance systems at a focal. . . level. [40]

Institutions located between the market and the state can ground their economic success (superiority) in a number of possible economic dilemmas. Ostrom has been closely associated with the debate over social organization to exploit common-pool resources and produce public goods, [41] but that is far from the only economic dilemma that non-market institutions may be called on to address. North argues that the exploitation of knowledge poses a challenge that markets may not meet well and his list of challenges includes other well-known sources of

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39. OSTROM, 256, *supra* note 31, at 278) (citation and footnotes omitted).

40. Elinor Ostrom, *A General Framework for Analyzing Sustainability of Social-Ecological Systems,* 325 SCIENCE 419, 422 (2009).

41. *See, e.g.*, Ostrom, *supra* note 17, at 408-09 ("Contemporary research on the outcomes of diverse institutional arrangements for governing common-pool resources (CPRs) and public goods at multiple scales builds on classical economic theory while developing new theory to explain phenomena that do not fit in a dichotomous world of 'the market' and 'the state.' . . . The market was seen as the optimal institution for the production and exchange of private goods. For nonprivate goods, on the other hand, one needed the government to impose rules and taxes to force self-interested individuals to contribute necessary resources and refrain from self-seeking activities. Without a hierarchical government to induce compliance, self-seeking citizens and officials would fail to generate efficient levels of public goods . . . .")

market failure.

> Just how does it work? Sociologists looking empirically at information networks describe an immensely complicated communications structure that pulls the dispersed knowledge together in order to use it effectively in the growth of productivity of the modern economy. . . . It is only when that specialized knowledge can be integrated with other complementary knowledge at low cost that it is very valuable. The interconnections necessary to combine distributed knowledge effectively entail much more than an effective price system, although that is an essential prerequisite. The essential public goods, asymmetric information, and ubiquitous externalities require that institutions and organizations be created to integrate this dispersed knowledge. . . .[42]

The economic dilemma that the Internet navigates could be classified as a common-pool resource, a public good with a massive (positive) externalities or a transaction cost problem (asymmetric information plus others).[43] Any of these would provide a basis for concluding that there was an economic benefit that could be captured by cooperation. Or, it can be argued that the immense power of the Internet and its remarkably quick rise to dominance reflects the fact that it addresses **all** of these perennial sources of market failure in significant ways. The importance of the Internet resource system is magnified by the fact that communications and information flow are increasingly central to economic activity and have long been at the heart of important political and social processes. Thus, the Internet provides uniquely useful solutions to several increasingly important social/economic

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42. NORTH, *supra* note 15, at 120-21. ELINOR OSTROM, ROY GARDNER AND JAMES WALKER, RULES, GAMES & COMMON-POOL RESOURCES (1994) at 193, 194, 217. "Policymakers responsible for the governance of small-scale, common-pool resources should *not* presume that the individuals involved are caught in an inexorable tragedy from which there is no escape. Individual may be able to arrive at joint strategies to manage these resources more efficiently. To accomplish this task they must have sufficient information to pose and solve the allocation problems they face. They must also have an arena where they can discuss their joint strategies and perhaps implement monitoring and sanctioning. In other words, when individuals are given an opportunity to restructure their own situation they frequently, but not always, use this opportunity to make commitments that they sustain, thus achieving higher joint outcomes without recourse to an external enforcer. . . ." But once individual communicate (especially if they can communicate with one another repeatedly), they can build up trust through their discussions and through achieving better outcomes. If individuals come to these situations with a willingness to devise sharing rules and to follow a measured reaction, then communication facilitates agreement selection and the measured reaction facilitates agreement retention.

43. *See, e.g.*, YOCHAI BENKLER, THE WEALTH OF NETWORKS (2006); Brett Frischmann, *An Economic Theory of Infrastructure and Commons Management,* 89 MINN. L. REV. 917 (2005). Benkler is most closely associated with the commons argument, although he has a very broad perspective; Frischmann emphasizes the externalities view.

dilemmas.   Failing to recognize the broad economic basis of the Internet's success seriously underestimates its value and power as a cooperative solution to important social and economic dilemmas.[44] More importantly, in order to avoid undermining the dynamic economic engine of the Internet in the process of responding to the maturation challenges, the rich and complex set of social and economic dilemmas it addresses must be considered.

As suggested by the above quotes, the challenge for institutional analysis has been to describe the rules that make resource systems work/economies perform well and to convince policymakers (among others) that the market or the state are not the only way to write effective rules. In the Internet space, we know the rules and the institutions. My goal is to understand why they worked so well and to caution policymakers that great care is needed in adapting them to the maturation challenges, lest the policies adopted undermine the ability of the resource system to continue it dynamic development. The proposed solution is to expand and reinforce governance institutions between the market and the state.

2. Creating Resources by Increasing Predictability

Both North and Ostrom launch their analysis from the desire and need to analyze systems that generate resources for groups of humans because the production and distribution of economic resources are central to human life and wellbeing.

> The revolution in technology of the past several centuries has made possible a level of human well-being of unimaginable proportions as compared to the past, but it also has produced a world of interdependence and universal externalities, and in consequence a whole new set of uncertainties.[45]

The ultimate goal of social institutions/organizations is the reduction of uncertainty through cooperation to capture collective benefits that exceed the benefits available from individual action. Figure II-1 presents a summary of the comprehensive variables and processes that the IAD approach has derived from experimental and field studies of

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44. Mark Cooper, *From Wifi to Wikis and Open Source: The Political Economy of Collaborative Production in the Digital Information Age,* 5 J. ON TELECOMM. & HIGH TECH. L. 125 (2006) (arguing that the digital economy goes beyond the traditional four good framework based on rivalry and exclusion because it creates a new type of good, collaborative goods – that increases in value because they exhibit antirivalry and inclusiveness. *Id.* "[C]ollaborative production goods occur where having numerous producers participate in the production of the goods increases its value and where the value of the good goes up as the number of people who use it increases." *Id.* at 133.).

45. NORTH, *supra* note 29, at 20.
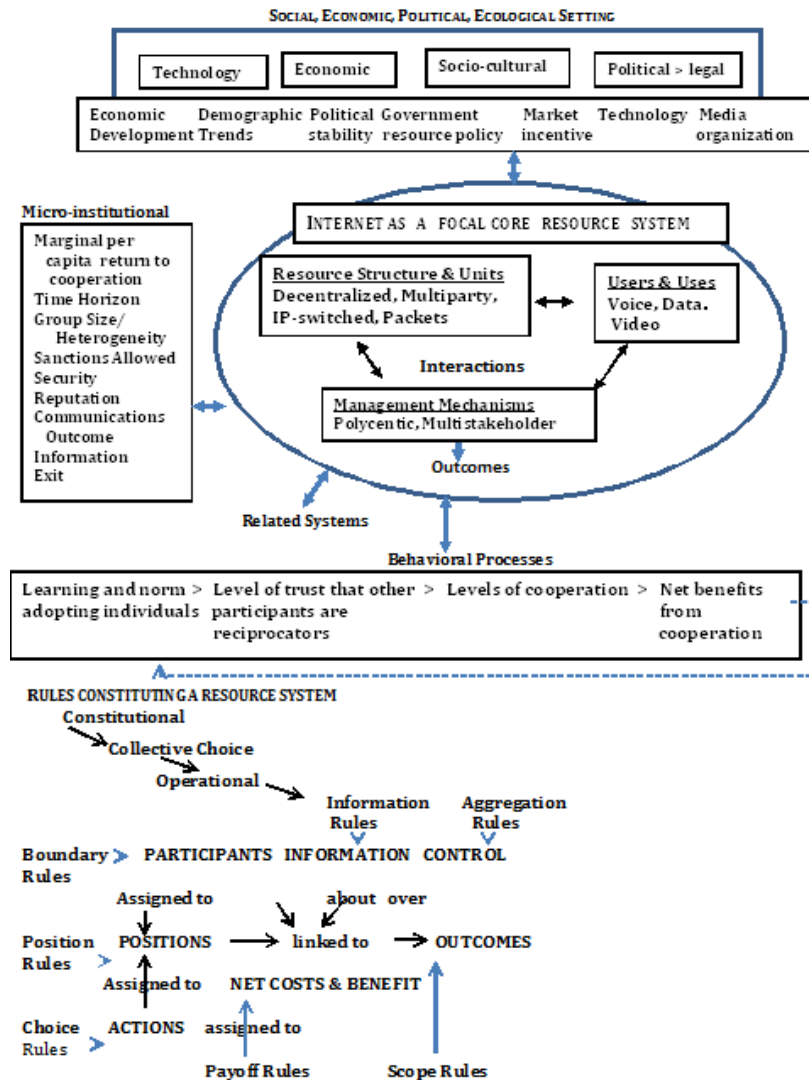
FIGURE II-1: VARIABLES AND PROCESSES THAT INFLUENCE THE DEVELOPMENT AND ADAPTATION OF THE INTERNET RESOURCE SYSTEM[46]

46. MARCO A. JANSSEN ET AL., WORKING TOGETHER: COLLECTIVE ACTION, THE COMMONS AND MULTIPLE METHODS IN PRACTICE (2010);, Elinor Ostrom, *A General Framework for Analyzing Sustainability of Socio-Ecological Systems*, SCIENCE MAGAZINE, July 24, 2009, at 24; Nives Dolsak & Elinor Ostrom, *The Challenge of the Commons, in*, THE COMMONS IN THE NEW MILLENNIUM: CHALLENGES AND ADAPTATION, (Nives Dolsak & Elinor Ostrom eds. 2003).

cooperative responses to economic dilemmas. Predictability of actions results from roles that are clearly defined by formal rules and informal norms as to who can do what, rules and norms that are well monitored and backed by enforcement mechanisms. Predictability is enhanced by providing incentives and enforcing constraints on activity with sanctions. Effective sanctioning that maintains the order tends to be graduated. Trust in the action of others is the key to predictability of action and lowering transaction costs. Information and communications are central to developing rules and enforcing them.[47]

Consistency/congruence across these levels and between the elements of each level is a key feature of a successful social response to a resource challenge.

Both of the frameworks are focused on the causes and responses to external and internal pressures for change and the ability of the institutions that humans have built to adapt.

> Successful economic development will occur when the belief system that has evolved has created a "favorable" artifactual structure that can confront the novel experiences that the individual and society face and resolve positively the novel dilemma. . . . Put simply the richer the artifactual structure the more likely are we to confront novel problems successfully. That is what is meant by adaptive efficiency; creating the necessary artifactual structure is an essential goal of economic policy.

> Adaptive efficiency . . . entails a set of institutions that readily adapt to the shocks, disturbances, and ubiquitous uncertainty that characterize every society over time. The foundation of these flexible institutions resides in widely held beliefs embodied in the informal constraints of the society.[48]

> In light of still further evidence about the performance of self-organized systems that are consistent with the earlier derived design principles, we can conclude that there are ways of organizing governance that increase the opportunities for adaptation and learning in a changing and uncertain world with continuing advances in

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47. Identifying similar vitally important social bases of action and gives an example that is relevant to the issues examined in this paper. *Id.* at 75 ("Norms of honesty, integrity, reliability lower transaction costs. . . . The traders from the Islamic world developed in-group social communication networks to enforce collective action. While effective in relatively small homogeneous ethnic groups, such networks did not lend themselves to the impersonal exchange that arises with the growing size of markets and diverse ethnic traders. In contrast, the Genoese developed bilateral enforcement mechanisms which entailed creation of formal legal and political organizations for monitoring and enforcing agreements—an institutional/organizational path that permitted and led to more complex trade and exchange.").

48. NORTH, *supra* note 15, at 69-70, 78.

knowledge and technologies. . . .

The contemporary use of the term *robustness* in regard to complex systems focuses on adaptability to disturbances: "the maintenance of some desired system characteristics despite fluctuations in the behavior of its component parts or its environment."[49]

Change depends on the ability of the institutions to buffer themselves and the origin and nature of the forces creating the pressure for change. These pressures can be internal to the resource system (e.g., depletion of resources, conflicts over interpretation of rules) or external (e.g., external intervention, competition for scarce resources, change in the characteristics of the resource).[50]

C. The Internet as a Focal Core Resource System

1. The Elements of the Internet Resources System

To study this complexity one must examine the formal and informal rules of social institutions and organization that humans develop to increase the predictability of behavior. As shown on the left side of Figure II-1, above, the resource system can be conceptualized as composed of three aspects or sets of elements—the structure and units, users and uses, and the management mechanism—that interact to produce the outcome. The resource system is embedded in a socio-ecological setting and supported by behavioral processes.

In Figure II-1, above, I modify Ostrom's basic set of definitions in two ways. First, I combine the structure and units into one aspect of the resource system that captures the generally technical nature of the system. Second, the aspect that I label management mechanism is called the governance system by Ostrom. Ostrom used the term governance system broadly to include the decisions and choices made about the constitution of the resources system. The Internet governance debate has come to use the term governance even more broadly to apply to both the management of the resource and the host of issues that arise from the socio-ecological setting.

This distinction is well-recognized in the Internet governance debate. For example, a paper from the United Nations Conference on

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49. OSTROM, *supra* note 31, at 257, 258.

50. NORTH, *supra* note 29 (noting a number of sources of change including: the inevitable imperfection of understanding of realty, *id.* at 2, the fit between the institutions and reality, *id.* at 3, complexity, *id.* at 23, processes by which human activity changes the environment in which institutions exist, *id.* at 116, and entrepreneurship, *id.* at 125); *see also* Elinor Ostrom and Xavier Basurto, *Crafting Analytic Tools to Study Institutional Change,* 327 J. INSTITUTIONAL ECON., 317, 324-27 (2011) (outlining various processes of rule change).

Trade and Development (UNCTAD) noted:

> It is important in this regard to distinguish "governance of the Internet" (that involves the physical and logical infrastructure of the Internet, and would probably be more appropriate to refer to as the management of the core resources of the Internet) from "governance on the Internet" (which concerns activities that take place over the Internet, particularly the exchange of information, goods and services).[51]

Throughout the remainder of the paper, I use the term Internet governance to refer to the very broad set of issues that have arisen in the international debate about the future of the Internet, while I reserve the term management mechanisms for the narrower questions of the operation of the structure, units, users, and uses of the resource system.

As shown on the right side of Figure II-1, the resource system produces beneficial outcomes by institutionalizing rules that govern the resource. There are three broad categories of rules that define a resource system.

- Constitutional rules govern the way the overall resources system is constituted, particularly how collective choice rules are defined.
- Collective choice rules embody the procedures by which the operational rules are changed.
- Operational rules govern the activities that take place within the borders of the resource system. There are seven operational rules that define the resource system by assigning participants to positions that are associated with actions that yield payoffs, subject to monitoring and control.

The central question posed by North is at the operation level, "just how does it work?" It can be answered in terms of Figure II-1 as follows. The Internet is a resource system in which anyone can do anything as long as it comports with the Internet protocols (IP). The protocols create a flow of resource units continuously. They place no restrictions on content. If there is congestion, the users are told to back off and each knows what needs to be sent to complete the communication. Users have the opportunity to design their uses or operate their networks in ways that can deal with the capacity of the system to handle traffic. Decentralized, user-based, local knowledge is allowed to play a large role in the resource system, another important characteristic that enables it to produce large benefits. The success of the

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51. United Nations Conference on Trade and Dev. (UNCTAD), *Internet Governance*, *in* Internet Governance: A Grand Collaboration 256 (Don MacLean ed., 2004) [hereinafter *UNCTAD*].

system encourages the community of users to invest substantially in its maintenance and expansion. There may be some uses that the resource system is not well-suited for, but there are always work-arounds, and the vast array of activities that it came to support swamped the things it could not do precisely because there is so much freedom for users to figure out how to get things done.

The essence of the Internet resource system came to be described as a series of layers configured as an hourglass, as depicted in Figure II-2 by the National Academy of Sciences. The description that has become common is that the unique, revolutionary idea of the hourglass is that the protocols and standards at the waist enable any network in the bottom strata to communicate with every other network in the bottom strata, regardless of the application used, as long as the communication adheres to the protocols and standards at the waist. Interestingly, the hourglass can be described as two sections connected by a channel, which better fits the idea of information flows. The functionality of the hourglass lies in the fact that the two sections can contribute to the system functioning as the source of the flow is renewed with the turning over of the glass. This highlights a key characteristic of the Internet. It can be argued that networks and applications are strong complements in the creation of a successful resource system, and it is fair to say that the success of the Internet resource system reflects the "equal" contribution of the two sections – content and networks; hardware and software.

2. Networks as Resource Systems

With the Internet defined as a network of networks, it is not surprising that analysts of the Internet governance issue frequently adopt network theory as a framework. Network theory is virtually identical to the analytic framework that I have outlined in this section. As Mueller described networks, the quality of being between market structures and hierarchical structure is an essential characteristic of a network.

> A network was said to be based on *the relationship* rather than *the transaction*; it was composed of longer-term bonds of reciprocity and trust among economic actors that were too stable to be classified as market transactions and too loose to be classified as formal hierarchies.[52]
>
> The economic advantage of the network flows from the characteristics of the network that allow it to utilize local knowledge.
>
> Many of the advantages attributed to this form of organization were

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52. MUELLER, *supra* note 19, at 34.

related to its efficiency in sharing and processing information and knowledge. Networks were characterized as relying on lateral as

LAYER 4   Applications

Electronic Mail   Audio Server   Remote Login   Teleconferencing

Information Browsing   Video Server   Interactive Education   Financial Services

Fax

LAYER 3   Privacy Middleware Services

Service Directories   Security   Multiscale Coordination

Name Server

Storage Repositories   Electronic Money

LAYER 2   **Transportation Svcs & Representation Stds**
(Fax, video, audio, text)   Open bearer service interface

LAYER 1   **ODN BEARER SERVICE**

Network Technology Substrate

LANS   ATM   Point-to-Point Circuits

Frame Relay   Dial-up Modem

Wireless   Direct Broadcast Satellite
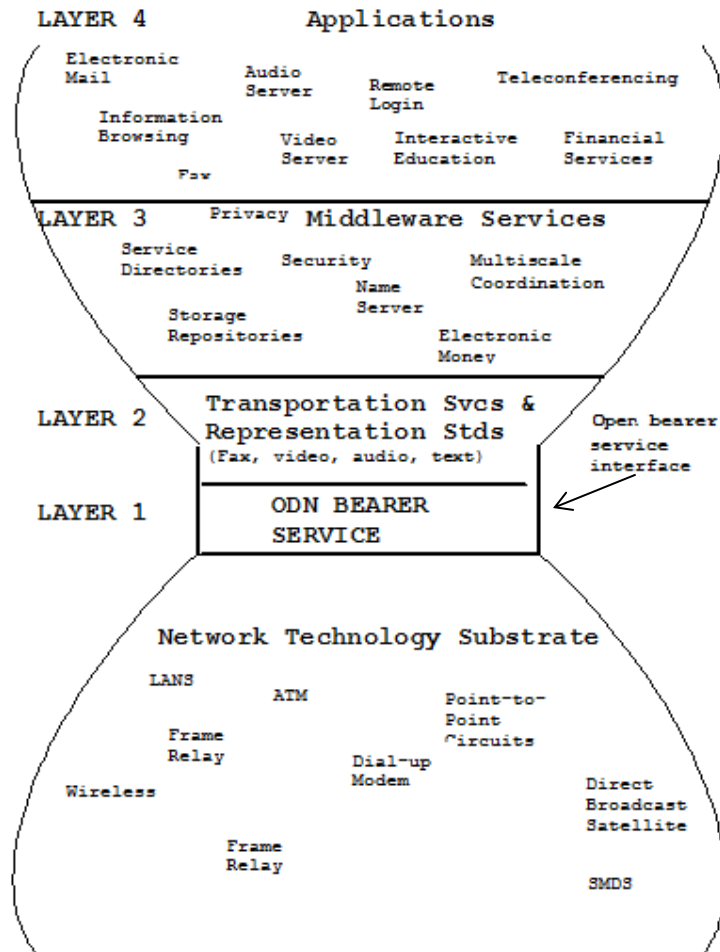
Frame Relay

SMDS

FIGURE II-2: THE INTERNET HOURGLASS AT THE HEART OF THE RESOURCE SYSTEM[53]

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53. NATIONAL RESEARCH COUNCIL, REALIZING THE INFORMATION FUTURE 3 (National Academy Press 1994), *available at:* http://www.scientificcomputing.com/news-HPC-Internet-Architectures-Hourglass-Shape.aspx (updated version).

opposed to hierarchical channels of communication, which made it possible to more efficiently exploit complementary skills and knowledge dispersed among multiple actors. As learning and innovation vehicles, network organizations compared favorably to "passing information up and down a corporate hierarchy or purchasing information in the marketplace" because they facilitated the development of "new interpretations" and "novel linkages," and took advantage of the unique economics of information, in that sharing does not deplete it. . . . Based on the preceding discussion, it now is easier to see how the Internet triggers an explosion of new kinds of network organization and peer production processes; and also how the Internet enables a vast expansion of transnational issue networks or policy networks.[54]

It is interesting to note that in answering the crucial question of how to account for innovation and change, Mueller turns to the process of institutionalization and cites North and Ostrom. The description of the network structure and dynamics fits the resource system framework, in general, and the Internet, in particular, quite well.

How might this result in innovation and change in the governance of communications and information?

At this juncture it becomes useful to link discussions of networks more directly to theories of institutions and institutionalization. When considering Internet governance we need to pay attention to the movement from informal, de facto association to formal organization; from loose consensual or cooperative action to the adoption of binding, agreed procedures. It is precisely this movement from the partially institutionalized to the formally structured that is the most critical and revealing part of the global politics of Internet governance.

Institutionalization implies that the parties involved in regular interactions understand and accept certain norms, conventions, and explicitly formulated rules governing their interaction, and that these rules can be enforced. This results in what game theorists call equilibrium outcomes, or stable patterns of interaction that reproduce and reinforce the rules and the organizational roles as the precondition for action. Mutual agreement on applicable rules and roles can generate collective benefits. Institutional theory suggests, however, that it is conflict or negotiation over the *distribution* of these benefits that moves loose associations of actors along the spectrum ranging from very informal, associative networks to more formal organization, and from there to the most hierarchical and

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54. *Id.* at 45.

binding forms of institutionalization.[55]

Pavan's formulation is similar:

This focus on interaction is justified by a "decentralized concept of social organization and governance [for which] the society is no longer exclusively controlled by a central intelligence (e.g. the state); rather controlling devices are dispersed and intelligence is distributed among a multiplicity of action (or 'processing') units." . . . [G]iven the features of dynamism and complexity that characterize the global context, new approaches are needed to investigate the plurality of actors *and* interaction in which they engage . . . . To this end, networks are a powerful image for portraying the growing complexity of contemporary societies. . . . [N]ot only do networks constitute a lens for depicting and reducing the complexity of the situation, but their emergence is nowadays also considered a relevant political result . . . . Networks are preferred to markets and hierarchies as modes of organizing political processes with specific reference to three aspects: *the relations established between actors,* which are pluricentric as opposed to monocentric, entailed by state regulation and multicentric arrangements characterizing market competition; *the decisional mechanisms enacted,* which are based on reflexive rationality rather than on the substantial rationality characterizing state regulation or on the procedural rationality defined by markets; and finally, *the level of compliance with collectively negotiated decisions,* which is ensured not by means of coercion typical of the state or by the *"fear of economic loss"* but rather through the generation of trust and political obligation. In sum, network arrangements are adopted because steering activities about complex matters require the simultaneous presence of diverse actors and competencies: it is along network ties that participants' points of view can be coordinated and consensus is possibly achieved.[56]

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55. MUELLER, *supra* note 19, at 35, 45-46.

56. PAVAN, *supra* note 19, at 44, 48 (citations omitted). Drawing on the works of Buchanan, MARK BUCHANAN, NEXUS: SMALL WORLDS AND THE GROUNDBREAKING SCIENCE OF NETWORKS (2002), Barabási, ALBERT-LÁSZLÓ BARABÁSI, (LINKED: HOW EVERYTHING IS CONNECTED TO EVERYTHING ELSE AND WHAT IT MEANS FOR BUSINESS, SCIENCE, AND EVERYDAY LIFE (2003), and Watts, DUNCAN J. WATTS, SIX DEGREES: THE SCIENCE OF A CONNECTED AGE (2003), I argue that decentralized, distributed network have unique efficiency characteristic that I call "[T]he principle of distributed efficiency . . . in which important shortcuts bypass hubs that have become congested or overburdened and allow nodes to communicate. . . . Important shortcuts (bridges) meet the criteria of reducing traffic between neighboring hubs that are already in communication through a third hub. By adding bridges to the decentralized network, it gains the characteristics of a distributed network. . . . (1) By adding links at the periphery, congestion of the core is reduced. Communications capabilities are distributed to the nodes or end points. (2) The additional links can relieve a great deal of traffic that had flowed through the central hub (c). Therefore, the network should have the necessary resources to free up to form the new links. (3) Moreover . . ., all clusters could communicate with one another . . . . (4) Under routine functioning, no node is separated

III. SUCCESS AS A SOURCE OF PRESSURES FOR CHANGE

A. Speed and Scope of Change

The Internet and the digital revolution make an immense amount of diverse activity possible, but it is just not any activity. It involves communications and the flow of information and knowledge. Communications networks have been extremely important resources systems as drivers of economic growth for centuries. As the role of knowledge in economic activity has expanded, communications systems have become more important.

As noted earlier, North deals with long sweeps of human history to locate the key factors and dates in the process of economic change. The top graph in Figure III-1 is reproduced from his latest work. The bottom graph shows the period of the two industrial revolutions to provide a magnified scale for the last four centuries. When the outcome is measured by the growth of the population, which North argues is a good indicator of the ability to meet human needs, the evolution of the human environment sped up dramatically with the 2nd industrial revolution, North's conclusion that the solution to the puzzle of economic development lies in the ability to pull together and integrate dispersed

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by more than two degrees (one link, one bridge) from any other hub. (5) Under stress, should any module be removed, no node is more than three steps (one link, two bridges) from any other hub. (6) No matter how many modules are taken out, all the remaining nodes can continue to communicate although it becomes more difficult since each communication must traverse more bridges. While we tend to "'see'" networks as nodes and hubs and measure them by counting the quantity or assessing the quality of messages that flow between them, the architecture of the network is dictated by the rules of communications and connectivity. In the robust, efficient network, information flows because it can (connectivity) and should (functionality). The architecture makes the observed pattern of communications between nodes and hubs possible. . . . The hierarchical, modular network that exhibits both decentralized and distributed communications traits allows experimentation at the periphery, without threatening the functionality of the network. (citation omitted). Failure is not catastrophic; since it can be isolated and its impact minimized. Success can be pursued independently and exploited because of efficient communications. Successful nodes grow more rapidly through preferential attachment. . . . " Cooper, *infra* note 76, at 120, 122-23 (citation omitted). "Watts . . . identif[ies] searchability as a critical and "'generic property of social networks.'" Searchability is facilitated by paying attention to one's neighbors (chosen by preferential attachment). As he puts it: "By breaking the world down the way we do – according to multiple simultaneous notions of social distance – and by breaking the search process itself down into manageable phases, we can solve what seems to be a tremendously difficult problem with relative ease. Searchability is one of the key advantages of multiscale networks because "'in ambiguous environments, information congestion related to problem-solving activities causes individuals – especially those higher in the hierarchy – to become overburdened. The local response of these individuals is to direct their subordinates to resolve problems on their own by conducting directed searches.'" Watts argues that "'[w]hen problem solving is purely local, requiring messages to be passed between members of the same work team, for example, or subscribers to the same ISP, congestion can be relieved effectively by a process that corresponds to *team building*." *Id.* at 124.

knowledge is readily apparent in Figure III-1.
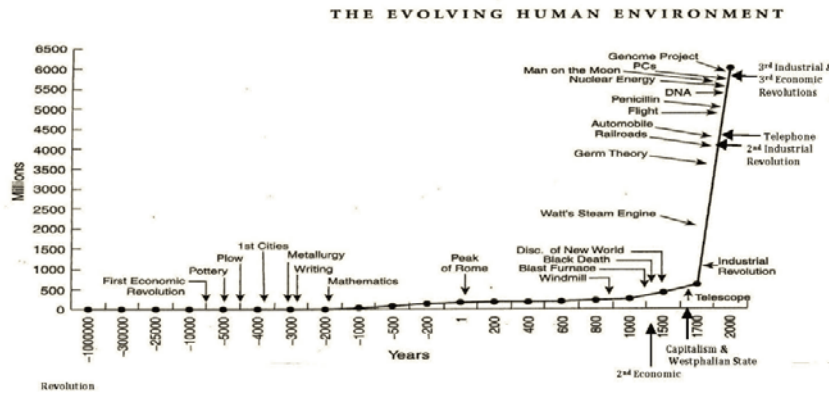
THE EVOLVING HUMAN ENVIRONMENT DURING THE INDUSTRIAL REVOLUTION[57]
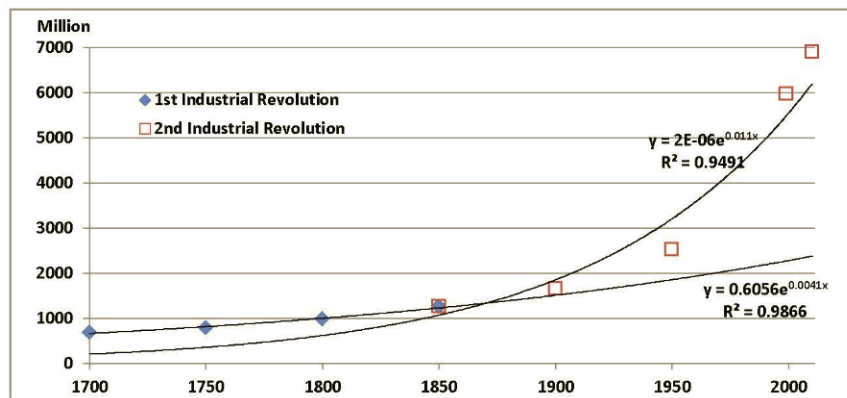
FIGURE III-1: MEASURING THE ECONOMIC AND INDUSTRIAL
REVOLUTIONS BY POPULATION GROWTH[58]

   North identifies two economic revolutions: the first being the invention of agriculture 10 millennia ago, the second being the knowledge revolution, one millennium ago.   The 2nd economic revolution, dating from the Renaissance, gathered speed in the wake of the 1st industrial revolution. North included the PC in his analysis, which I believe is a good symbolic marker for what I call the 3rd industrial revolution. I have added in key technologies and dates suggested by this

   57. *World population,* WIKIPEDIA, http://en.wikipedia.org/wiki/World_population (last modified Oct. 3, 2012, 1:30 PM).
   58. NORTH**,** *supra* note 15, at 89.

analysis:

- the telephone, since this analysis focuses on communications resource systems,
- makers for the 2nd economic and 2nd industrial revolutions, and
- the emergence of modern capitalism and the Westphalian state which, not surprisingly, emerged at roughly the same time as preconditions for the 1st industrial revolution.

Figure III-2 focuses on communications technologies since the invention of the telephone and measures the output as the total number of subscribers. Measured as penetration (subscribers per 100 population) the graph would look much the same. Measured by the volume of output in terms of the spread of personal (one-to-one) communications the 2nd industrial revolution moved slowly (broadcasting, e.g., one-to-many like radio moved faster). The digital revolution and the Internet have accelerated the pace by an order of magnitude and expanded the scope of personal communications from voice to data and video.
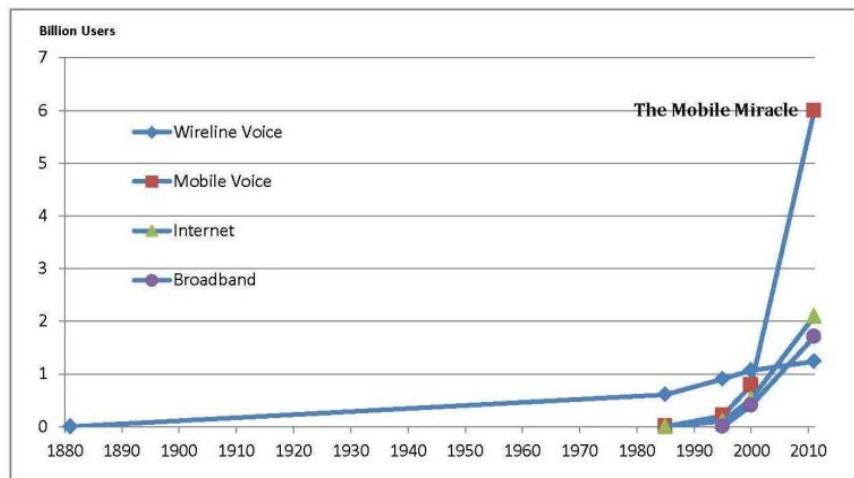

FIGURE III-2: PENETRATION OF ELECTRONIC COMMUNICATIONS TECHNOLOGY[59]

59. Int'l Telecomm. Union, World Telecommunication/ICT Statistics, http://www.itu.int/ITU-D/ict/publications/world/material/WTID_indicators xls (last visited Oct. 23, 2012).

Given the observation about the central role of knowledge in the 2nd economic revolution, one can argue that the 3rd industrial revolution has accelerated the process of change with at least as much force, if not more, than at any time in the past. It is such a profound development in the 2nd economic revolution, that the digital revolution may eventually merit the title of the 3rd economic revolution in addition to being the 3rd industrial revolution.[60]

Figure III-2 suggests that mobile voice deserves the title of mobile miracle that is frequently applied to it,[61] with four times the penetration in a couple of decades than wireline telephony achieved in a century and a quarter. Internet connectivity is 50 percent higher than the penetration of wireline telephony in a couple of decades, primarily because of wireless. Broadband has exceeded the penetration of wireline telephony in about a decade. The aggregate statistics merit the term revolution, but they must not blind us to continuing challenges in terms of the spread of technologies, as discussed below.

Figure III-3 presents a second perspective on the spread of the digital revolution in the United States. It shows the number of years that key technologies of the 2nd industrial revolution (electricity and telephone) took to achieve high levels of penetration (50% and 80%) in the mass market. These are compared to the number of years it took key technologies of the 3rd industrial revolution (mobile voice, Internet, and mobile data) to reach similar levels of penetration. The speed of penetration is much faster in the digital age. To some extent, the penetration of earlier technologies paves the way for later technologies, but that does not negate the impact of the new technologies, nor does it negate the pressures for change. On the contrary, the dependence of the Internet for essential inputs from existing resource systems with very different governance models became an important source of conflict and pressure for change.

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60. Joel Mokyr, *Innovation in an Historical Perspective: Tales of Technology and Evolution*, *in* TECHNOLOGICAL INNOVATION AND ECONOMIC PERFORMANCE 23, 36 (Benn Steil, et al. eds., 2002) (arguing that the digital revolution is one of a handful of General Purpose technologies precisely because it has the ability to be recombined.).

61. *Can Competition Repeat the Mobile Miracle for Broadband?*, ITU NEWS (Dec. 2010), https://itunews.itu.int/En/524-Can-competition-repeat-the-mobile-miracle-for-broadband note.aspx (last visited Oct. 4, 2012).
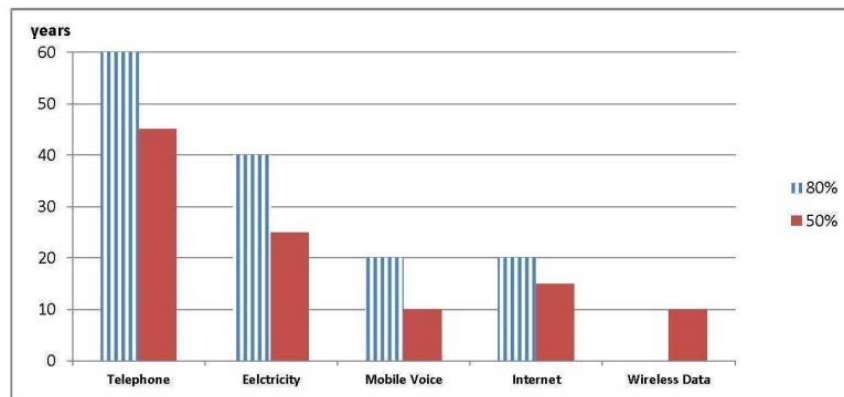
FIGURE III-3: MILESTONES IN THE PENETRATION OF KEY MASS
MARKET TECHNOLOGIES[62]

As shown in Figure III-4, the growth in the output was not only in
the number of subscribers, but also in the massive quantity and quality of
the traffic. Data flows changed dramatically from relatively simple
balanced data flows to a wide variety of applications demanding different
network functions and very uneven network flows. In fact, one leading
analyst of the industry identifies over half a dozen dimensions of major
change in the Internet resource system including:

- "the infrastructure over which the Internet itself rides,"
- "the topology of the Internet,"
- "technology at the edge,"
- "type of traffic,"
- "volume of traffic,"
- "types of market participants and their relationships," and
- "methods of compensation for exchange of traffic."[63]

While we tend to emphasize the output (or demand side) of the
resource system, it is important to recognize the supply side. Delivering
an exaflood of data to two billion people requires an immense amount of
investment. The dramatic growth of users was sustained by the
deployment of capital assets. In the early days, telecommunications
infrastructure did not have to be deployed since the Internet rode on the

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62. U.S. Bureau of the Census, *Statistical Abstract of the United States, various issue*s,
*Historical Statistics of the United States, Colonial Times to 1970, (*Installed Generating
Capacity) *available at* http://www2.census.gov/prod2/statcomp/documents/CT1970p2-01.pdf;
ITU, ICT Data and Statistical Database, http://www.itu.int/ITU-
D/ict/publications/world/material/WTID_indicators xls.

63. *See* Anna-Maria Kovacs, *Internet Peering and Transit*, TECH. POL'Y INST. 2 (Apr. 4,
2012), http://www.techpolicyinstitute.org/files/amkinternetpeeringandtransit.pdf.

existing telecommunications network. Broadband technologies were deployed in the mid-1990s, soon after the full commercialization of the Internet.
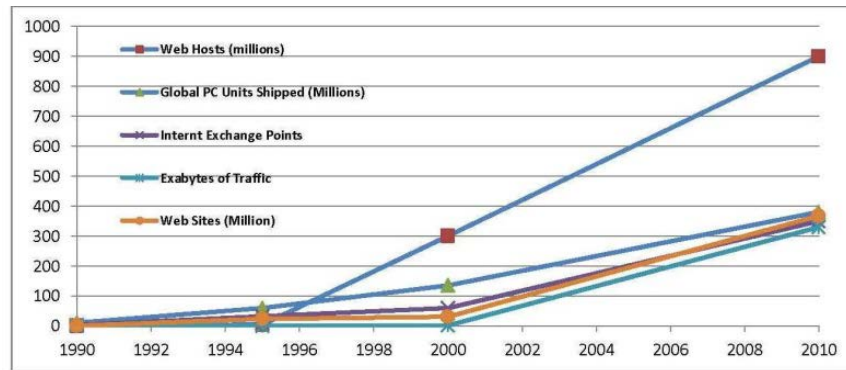

FIGURE III-4: EXPANSION OF TRAFFIC, EQUIPMENT AND SERVICES[64]

In addition to the immense expansion of the telecommunications infrastructure to meet communications needs, the ease of entry and decentralized nature of the services offered played a critical role in driving demand and functionality. After a couple of decades of development, there was one host for every 2.5 subscribers on the Internet. There is one website for every six Internet subscribers. The growth of users,[65] usage,[66] and applications in the mobile space has been even more rapid.[67] The ability to add applications thrives in a space where knowledge is decentralized and entry is easy.

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64. *How We Got from 1 to 162 Million Websites on the I*nternet*, ROYAL PINGDOM (Apr. 4, 2008), http://royal.pingdom.com/2008/04/04/how-we-got-from-1-to-162-million-websites-on-the-internet/ (last visited Oct. 4, 2012); *Internet traffic*, WIKIPEDIA, http://en.wikipedia.org/wiki/Internet_traffic (last modified Apr. 25, 2012, 5:09 AM); *Internet 2012 in Numbers*, ROYAL PINGDOM (Jan. 17, 2012), http://royal.pingdom.com/2012/01/17/internet-2011-in-numbers/ (last visited Oct. 4 2012); *Market share of leading PC vendors*, WIKIPEDIA, http://en.wikipedia.org/wiki/Market_share_of_leading_PC_vendors (last modified Sep. 10, 2012 10:11 PM); Michael Kende, *Overview of Recent Changes in the IP Interconnection Ecosystem*, ANALYSIS MASON 1, 6 (Feb. 23, 2011), http://www.analysysmason.com/About-Us/News/Insight/Internet_exchange_points_Feb2011/Related-report-download/.

65. *See Global mobile statistics 2012 Part A: Mobile subscribers; handset market share; mobile operators*, MOBITHINKING (June 2012), http://mobithinking.com/mobile-marketing-tools/latest-mobile-stats/a.

66. *See Global mobile statistics 2012 Part B: Mobile Web; mobile broadband penetration; 3G/4G subscribers and networks*, MOBITHINKING (June 2012), http://mobithinking.com/mobile-marketing-tools/latest-mobile-stats/b.

67. *See Global mobile statistics 2012 Part E: Mobile apps, app stores, pricing and failure rates*, MOBITHINKING (June 2012), http://mobithinking.com/mobile-marketing-tools/latest-mobile-stats/e.

B. The Challenge of Change

Although the full range of pressures for change requires an appreciation of the impact of the growth and expansion of the Internet on the socio-ecological setting, which will be discussed in the next section, there are three pressures for change that flow directly from the analysis in this section. Viewed as a resource system, the ability to manage the resource to maximize its output and use are the central measures of it's success.

1. Resource Availability Flashpoints in the Quarter-life Crisis

The measures of Internet expansion that I have presented above hide one of the most important challenges of the quarter-life crisis, the digital divide (see Figure III-5). Universal service is frequently considered an economic, social, or political issue, but I include it here because the Internet is the focal core communications resource system of the digital economy. Its primary function is to make communications possible. The more people who can communicate and the more varied and richer the quality of communications the better. The failure to achieve universal service or restrictions on the ability to communicate are systemic failures that strike at the heart of the resource system. The Internet has achieved the goal of extending and enhancing communications more than could have been dreamed of a quarter of century ago, but the ultimate goal is universal service.

Figure III-5 highlights the problem of digital inclusion, which remains an important challenge for the Internet resource system. The failure is relative, but substantial. The top graph shows that the penetration of wireless voice is 1.6 times higher in developed countries than developing, but the penetration in developing nations is quite high at 70 per 100 people. Internet penetration is much less equal, with penetration in developed nations 3.2 times as great as developing, and the penetration of Internet in the developing nations only at 21 per 100 people. The gap in broadband is quite large and the level in developing nations is quite low. Developed nations stand at about 50 per 100 people, while developing nations are in range of 10 per 100 people. Wireline telephony subscriptions are about where broadband subscriptions are in the developing world, but much higher in the developed world. In fact, the largest deficit is in wireline telephone connectivity in spite of over a century of deployment. The immediate challenge would seem to be to ensure that the mobile miracle in voice becomes a mobile miracle in broadband Internet penetration and that mobile broadband provides as much functionality as possible.
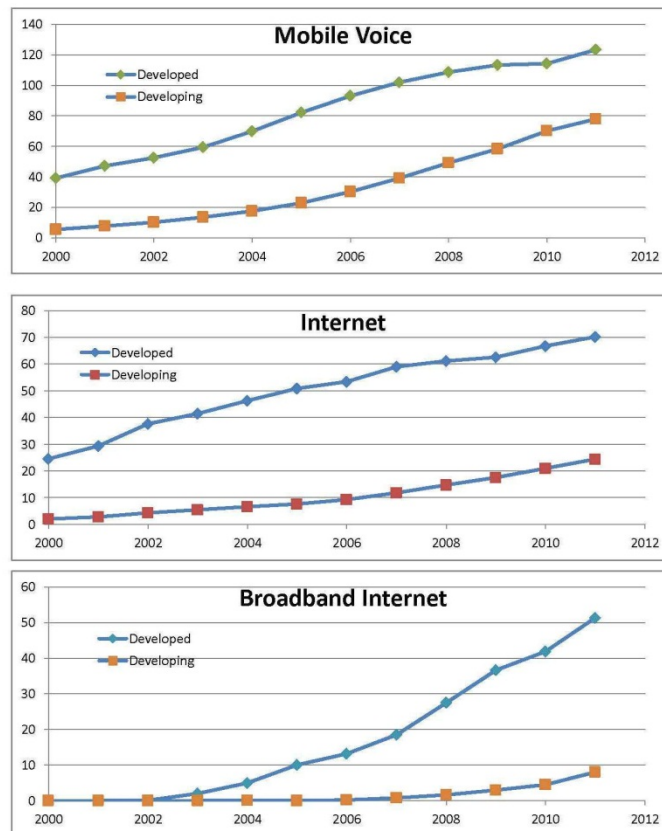
FIGURE III-5: SUBSCRIBERS PER 100 POPULATION, DEVELOPED AND
DEVELOPING NATIONS[68]

Moreover, as shown in Figure III-6, the challenge of digital inclusion is not limited to the difference between developed and developing nations. The digital divide persists in the United States, with much lower penetration rates among lower income households. Moreover each new round of technology reproduces the digital divide problem. Ensuring universal service remains a focal point of public policy across and within nations. Penetration among households with incomes above $75,000 per year is about twice that of households with incomes below $30,000 per year, and the penetration of broadband is less than 50 percent for lower-income households.

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68. *ICT Data and Statistics (IDS)*, Int'l Telecomms. Union, http://www.itu.int/ITU-D/ict/statistics/ (last updated Oct. 04, 2012)
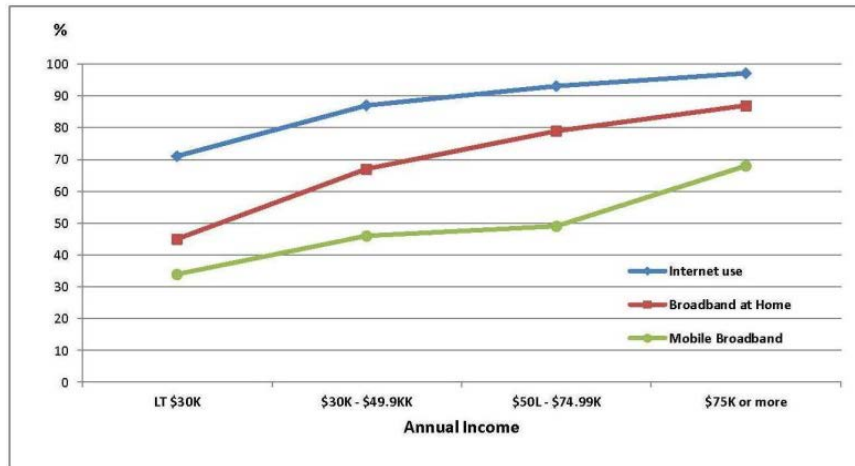
FIGURE III-6: THE PERSISTENT DIGITAL DIVIDE IN THE UNITED STATES:
2011[69]

2. How much change is necessary?

Beyond the digital divide, where the nature of the challenge is clear, there are other areas where the challenges are debated, How much change is necessary? Does the growth of the system and the change in output really require a change in the fundamental rules by which the Internet resource system operates? This question is hotly debated at a variety of levels. In fact, when it comes to the question of the need to change the central approach to the core technical rules that govern the Internet resource system, there is still a vigorous debate about whether significant change is necessary. Some argue that the "amazingly efficient and brutally simple IP architecture" is not so frayed as to be in need of repair:

> Specifically, I am referring to the continuing voices of confident expectation on the part of some players that they can transform either all or their part of the Internet's interconnection environment into something more aligned to the historical telephony model, replete with concepts of "sender pays" and QoS interconnects, in the hope that such a realignment would better serve their perceived self-interest. But maybe such expressions are more about kite flying and posturing than a [sic] expression of determined intent, as a practical examination of the actual nature of interconnections in the Internet shows a relatively uniform landscape of customer/provider or peering arrangements behind most interconnections, and no substantive

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69. Kathryn Zickuhr & Aaron Smith, *Digital Differences*, PEW INTERNET & AM. LIFE PROJECT   5,   10,   17   (Apr.   13,   2012), http://www.pewinternet.org/~/media//Files/Reports/2012/PIP_Digital_differences_041312.pdf.

evidence that inter-provider QoS, inter-provider MPLS VPNs, inter-provider multicast, or even inter-provider NGN architectures are any more than a collection of insubstantive myths and vapourware in this space.

Perhaps its [sic] just me, and perhaps I am increasingly intolerant of this kind of opportunistic posturing that attempts to portray as viable what is more along the lines of ill-conceived and inefficient adornments to the common substrate of an amazingly efficient and brutally simple IP architecture . . . .[70]

Others argue that the dramatic increase in capabilities and demand for more complex services requires the core principle to adapt, admitting more complex relationships between participants to support more diverse outputs.

Our collective experience with trying to move from the legacy single-class of service Internet toward an Internet that implements standardized approaches for delivering end-to-end quality of service (QoS) and multicast in the general Internet and across virtual private networks (VPNs) demonstrates the challenges of coordinating a set of self-interested stakeholders. The system of bilateral negotiations using a simple set of standardized contracts that resulted was partially a response to the challenges of full multilateral coordination. The scalability and stability of end-to-end interconnections in the Internet has been dependent on the stability of the underlying bargaining mechanism that implements only a restricted set of transfers. However, the collective price paid for the limitations inherent in building an end-to-end Internet from a collection of bilateral bargains has been the lack of services (QoS, multicast) that might arguably benefit all.[71]

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70. Geoff Huston, A *Report on the OECD/BEREC Workshop on Interconnection and Regulation*, CIRCLEID, (June 28, 2012, 12:33 PM), http://www.circleid.com/posts/20120628_report_on_oecd_berec_workshop_on_interconnection_and_regulation.

71. Peyman Faratin, David Clark, Steven Bauer, Willian Lehr, Patrick Gilmore & Arthur Berger, *Complexity of Internet Interconnections: Technology, Incentives and Implications for Policy*, Paper prepared for 35th Research Conference on Communication Information and Internet Policy, 21 (Sep. 28-30, 2007) *available at* http://cfp mit.edu/publications/CFP_Papers/Clark%20Lehr%20Faratin%20Complexity%20Interconnection%20TPRC%202007.pdf; *see also* David Clark, William Lehr and Steven Bauer, *Interconnection in the Internet: the Policy Challenge*, Paper prepared for 39th Research Conference on Communication Information and Internet Policy (Sep. 23-25, 2011) *available at* http://groups.csail mit.edu/ana/Publications/Interconnection_in_the_Internet_the_policy_challenge_tprc-2011.pdf (building on their previous work).

3. Resource Management Flashpoints in the Quarter-life Crisis

Some of the aspects of the Internet management mechanism are debated, independently of the question of change.   There is dissatisfaction with the way the rules at the heart of the resources system were set up in the first place and how they will be determined in the future.[72]   These are debates about the process of setting constitutional and choice rules, and they are among the most intense areas of debate.

The key position in the Internet resource system is defined by an Internet address, since an address is essential to the ability to send or receive a message.   The assigning and management of addresses naturally becomes one of the focal points of attention in the debate over the governance of the resource system.   The language in which addresses are written also becomes an important issue as the public makes more and more use of the communications resource system.

The rules that affect the flow of traffic (aggregation rules) are a second area that plays a vital role in the operation of the system. Messages are supposed to pass freely through the system, subject to a best effort protocol, as described above, but they travel through a telecommunications medium, which itself is a resources system.   The willingness and ability of the entities (overwhelmingly privately-owned companies in the days of the early commercial Internet development, but publicly owned in others) that manage the telecommunications resource system to simply pass the packets along has become a point of contention in the Internet resource system.   Originally it was debated as "open access," then as "network neutrality."   Recently it has taken the form of a debate over deep packet inspection, a process in which the telecommunications network operators examine and consider much more than the location of the addresses involved in the communications to decide how to handle the packets.   Deep packet inspection could be framed in the context of a position rule (what actions are allowed), an aggregation rule (how control is exercised), or an information rule (what information the telecommunications operator has a right to see and act on).

Other challenges that affect the operation rules include actions by users that threaten the integrity of the system. Problems like spam, denial of service attacks, and cyber-security issues can be conceptualized in one of several ways. They could be a border rule issue in the sense that users who are unwilling to abide by the rules are allowed into the resource system.   They could be framed as an aggregation rule problem in the sense that the operational rules do not sufficiently control uses to prevent

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72. *See* MILTON MUELLER, RULING THE ROOT (2002).

the pollution of the resource system. What will be defined as pollution as compared to an allowed use can be a point of strenuous debate, as strenuous in cyberspace as it is in physical space.

IV. THE SOCIAL RESPONSIBILITIES OF DOMINANT RESOURCE SYSTEMS

A. *Social Policy Elements of the Quarter-life Crisis*

Ostrom and North identify four dimensions of the socio-ecological setting in which any specific institution/organization/resource system is embedded—technology, economy, socio-cultural, and the polity.

> It is the interaction between institutions and organizations that shapes the institutional evolution of an economy. If institutions are the rules of the game, organizations and their entrepreneurs are the players. Organizations are made up of groups of individuals bound together by some common purpose to achieve certain objectives. Organizations include political bodies (political parties, the Senate, a city council, regulatory bodies), economic bodies (firms, trade unions, family farms, cooperatives), social bodies (churches, clubs, athletic associations), educational bodies (schools, universities, vocational training centers). The organizations that come into existence will reflect the opportunities provided by the institutional matrix.[73] [A]n essential question we must ask is, who makes the rules and for whom and what are their objectives.[74]

The framework I use describes these domains as four realms of social order, as summarized in Table IV-1. It focuses the discussion on the institutional attributes that are central to new institutional analysis. The specific elements that constitute the framework were developed based on Lessig's discussion of Internet code, which argued that a social phenomenon, like the Internet and its governance, can be constrained by four "modalities of regulation" – architecture, the market, law, and norms.[75] The "modalities of regulation" all constrain action, but in different ways—actions can be permitted/promoted or banned/prohibited by different constraints. One critically important insight in Lessig's analysis is that the weights and importance of the "modalities of regulation" can be configured in different ways to achieve the same outcome.

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73. POTEETE ET AL., *supra* note 36, at 236 (referring to three realms of the social order—social economic and political—as part of the setting).

74. NORTH, *supra* note 15, at 15.

75. *See* LAWRENCE LESSIG, CODE AND OTHER LAWS OF CYBERSPACE 235 (1st ed. 1999).

	REALMS OF SOCIAL ORDER			
	Technology	**Economy**	**Socio-Cultural**	**Polity**
UNITS/OUTCOME				
Value Created	Comfort/ Security	Well-being Equity	Fulfillment Dignity, Self-awareness	Freedom Autonomy, Agency
Affected Activity	Movement	Exchange	Self-Expression Creation of Meaning	Speech Mobilization
Measure of Progress	Expanding the range of things humans can do by reducing constraints & increasing affordances	Improving material well-being & distributing it justly	Enabling fulfillment character development & connectedness; Enhancing the ability to to self-consciously produce the cultural artifacts that create shared meaning	Expanding the sphere of freedom Increasing individual autonomy/action and facilitating collective translation into authority
STRUCTURE				
Primary Institution	Place/Space	Enterprise/ Union	Family/Church	State/Media
POSITIONS/USERS				
Roles Governed	Inhabitant/ User	Consumer/ Producer	Person/ Member	Citizen/ People
GOVERNANCE				
Modality of Regulation	Architecture	Property rule	Norms – Meaning	Law
Enforcement Agents	Builder/ Operator	Seller/Buyer	Peers/Group	Police/Courts
Nature of Constraint	Physical	Monetary	Opprobrium	Sanction
Timing of Constraint	Before	During	Before/After	After

TABLE IV-1: POLITICAL ECONOMY OF ORDER DEFINED BY SOCIAL INSTITUTIONS[76]

I expanded and elaborated on the core concept of "modalities of regulation" to a broader view of society.[77] I argue that social order relies on the institutionalization of core functions in each of the realms. The purpose of institutions in each realm is to provide the function and realize a value that is important to society by incenting and constraining behavior, which reduces uncertainty and increases predictability in behavior that is enforced. The "modality of regulation" in each realm directs behavior toward the goal. Participants occupy roles configured in organizations that are constrained by norms and rules. I identified these realms of social order in an analysis of one of the key social values that was embraced during the quarter-life crisis of the communications sector of the second industrial revolution – universal service, which is now referred to as digital inclusion

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76. *See id.*; LESSIG, *supra* note 75; BENKLER, *supra* note 43.

77. Mark Cooper, *Inequality in the Digital Society: Why the Digital Divide Deserves All the Attention It Gets*, 20 CARDOZO ARTS & ENT. L. J. 73 (2002), http://heinonline.org/HOL/LandingPage?collection=journals&handle=hein.journals/caelj20&div=9&id=&page=

B. *The Maturation Challenges*

1. Through the Eyes of International Policymakers

The quarter-life crisis comes about when the activities made possible by an industrial revolution deeply affect the routines and values by which the social order is defined. It is a natural part of the maturation of the digital revolution that louder and louder calls for public obligations across all the realms of social order will be heard as it becomes the dominant means of communications and commerce. Figure III-1 locates the primary issues that have been raised in the ongoing debate over the Internet in relation to the four realms of social order. Generic issues are arrayed inside of the specific issues identified in two recent empirical analyses of the substances of the WSIS collaboration on Internet governance. The top graph is based on an analysis of the issues discussed in various meetings of groups formed by the Internet Governance Forum. The bottom graph summarizes the issues as perceived by leading analysts of Internet Governance in a major collection of papers published by the United Nations Information and Communication Technologies Task Force. The issues are similar in both contexts.

Table IV-2 summarizes the recommendation of three major international efforts to identify key issues that have emerged surrounding the Internet. It presents three perspectives from policy papers issued by major international bodies. It starts with the broad statements of principles that are offered as justification for the adoption of the specific policy recommendations. These international perspectives not only share the basic understanding of the keys to the success of the digital revolution, they also exhibit underlying tensions inherent in the maturation challenges. The tension is between the benefits of the free flow of information and other behaviors that impose costs or threaten values. Balance is the key word that flows through many of the statements of principles.

Elena Pavan, *Frames and Connections in the Governance of Global Communications*, p. 124.
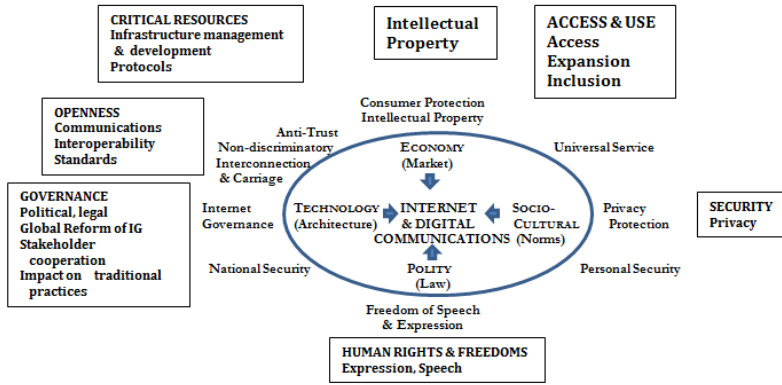
Milton Mueller, John Mathiason, and Lee W. McKnight, "Making Sense of 'Internet Governance,'" pp.108-113.
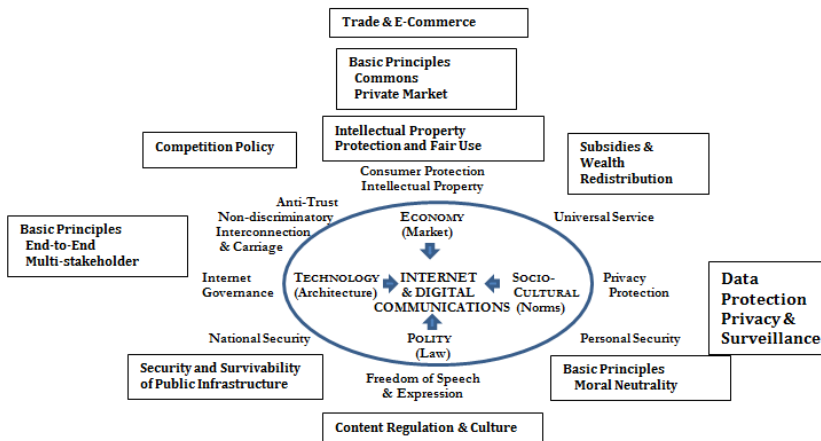

FIGURE IV-1: ISSUE CLUSTERS IN THE INTERNET GOVERNANCE
DEBATE[78]

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78. PAVAN, *supra* note 19; Milton Mueller, John Mathiason & Lee McKnight, Making Sense of "Internet Governance" 15-17 (The Internet Governance Project, Working Paper, Apr. 26, 2004), http://www.wgig.org/docs/ig-project5.pdf.

BROAD STATEMENTS OF PRINCIPLES

The Heads of State and Governments recognized the importance of the Internet... is a central element of the infrastructure of the emerging information society, while recognizing that there are differing views on the suitability of current institutions and mechanisms for managing process and developing policies for the global Internet. In particular, the WSIS principle relating to the stable and secure functioning of the Internet was judged to be of paramount importance...This historical lens was useful to identify the guiding principles and factors that have enabled or contributed to the Internet's successful development, including the open and decentralized nature of its architecture and the underlying technological development of its core standards. (WSIS)

"The Intergovernmental Council of the Information for All Programme of UNESCO . . . [a]grees upon a set of values, basic rights and obligations in the information society which should guide the actions and be observed by the members of the information society. . . . Internet in particular and ICTs more generally should be recognized as a key public service for building a people-centred, inclusive and development-oriented information society and are crucial to promote the exercise and enjoyment of universally recognized human rights . . . . Everyone shall be able to connect, access, choose, produce, communicate, innovate and share information and knowledge on the Internet . . . . Active social participation in public life through the use of Internet and other ICTs shall be enabled on a non-discriminatory basis. . . . Internet and other ICTs shall serve to reduce digital divide and deploy technology and applications to ensure inclusion... Technological and methodological standards, access solutions, portability and interoperability shall allow the widest possible access to content and content production, and encourage the evolution and improvement of the Internet and other ICTs to bring about greater inclusion and overcome forms of discrimination (UNESCO).

"The Internet has grown and diffused extremely rapidly across the globe, and continues to bring significant benefits to economies and societies . . . .The policy-making principles in this communiqué are designed to help preserve the fundamental openness of the Internet while concomitantly meeting certain policy objectives, such as the protection of privacy, security, children online, and intellectual property rights, as well as the reinforcement of trust in the Internet . . . . Recognising [sic] the reliance of our economies on the Internet, the global nature of the Internet, and the various approaches implemented to stimulate the Internet economy, including innovative governance strategies in convening diverse groups of stakeholders to forge consensus-based policies, we agreed as governments, private sector stakeholders and civil society to the following basic principles for Internet policy-making (OECD)."

SPECIFIC RECOMMENDATIONS ACROSS THE REALMS OF SOCIAL ORDER

WORKING GROUP ON INTERNET GOVERNANCE	OECD PRINCIPLES FOR INTERNET	UNESCO CODE OF ETHICS FOR THE THE INTERNET SOCIETY
Technology		
Administration of the root zone files and root server system of the DNS	"Promote and protect the global free flow of information"	"The basic technical standards used on the Internet and other ICTs must always be open to allow interoperability and innovation."
IP Addressing	The Internet economy, as well as	
The WGIG agreed that the continued Internationalization of the Internet and the principle of universality reinforces the need for a review of existing governance mechanisms	individual's ability to learn, share information and knowledge, express themselves, assemble and form associations, depend on the global free flow of information."	"Develop trustworthy Internet and other ICTs ensuring security, reliability and stability of critical and pervasive applications and services." "Technological and methodological standards, access solutions, portability and interoperability shall allow the widest possible access . . . ."
Multilingualism: Domain names, IP addressing	"Promote the open, distributed and interconnected nature of the Internet"	
Economics		
Interconnection costs, Consumer Rights, Spam	"Promote investment and competition in high-speed networks and services" "Promote and Enable the Cross-Border Delivery of Services" "[P]romote [I]nnovation"	"Internet in particular and ICTs more generally should be recognized as a key public service for building a people-centred, inclusive and development-oriented information society . . . ." "Affordable access to the Internet should serve as a tool for Development . . . ."
Socio-Cultural		
Privacy rights, data protection	"Strengthen consistency and effectiveness in privacy protection at a global level"	"Affordable access . . . should serve as a tool for . . . social cohesion. . . . Active social participation in public life through
Multilingualism, Content	"Promote Creativity" "Public policy should help foster a diversity of content, platforms, applications, online services, and other user communication tools . . . to allow users to fully benefit. . . ."	the use of Internet . . . on a non-discriminatory basis." "Information should be made available, accessible and affordable across all linguistic, cultural and social groups . . . ."
Political		
Maximize individual empowerment	"[F]reedom of expression"	"Everyone should have a freedom of association . . . a right to freedom of expression, participation and interaction on the Internet . . . ."
Encourage co-operation to promote Internet security	Internet stability, security and cybercrime "[I]ndividual empowerment: the Internet	Every person . . . shall be able to connect, access, choose, produce, communicate, innovate and share information and knowledge
Governments, in cooperation with all Stakeholders	offers potential for individual to exercise control over the information that they	on the Internet."
Should explore and develop tools and mechanisms including treaties and, cooperation to allow for effective criminal investigations and prosecution of crimes committed in cyberspace against networks and technological resources.	receive as well as the personal data that is disclosed about them."	

Freedom of Expression: The Internet economy, as well as individuals' ability to learn, share information and knowledge, express themselves, assemble and form associations, depend on the global free flow of information . . . . While promoting the free flow of information, it is also essential for governments to work towards better protection of personal data, children online, consumers, intellectual property rights, and to address cyber security. In promoting the free flow of information governments should also respect fundamental rights." (OECD)

"Freedom of expression and creative use of ICTs should not be restricted, except when impinging upon the basic human rights of others. . . . Everyone has a right to freedom of expression, participation and interaction on the Internet that should not be restricted, except in those narrowly defined circumstances that are based on internationally recognized laws and universal human rights standards." (UNESCO).

Ensure that all measures taken in relation to the Internet, in particular those on grounds of security or to fight crime, do not lead to violation of human rights (WSIS)

Internet Governance: As a decentralised [sic] network of networks, the Internet has achieved global interconnection without the development of any international regulatory regime. The development of such a formal regulatory regime could risk undermining its growth. The Internet's openness to new devices, applications and services has played an important role in its success in fostering innovation, creativity and economic growth. This openness stems from the continuously evolving interaction and independence among the Internet's various technical components, enabling collaboration and innovation while continuing to operate independently from one another . . . . The roles, openness, and competencies of the global multi-stakeholder institutions that govern standards for different layers of Internet components should be recognised and their contribution should be sought on the different technical elements of public policy objectives." (OECD)

The WGIG identified a vacuum within the context of existing structures, since there is no global multi-stakeholder forum to address Internet-related public policy issues. (WSIS)

Member states and respective stakeholders should take all steps to develop trustworthy Internet and other ICTs ensuring security, reliability and stability of critical and pervasive applications and services." (UNESCO)

Personal Security: Suppliers should have the ability to supply services over the Internet on a cross-border and technologically neutral basis in a manner that promotes interoperability of services and technologies, where appropriate. Users should have the ability to access and generate lawful content and run applications of their choice . . . providing that appropriate data protection and security measures are implemented in a manner consistent with the relevant OECD Guidelines and reflecting the necessary balance among all fundamental rights, freedoms and principles." (OECD)

"Everyone should have a freedom of association on the Internet and ICT-mediated assembly. Member States should take preventive steps against monitoring and surveillance of assembly and association in a digital environment." (UNESCO)

Cyber-security: Policies to address security threats and reduce vulnerabilities are important to the continued vitality of the Internet. The implementation of internationally recognised, market-driven security standards and best practices to promote online security should be encouraged . . . . Policies to enhance online security should not disrupt the framework conditions that enable the Internet to operate as a global open platform for innovation, economic growth, and social progress and should not be used as pretence [sic] for protectionism. Policies should also aim to enhance individual and collective efforts for self-protection and promote trust and confidence. Their consistency with, and potential impact on, other economic and social dimensions of the Internet should be carefully assessed through a multi-stakeholder process prior to adoption and implementation." (OECD)

"Member states should implement preventive measures and coordinate strategies to ensure security on the Internet and the protection of society against cybercrime, including acts motivated by racism, racial discrimination, xenophobia and related intolerance, hatred, violence, all forms of child abuse, and trafficking and exploitation of human beings." (UNESCO).

Intellectual Property: "Policies and practices should continue to encourage and promote an Internet environment which is conducive to launching creative and innovative technologies, businesses, and other endeavours [sic] that respect recognised legal rights without having to obtain permission or affirmative co-operation from established service providers. Intellectual property protection is a fundamental tool for the advancement of innovation and creativity on the Internet. New and complementary approaches balanced to ensure effective protection of intellectual property should also be encouraged where necessary, and should also ensure protection of legitimate competition and fundamental principles such as freedom of expression, access to lawful content and Internet services and technologies, fair process, and privacy. Sound Internet policy should encompass norms of responsibility that enable private sector voluntary co-operation for the protection of intellectual property. Appropriate measures include lawful steps to address and deter infringement, and accord full respect to user and stakeholder rights and fair process." (OECD)

"Intellectual property of the creations in a digital environment should be a subject of and shall be protected under the intellectual property rights legislation. Unauthorized copying and distribution of copyrighted materials must not be condoned. Legal frameworks facilitating owners of intellectual property to share their knowledge and creations should be supported to promote open access to knowledge and foster creativity. Application of international intellectual property conventions should be based on the fair balance between the interests of the rights holders and of the public." (UNESCO)

Efforts should be made to render consumer protection laws and enforcement mechanisms fully and practically applicable and to protect consumers during online purchase of physical and digital goods and only services (WSIS).

Network Management: "Appropriate limitations of liability for Internet intermediaries have, and continue to play, a fundamental role, in particular with regard to third party content . . . identify the appropriate circumstances under which Internet intermediaries could take steps to educate users, assist rights holders in enforcing their rights or reduce illegal content, while minimising burdens on intermediaries and ensuring legal certainty for them, respecting fair process, and more generally employing the principles identified in this document. In achieving these current objectives the social and economic costs and benefits, including impacts on Internet access, use, security and development of the policy options should be assessed as part of their development process as should also be their compatibility with the protection of all relevant fundamental rights and freedoms and their proportionality in view of the seriousness of the concerns at stake." (OECD)

All stakeholders shall work together to prevent against abusive uses of ICTs, protection of private data and privacy and violation of human rights on the Internet and other ICTs by combination of legislative measures, user education, including use of media and information literacy skills, self-regulation and co-regulation measures and technical solutions without disrupting the free flow of information. (WSIS)

Privacy: Strong privacy protection is critical to ensuring that the Internet fulfills its social and economic potential . . . . Privacy rules should be based on globally recognised principles, such as the OECD privacy guidelines, and governments should work to achieve global interoperability by extending mutual recognition of laws that achieve the same objectives . . . . Privacy rules should also consider the fundamental rights of others in society including rights to freedom of speech, freedom of the press, and an open and transparent government." (OECD)

Everyone has a right to the protection of personal data and private life on the Internet and other ICTs. Users should be protected against the unlawful storage, abuse or unauthorized disclosure of personal data, and against the intrusion of their privacy." (UNESCO)

Efforts should be made, in conjunction with all stakeholders, to create arrangements and procedures between national law enforcement agencies consistent with the appropriate protection of privacy, personal data and other human rights. (WSIS)

TABLE IV-2: SOCIO-ECOLOGICAL CHALLENGES IN THE QUARTER-
LIFE CRISIS OF THE INTERNET

2. The Social Goals of the Public Digital Communications Network

Viewing the quarter-life crisis through the lens of the U.S. debate over the future of the public switched telephone network serves three purposes. First, it reminds us that the maturation challenges do not arise only or simply in the context of relations between developed and

developing nations. The issues are endemic to the digital revolution at all levels of economic development. Second, the historical background of these issues in the United States, where the Internet got its start, provides an important perspective on why it succeeded and, therefore, how success can be ensured globally. Third, a longer view of history also serves to underscore the fact that public obligations are not associated with a specific technology.

One of the areas where the maturation challenges can be seen most clearly in the United States is in the debate over how to deal with the public interest obligations of the public switched telephone network (PSTN). The obligations that the PSTN was asked to shoulder did not grow from the PSTN itself; they came from society and were imposed when the PSTN became the primary means of communications. Over the course of a century, the obligations that were placed on the communications resource system increased as the role of the communications network in modern society increased. The density of obligations shown in Figure IV-2 flows from the importance of communications. The means of communications are one of the most important infrastructures in any modern society because they support the flow of commerce and ideas. In the information age, they may be **the** most important infrastructure.

The quintessential expression of the public obligations of the public switched telephone network is the first section of the Communications Act of 1934. The purpose of the Act was

> [t]o make available, so far as possible, to all the people of the United States . . . a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges, for the purpose of the national defense . . . and for the purpose of securing a more effective execution of this policy by centralizing authority heretofore granted by law to several agencies and by granting additional authority with respect to interstate and foreign commerce in wire and radio communication, there is hereby created a commission to be known as the "Federal Communications Commission" . . . .[79]

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79. Communications Act, ch. 652, 48 Stat. 1064 (1934) (codified as amended at 47 U.S.C. § 151 (1996)).
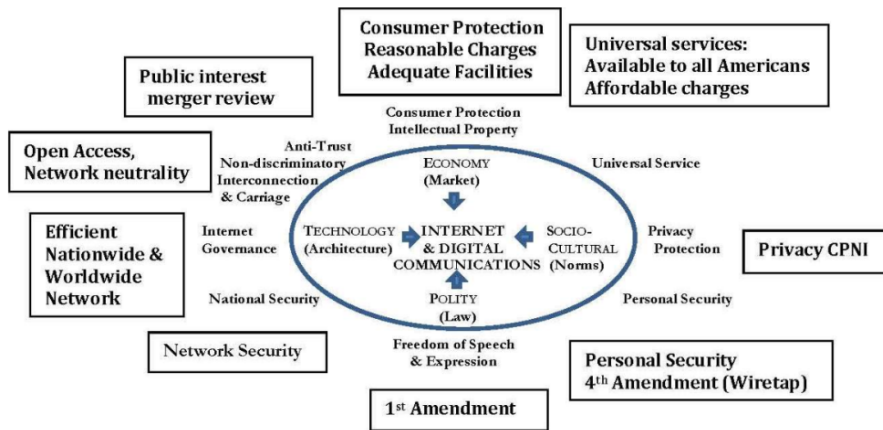
FIGURE IV-2: The Maturation Challenges Confronting the Digital Revolution: Mapped as the Social Responsibilities of the U.S. Public Switched Telephone Network

The commitment was broad and pragmatic, applied to wired and wireless communications and recognized the centrality of communications to a number of social goals. The definition of the goals was inclusive and evolutionary, and the commitment to the form of governance was secondary to the statement of goals. It chooses the form of governance that dominated the response to the quarter-life crisis of the second industrial revolution, but regulation is for the purpose of achieving the goals; it is not an end in itself.

3. Historical Underpinnings of Modern Communications Policy Principles

This commitment, which came toward the end of the quarter-life crisis of the second industrial revolution, was a progressive statement of policy principles (two thirds of Americans did not have a telephone in 1934) that had been evolving over half a millennium. The obligations of the public switched telecommunications network fits squarely within the long sweep of history discussed in the previous section.

For at least half a millennium, as new technologies transformed the means of communications, societies examined how they were helping or hindering in the accomplishment of broader social goals and, where need be, established obligations to advance toward those goals.

As capitalism was dissolving feudalism, the emerging social order

discovered an important new social, political and economic function – mobility. Physical and social mobility were anathema to feudalism, but essential to capitalism and democracy. Providing for open and adequate highways of commerce and means of communications were critical to allow commerce to flow, to support a more complex division of labor and to weave small distant places into a national and later global economy.[80]

One of the most important obligations was non-discriminatory interconnection and carriage, grounded in 17th century common law. For example, under common law, innkeepers were obligated to serve all travelers, thereby supporting the movement of people, goods, and services. Not only were all to be served on a nondiscriminatory basis, but when the innkeeper hung out his sign he brought upon himself the obligation to protect the property of the traveler. An early legal text provides the following summary:

> There is also in law always an implied contract with a common inn-keeper, to secure his guest's goods in his inn . . . . Also if an inn-keeper, or other victualler, hangs out a sign and opens his house for travellers, it is an implied engagement to entertain all persons who travel that way; and upon this universal *assumpsit*, an action on the case will lie against him for damages, if he, without good reason, refuses to admit a traveller.[81]

Inns were critical to commerce and communications since, given the technology of the time, only short distances could be covered before rest and sustenance were needed. As critical as inns were to the flow of commerce, obviously roads and waterways were at least as important. Navigation projects, canals, and turnpike trusts chartered under obligations of providing service to the public were the early vehicles of the capitalist political economy to provide for transportation projects. Created in the 15th through 18th centuries and building on principles of common law, these were private undertakings with a public franchise to collect tolls on the section of a road or waterway whose upkeep was the responsibility of the trustee.[82] Fees were assessed and access provided on a nondiscriminatory basis. While different rates could be charged to different types of traffic, discrimination within categories was forbidden.

By the 19th century, however, direct public responsibility for roads

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80. Cooper, *supra* note 35, at 111.

81. 3 WILLIAM BLACKSTONE, COMMENTARIES *164-65.

82. *See Turnpike trust*, WIKIPEDIA, http://en.wikipedia.org/wiki/Turnpike_trust (last modified Aug. 6, 2012, 3:59 AM); Andrew Odlyzko, Pricing and Architecture of the Internet: Historical Perspectives from Telecommunications and Transportation 17-19 (Aug. 29, 2004) (unpublished manuscript), http://www.dtc.umn.edu/~odlyzko/doc/pricing.architecture.pdf.

became the norm and provided nondiscriminatory access. Maintaining a network of transcontinental roads became a governmental responsibility, first city, then state, then national. Public subsidies to ensure access to the means of communications and commerce were evident in support for the post office and post roads in the early 19th century and the land grants to railroads in the mid-19th century.

In the late 19th and early 20th centuries, as huge corporations became the primary organizational form in the economy as the entities to carry the second industrial revolution forward, it was no longer possible to rely on common law and general statute to ensure that the means of communications were serving higher social purposes, so specific legislation was enacted to do so. The principles of nondiscriminatory access were carried through to all national communications and transportation networks. Roads and highways, canals, railroads, the mail, telegraph, and telephone, some owned by public entities, most owned by private corporations, were operated as common carriers that are required to interconnect and serve the public on a non-discriminatory basis. An early court decision regarding telecommunications provides an interesting historical perspective:

> [The telephone] has become as much a matter of public convenience and of public necessity as were the stage-coach and sailing vessel a hundred years ago, or as the steam-boat, the railroad, and the telegraph have become in later years. It has already become an important instrument of commerce. No other known device can supply the extraordinary facilities which it affords. It may therefore be regarded, when relatively considered, as an indispensable instrument of commerce. The relations which it has assumed towards the public make it a common carrier of news—a common carrier in the sense in which the telegraph is a common carrier—and impose upon it certain well-defined obligations of a public character. All the instruments and appliances used by a telephone company in the prosecution of its business are consequently, in legal contemplation, devoted to a public use.[83]

The early date of this observation, 1886, is notable because the telephone had just begun to penetrate, but so too is the comprehensive sweep of history. The telephone network was in its infancy but its vital nature brought the obligation of a common carrier upon it. Telephones would soon become a dominant means of business communication. Traditional practice did not excuse it from public interest obligations because it was new. Moreover, this citation also suggests the dual nature of communications networks as both a means of commerce and a means

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83. Hockett v. State, 5 N.E. 178, 182 (Ind. 1886).

of democratic expression. Finally, this quote captures the long history of the concept of public obligation that attached to services that play the vital role of carrying commerce and communications.

Symbolically, the Interstate Commerce Act marked the beginning of the institutional reaction to the quarter-life crisis of the second industrial revolution – followed by the vigorous institution building of the Progressive era.[84] The institutions that imposed social obligations on the electronic communications that dominated the 20th century are grounded in and followed the pattern of development of the Progressive era. Social obligations were first imposed at the local level, and then extended to the federal level. The legal foundation for federal regulation of the nascent 20th century communications industry was laid at the height of the Progressive era with the Mann-Elkins Act that placed the industry under Interstate Commerce Commission authority (1910), an antitrust consent decree (1914) under the Sherman Act (1890), and the passage of the Radio Act (1912). These were consolidated and extended in the institution building of the New Deal.

4. Key Policy Pillars of the Success of the Internet and Unlicensed Spectrum

In the previous section, I discussed the relationship between the Internet and the telecommunications networks in terms of the characteristics of the resource systems. Given that the telecommunications resource system was among the classically regulated industries of the second industrial revolution, the supportive relationship between telecommunications and the Internet reflected specific policies. How these were implemented provides insight into how the success of the past can be extended into the future.

In the late 1960s, the FCC made two key decisions that enabled the Internet to grow in a collaborative space that was not dictated by government or dominated by telecommunications carriers. The Carterfone[85] and the first   Computer Inquiry[86] rulemakings created a

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84. *See Progressive era*, WIKIPEDIA, http://en.wikipedia.org/wiki/Progressive_era (last modified Sept. 17, 2012, 3:42 PM).

85. TIM WU, THE MASTER SWITCH 190 (2010) ("The phone jack and the Carterfone decision made it possible to sell to the public devices like fax machines and competitively priced (non-Bell) telephones. They also made possible the career of Dennis Hayes, a computer hobbyist ("geek" is the term of art) who, in 1977, built the first modulator/demodulator (modem) designed and prices priced for consumers . . . ." *Id.* at 191.).

86. *Id.* at 190-91 ("In 1971, the FCC issued a rule banning AT&T from directly entering the market for "data processing" or "online services." . . . In short, with strange and unprecedented foresight, the FCC watered, fertilized, and cultivated online computer services as a special, protected industry, and, over the years, ordained a set of rules called the *Computer Inquiries,* a complex regime designed both to prevent AT&T from destroying any budding firm and also to ensure that online computer services flourished unregulated." *Id.*).

minimal, but fundamental, obligation of nondiscrimination for communications devices and data traffic. The telecommunications carriers were required to let people connect their devices and transmit their data without the interference of the carriers (at the time a near national monopoly owned by AT&T). AT&T had made its hostility to a decentralized communications network that it could not dominate known,[87] but the desire of the dominant telecommunications carrier to control the network was blunted by these two FCC policies.[88]

The Carterphone and Computer Inquiry orders were written in a way that they did not require additional layers of regulation beyond the basic nondiscrimination requirement. Activity was allowed to happen unless the incumbent could show that it was harmful, or violated the conditions of use. The non-telephone companies had the right of action. Because the orders did not require further commission action and they were implemented in a period in which deregulation and liberalization were the policy orientation, these orders had the effect of controlling the worst instincts of telecommunications companies and government regulators, resulting in a space in which individual and non-governmental action was relatively free.

I believe it is extremely important to recognize the vital role of government in creating an environment that was conducive to the success of a decentralized network subject to collaborative, communal governance precisely because we are entering a phase where more government involvement seems necessary. History teaches us not only that it is a mistake to see any government action as detrimental to the continued development of the Internet and the digital revolution, but also what governmental policies can assist in its development – policies that expand the space for action between the market and the state.

Moreover, it is important to note that the FCC repeated the success of creating a space between the market and state a couple of decades later when it decided to "unlicense" bands in the spectrum and allow anyone to use them, subject to simple rules of cooperative use. By removing the barrier to entry and ensuring access to a vital input, which was followed by cooperative development of standards by potential users, a communication space was created between the market and the state. As a result, an "amazingly efficient and brutally simple"[89] set of rules unleashed the WiFi revolution without which mobile broadband service would be far more costly and less consumer-friendly.[90] The key

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87. ABBATE, *supra* note 32.

88. *See* LESSIG, *supra* note 34, at 148.

89. Huston, *supra* note 70.

90. *See* Mark Cooper, Efficiency Gains and Consumer Benefits of Unlicensed Access to the Public Airwaves, 1-2 (Jan. 2012) (unpublished manuscript), http://www.markcooperresearch.com/SharedSpectrumAnalysis.pdf.

ingredients of the success of the WiFi resource system that parallel the success of the Internet resource system. Having shown the institutional model exists in the digital age as an effective solution to a number of economic[91] and social dilemmas,[92] I argue that this approach to organizing resource systems is replicable and expandable, representing a fundamental enrichment of the artifactual structure that can confront the novel experiences that the individual and society face and resolve positively the novel dilemma of digital communications.

The most important take-away from this historic discussion is that the focus on the public switched telephone network is so narrow that it misrepresents the policy challenge. The policy concern is how to ensure that the dominant communications network meets the evolving needs of the economic, social and political institutions. These concerns affected the communications network before it was electronic, and they should continue to affect it now that it is digital.

The mobile communications revolution has been built upon two very different and successful approaches to the management of spectrum that were made possible by a remarkable, U.S. led, real-world experiment. The FCC established the basis for two different approaches. Exclusive licenses were made available to allow new, two-way communications, and later, licenses were auctioned to the highest bidder. At the same time, the FCC identified some bands where there would be no licensee and interference would be avoided by the use of new technologies (spread spectrum) and restrictions on the amount of power devices could use. Anyone and everyone could transmit in these unlicensed bands as long as the devices obeyed the rules.

The original approach to interference management through spectrum allocation and the two new approaches have been described in a number of ways – command and control v. property v. commons; administrative v. tradable/flexible/market-oriented v. license exempt commons. However, the simple labels do not do justice to the differences and similarities between the models. For example, it can be argued that the license-exempt approach is more market-oriented than the tradable/flexible exclusive licensed approach because it invites much greater entry and competition at the device and service levels. At the same time, the license-exempt model is far from a free-for-all, since the FCC certifies devices that must comply with very specific rules for their operation (in effect "licensing" devices rather than uses or users). Indeed, the FCC still administers the regime of rights enjoyed by spectrum users

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91. *See* Cooper, *supra* note 44.

92. *See* Mark Cooper, *Structured Viral Communications: The Political Economy and Social Organization of Digital Disintermediation,* 9 J. ON TELECOMM. & HIGH TECH. L. 15 (2011).

under both of the newer models.

The dramatic developments in the wireless sector in the past decade and the success of the unlicensed model have been so swift and unexpected that their implications for policy have not been fully recognized. Ironically, the success of the unlicensed model has not been studied rigorously by the agency that made it possible. In a deregulatory age, one of the most successful experiments in radical deregulation has received almost no analytic attention from the FCC.

From the point of view of traditional economic analysis, compared to exclusive licenses, the unlicensed model is extremely, even radically, deregulatory. It captures what would be externalities with respect to licensed approaches and corrects important market failures.

- The unlicensed model removes the spectrum barrier to entry, which is the primary obstacle by allowing anyone to transmit signals for any purpose, as long as the devices used abide by the rules.
- Removing this barrier to entry removes the threat of hold up, in which the firm that controls the bottleneck throttles innovation by either refusing to allow uses that are not in its interest, or appropriating the rents associated with innovation.
- It lowers the hurdle of raising capital, by eliminating the need for a network and focusing on devices.
- It fosters an end-user focus that makes innovation more responsive to consumer demand; indeed, it allows direct end-user innovation.
- It de-concentrates the supply of services compared to the exclusive licensed model, especially for high bandwidth services which tends to result in a very small number of suppliers, particularly in lower density markets.

Unlicensed spectrum lowers transaction costs. If the rules are written leniently, many people will be able to transmit for many purposes. If the rules are written well, interference will be avoided. The FCC's approach to setting aside spectrum for shared use exhibits several characteristics that accomplish the task of managing the common-pool resources in a light handed manner.

- The use rules were simple and established an easy set of conditions with which devices had to comply.
- They did not require intensive, continuous monitoring and coordination.
- There were no membership rules. Anyone could enter and use the shared resource. . . .

Beyond these traditional economic factors, the unlicensed model creates a much more diverse sector. Diversity has come to be recognized

as a uniquely important characteristic of economies and economic systems because it reinforces desirable economic traits of the system. Diversity creates value, enhances innovativeness and builds resilience, as well as promoting other social values like pluralism.[93]

V. CHALLENGES FROM THE SOCIO-ECOLOGICAL SETTING

Combining the challenges from within the system identified in Section III with the array and social importance of demands emanating from the socio-ecological setting identified in Section IV provides a ready explanation for the intensity of the debate over Internet governance. The long list of challenges is provided on the left side of Table V-1. Yet, as the right side of Table V-1 shows, the economic dilemmas to which the Internet provided a potent solution have not disappeared and the challenges of governance confront all the potential candidate institutions that might be seen the vehicles to respond, including the state.[94]

A. The Continuing Limitations of the Market

The immense economic and socio-ecological importance of the resource system drives some to turn to the market for solutions, because the market is an important contributor to the success of the Internet. Yet, the underlying public goods, externality, common-pool resource, and transaction cost problems to which the institutional organization of the Internet resource systems was a remarkably successful response have not gone away. Replacing the core Internet principles with an exclusive reliance on the market threatens the functioning of the Internet system by creating the danger of rising transactions costs, restriction of flow by contracting failures and the exercise of opportunistic power relations.

There is clear recognition of continuing and potential economic

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93. Cooper, *supra* note 89, at 1-2, 3-4, 36-37 (footnotes omitted).

94. MUELLER, *supra* note 19, at 210-11 (expressing the dilemma in reflecting on the challenge of confronting the problem of content regulation: "As many others have argued, the stunning success of the Internet as a medium of expression and engine of economic development was based on the end-to-end principle. The network was designed to be as neutral a platform as possible; it is a mover a [sic] bits that leaves the definition of applications and content to the end users. A neutral network eliminates gatekeepers and similar barriers to access. . . . A neutral network maximizes access to the public and minimizes the ability of an intermediary to substitute its own judgments for those of end users. . . . Even if we recognize that some content will be illegal and that there may be no right to produce or access it, regulation by nation-states should stay congruent with the end-to-end principle and target its enforcement activity at the edge as well. If we try to engineer the network itself to police and censor content, we give states and network operators too strong a gatekeeping role.").

dilemmas, including the major problem of the potential exercise of market power by large players strategically located in the resource system.

> There is also an awareness that one of the more critical risk factors in this market-driven environment is the creation of "bottlenecks" in the delivery of services to customers. Such bottlenecks admit the introduction of "gatekeepers" which, in turn, admit the potential to impose rentals on those parties who are forced to pass services through the bottleneck. If there is a failure of competitive pressure in the access market there is a significant risk of such forms of forced distortions appearing in the market through the exploitation of such bottlenecks to extract scarcity rentals from those parties who are forced to pass their services through such points of constraint and imposed third party control.[95]

> These agreements and the cost structure they imply will be private information of the networks and may be only loosely (if at all) linked to the underlying traffic patterns or infrastructure costs . . . .

> This results because the LEs [large eyeball networks] believe they have bargaining power over content providers, large and small, under the assumption that eyeball customers are less vulnerable to switching to another access provider than are content ASes [Autonomous Systems]. . . .

> ISPs with a significant number of "eyeballs" can attempt to use access as a basis to negotiate favorable interconnection terms. [96]

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95. Huston, *supra* note 70.

96. Faratin et al., *supra* note 71, at 16-18.

PRESSURES FOR CHANGE

"Unintended Consequences" of the successful resources system

Structure and Units
  Size
  Geographic scope
  Complexity of tools
Users and Uses
  Commercialization
  Diversity
  Speed
  Latency

Demands emanating from the socio-ecological setting

Polity
  Human Rights & Freedoms
    Expression, Speech
  Content Regulation & Culture
  Surveillance
Technology
Security and Survivability of
  Public Infrastructure
Critical resources
  Infrastructure management
    & development
  End-to-end principle
    Protocols/standards
    Communications
    Interoperability
Economy
  Basic Principles
    Commons
    Private Market
  Trade & E-Commerce
  Intellectual Property & Fair Use
  Subsidies/ Wealth Redistribution
  Competition Policy/Antitrust
Access & Use Access
  Expansion
  Inclusion
Social
  Data Protection
  Privacy

INSTITUTIONAL CHALLENGES

Challenges to which the market may not be the solution

Externalities
        Loss of scalability
        Loss of end-to-end
        Free riding
Transaction cost increases
        Contract failure
        Asymmetric Information
          Bargaining, Monitoring
Strategic Behavior
      Rent seeking
      Opportunism
      Investment
        Distorted, Insufficient
Behavioral
      Perception
      Calculation
        Overly simplistic heuristics
      Implementation
        Game of chicken gone wrong

Governance challenges that render the state ill-suited as the solution

Authority
    Geographic Scope
      Borderless
      Decentralized
      Distributed
Ability
    Speed and flexibility
    Knowledge
        Quantity
        Operational necessity
        Local
Capacity
    Politicization
    Resource

Ongoing challenges confronting the state and Internet governance

  Legitimacy
  Access
      Availability
      Adoption

Table V-1: MATURITY CHALLENGES DRIVEN BY CHANGE

However, the market failure risks to the system are more profound and include a fundamental transaction cost problem that can lead to an increase in costs, or a breakdown of transactions altogether.

In sum, such bilateral constraints – due in part to the limitations of legacy interconnection regimes because of the architecture – conceal end-to-end value information that might otherwise provide the basis for signaling the magnitude and direction of direct and indirect externalities. The lack of such an appropriate signaling mechanism may result in the foreclosure of markets for certain services (e.g., QoS differentiated services for the general Internet). Historically, this potential loss was traded off against the benefits of lower uncertainties associated with the simpler interconnection

environment. Volume and destination-based value accounting resulted not only from architectural constraints, but were also a "satisficing" response to residual uncertainty of who should pay whom. Other value proxies would have introduced higher uncertainties and bargaining costs . . .

[A] *possible* concern that might arise in the future is that the increased complexity of the interconnection space may raise bargaining costs, and in the extreme pose a threat for the equilibrium that has sustained E2E [end-to-end] connectivity in the Internet thus far . . .

Uncertainties over how to allocate (shared or standalone) costs, especially across multiple ASes (when multi-homed) involving different contracts, may raise the risks of peering bargaining failures. Many large networks (and some small networks) will not accept peering requests from smaller networks, even if there are likely to be cost or performance benefits for the larger network.[97]

Having pointed out the recognition that there are continuing economic dilemmas that the market may not be able to resolve, it is also necessary to note that there is still a strong preference for exploring market solutions before regulatory approaches are implemented.

[A]s NIE explains, firms search for contractual (or regulatory) guarantees against opportunistic behavior . . . In some cases, reputational constraints and the power of social norms may be effective; in others, vertical integration may become a necessary step . . . and, in still other cases, parties may remain vulnerable to the possibility of hold-up . . . And in yet other cases, such as the network management issue, some form of regulation may be necessary to enable these markets to function reliably and effectively.[98]

Some skeptics of regulation have called for a continuing "hands off" approach to the Internet and have even suggested that the FCC itself is an antiquated institution that should be abolished. But as this [a]rticle demonstrates, the challenges for the relevant firms to cooperate without the aid of government encouragement and oversight may be too much to expect. By contrast, "a public signal to invest the necessary resources in a coordinated solution, and structured opportunities to come together, may suffice to allow private parties to achieve efficient outcomes." Notably, the norms of Internet cooperation cannot be taken for granted and ultimately will

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97. Faratin et al., *supra* note 71, at 12, 16, 18. (footnote omitted).
98. Phil Weiser, *The Future of Internet Regulation*, 43 U.C. Davis L. Rev. 529, 543-44 (2009) (citations omitted).

require some form of norm entrepreneurship . . .[99]

Interconnection policy is going to become the battleground for the new telecom regulatory debates . . .

Before more interventionist regulatory approaches are applied, we believe any policy focus should be on improving transparency into the workings of the Internet ecosystem in general and interconnection markets, more specifically . . . (a) information about industry-wide cost models; (b) information about traffic trends and distributions; and (c) information about interconnection agreement terms and conditions.[100]

B. The Continuing Limitations of the State

Whatever the level of concern about the ability of the market to deliver solutions to the economic dilemma, there is a much higher level of concern that the market cannot solve the challenges emanating from the socio-ecological setting. This was quite evident in the lengthy list of challenges and tensions outlined in Section IV. This stimulates a search for new authority in the nation state, which is the incumbent institution with primary responsibility for tending to the key realms of social order. Yet, every one of the internal challenges that strain the Internet resource system management mechanism would strain the state. Moreover, the state suffers other types of problems that hinder its ability to provide responses to the maturation challenges, without undermining the Internet resource system.

First, the borderless, transnational nature of the Internet resource system is a unique challenge to the ability of the state to craft policy. Because information flows are so fluid and multinational, it is argued that the challenge to national authority is well beyond the typical international challenge. It is frequently noted that the "bad" acts and actors are beyond the borders of state authority, but it should be noted that the good acts and actors are too.[101]

Second, the dynamic, complex and interconnected nature of the 21st century economy, particularly those sectors touched by digital technologies, makes it difficult for centralized, bureaucratic oversight to write and enforce regulation.[102] Traditional regulation is ill-suited, even

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99. Phil Weiser, *The Future of Internet Regulation*, SELECTED WORKS OF PHIL WEISER 53 (Feb. 2009), http://works.bepress.com/cgi/viewcontent.cgi?article=1000&context=phil_weiser (citations omitted) (quoting material from the internet version of the article not appearing in the print version).

100. Faratin et al., *supra* note 71, at 22.

101. *See* MUELLER, *supra* note 19, at 243.

102. "[I]ndustry-led approaches can play an important role in delivering regulatory objectives: these can help address an issue quickly and flexibly while benefiting from industry

inimical to an economy that thrives on flexibility and is driven by rapid innovation.

Third, the model of an expert agency relied upon to implement broad goals has been undermined by the politicization of the regulatory process. The traditional approach to formal, notice and comment regulation was based on the belief that expert agencies could do a better job than political bodies like legislatures in designing regulation to deal with the day-to-day functioning of industries. Once it becomes politicized, it loses its advantage.[103]

Finally, traditional regulation is not likely to work very well because the ability of the state to implement and enforce regulation has been undermined by systematic and persistent defunding of regulatory agencies.[104] Decades of anti-government and pro-market rhetoric have taken their toll. The agencies now lack the resources to do their jobs. In the United States, the number of regulatory and antitrust employees per dollar of value they oversee in the economy at large and the communications sector is one-fifth the level it was in 1970. Compared to profits and assets, agency budgets are less than half the level they were in 1970.

None of these factors is likely to be reversed any time soon. The

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expertise, often at a lower cost to society than formal regulation. Timeliness and flexibility of solutions are particularly critical in fast moving, technologically complex communications markets." *Identifying Appropriate Regulatory Solutions: Principles for Analysing Self- and Co-Regulation*, OFFICE OF COMMUNICATIONS (U.K.) 4 (Dec. 10, 2008), http://stakeholders.ofcom.org.uk/binaries/consultations/coregulation/statement/statement.pdf [hereinafter *Ofcom Statement*]; "A common theme is that traditional regulation is not suited to meet many contemporary policy needs (although as we emphasize below, it still has a role to play), and indeed it is partly in response to the perceived shortcomings of the regulatory *status quo* . . . . 'underlying each strand in the literature is the belief that the increased complexity, dynamism, diversity, and interdependence of contemporary society makes old policy technologies and patterns of governance obsolete.' Neil Gunningham, *Reconfiguring Environmental Regulation: The Future Public Policy Agenda*, conference paper presented at *Environmental Law in a Connected World*, LA FOLLETTE SCH. PUB. AFFAIRS, U. WIS. – MADISON 9 (Jan. 31, 2005) *available at* http://www.lafollette.wisc.edu/research /environmentalpolicy/gunninghamreconfigure.pdf (quoting Daniel Fiorino, *Rethinking Environmental Regulation: Perspectives from Law and Governance*, 23 HARV. ENVTL. L. REV. 441, 464 (1999)); *See also* Denis D. Hirsch, *The Law and Policy of Online Privacy: Regulation, Self-Regulation, or Co-Regulation?*, 34 SEATTLE U. L. REV. 439, 458 (2011).

103. *See* Jo Becker & Barton Gellman, *Leaving No Tracks*, WASH. POST, June 27, 2007, at A01, *available at* http://voices.washingtonpost.com/cheney/chapters/leaving_no_tracks, Which suggests that while producers complain about the involvement of public interest groups, it is certainly true that there has been a politicization of the process on both sides and industry has generally gotten the best of it, symbolized by Vice President Dick Cheney's campaign against environmental regulation in which he told his clients to "match the science.".

104. *See* Mark Cooper, *Crowd Sourcing Enforcement: Building a Platform for Participatory Regulation in the Digital Information Age*, presentation at *The Digital Broadband Migration: The Dynamics of Disruptive Innovation*, SILICON FLATIRONS CTR. (Feb. 12, 2011), http://siliconflatirons.com/documents/conferences/ 2011.02.13/ MarkCooperPresentation.pdf.

critique of the state is widespread, if not universal. Pavan presents a concise summary that sweeps across all of the issues discussed up to this point.

> [W]e are standing in an epoch of overall political uncertainty caused, in the first place, by the fact that states have to face multiple and complex issues that extend beyond the boundaries of their sovereignty and, more importantly, that require an incredibly large amount of competency to be managed adequately. This does not mean that states have lost their functions: institutions continue to be the sole agents in charge of producing policies. What changes is that they can no longer perform their functions "behind closed doors" but, rather, find themselves forced to act within a very crowded environment, populated by a multiplicity of non-institutional actors who possess the required knowledge and the expertise for managing complex and dynamic global issues. How to translate the necessity for multiactor collaboration into efficient governance arrangements remains an open question.

> This is particularly true in the case of information and communications matters, where technical and social aspects are both relevant and so interwoven that, when it comes to their regulation, governments have to coordinate a plurality of interests, knowledges, agendas, and priorities but often are not equipped with the necessary competencies to do so. In the Internet case we have the extreme situation in which governments were also the last actors to be involved in the management of a system that had self-managed itself for years. The underlying question of how we shift from "government to governance" in the IG [Internet governance] domain becomes, in general, a question about how we can effectively relate traditional steering activities, for which states are responsible, with broader coordination tasks that go back to the very origin of the Net itself and that combine the multiple perspectives and needs of all institutional and non-institutional Internet users. What is the role of different actors' categories in the governance dynamics of the Internet? How to (re)conciliate perceptions, positions, and political interests?[105]

C. Key Resource System Challenges

1. The Relationship between the Social Demands and the Internet Architecture

Figure IV-1 and Figure IV-2 above showed the location of the maturation challenges emanating from the social structure in terms of their grounding in the realms of social order. The discussion in Section II pointed out that the distinction between governance of and on the

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105. Pavan, *supra* note 19, at xxix. (citations omitted).

Internet is a useful tool for sorting policy approaches. A key challenge is operationalizing the distinction.

One approach is to note that the maturation challenges can be lined up with the Internet hourglass introduced earlier, as shown in Figure V-1. While the correspondence is not one-to-one, the argument can be made that the modalities of regulation that address each of the various challenges map reasonably well across the layers of the hourglass. Addressing higher-level problems with solutions at lower layers risks paying a heavier price in terms of harm to the resource system than is necessary. The complex link between the resource system and the socio-ecological environment is also recognized by the UNCTAD analysis:

> Of course, it is not possible to establish a clear-cut separation between all infrastructural/technological matters on one side and political and socio-economic questions on the other. Policy decisions very often have technological implications and vice versa. A crude device to categorize public policy issues that need to be addressed and the responses that could be explored in each case could be to distinguish between the management of the Internet as a global utility and the international governance issues posed by the use people make of that utility.[106]

Aside from the reference to a "utility," which will make many in the Internet governance debate cringe, the call for an effort to make the distinction between technology and policy is important in the Internet governance debate as discussed in Section III below. Moreover, as discussed in Section III, the UNCTAD analysis does not envision "utility" style regulation as the solution for the technical issues that arise in the management of the core resources of the Internet.

In Figure V-1, I put two challenges outside of the confines of the hourglass – freedom of speech located above the content layer and universal service located below the network strata. The reason as suggested earlier is that these two are essential outcomes of the resource system, the primary purposes and function that the system serves in society.

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106. *UNCTAD*, *supra* note 51, at 256.

INTERNET ARCHITECTURE

THE MATURATION CHALLENGES

FREE SPEECH

LAYER 4   Applications

Electronic Mail   Audio Server   Remote Login   Teleconferencing

Information Browsing   Video Server   Interactive Education   Financial Services

Fax

CONSUMER PROTECTION

INTELLECTUAL PROPERTY

LAYER 3   Privacy Middleware Services

Service Directories   Security   Multiscale Coordination

Name Server

Storage Repositories   Electronic Money

PRIVACY PROTECTION

PERSONAL SECURITY

LAYER 2   Transportation Svcs & Representation Stds
(Fax, video, audio, text)

Open bearer service interface

LAYER 1   ODN BEARER SERVICE

INTERNET MANAGEMENT NON- DISCRIMINATORY INTERCONNECTION & CARRIAGE

CYBER-SECURITY

Network Technology Substrate

LANS   ATM   Point-to-Point Circuits

Frame Relay   Dial-up Modem

Wireless   Direct Broadcast Satellite

Frame Relay

SMDS

ANTITRUST

UNIVERSAL SERVICE

FIGURE V-1: THE CHALLENGES AT VARIOUS LAYERS OF THE INTERNET ECOLOGY

2. The Relation between the Telecommunications Resource System and the Internet Resource System

A fundamental challenge to the institutional *status quo* is the distribution of resources and obligation between the two communications resource systems that coexist at present. As noted above and suggested

by Figure V-2, the Internet was dependent on the dominant telecommunications resource system for its growth. The existing telecommunications infrastructure carried Internet communications. Interconnection and carriage were crucial functions on which the Internet relied. Over time, while that underlying relationship remains, as the Internet matures, it captures more and more of the function of the pre-existing resource system. There are three sources of conflict that are expressed in the quarter-life crisis:

FIGURE V-2: SHIFTING RELATIONSHIPS BETWEEN THE INTERNET AND TELECOMMUNICATIONS RESOURCE SYSTEMS

- First, there is a shift of resources, which throws the incumbent telecommunications resource system into crisis.
- Second, the governance structure of the incumbent

> telecommunications resource system is fundamentally different than the emergent system.
>
> • Third, the telecommunications resource system bears the social obligation of universal service, the broadband Internet resource system does not (at least in the minds of many companies).

VI. GOVERNANCE INSTITUTIONS FOR THE DIGITAL REVOLUTION

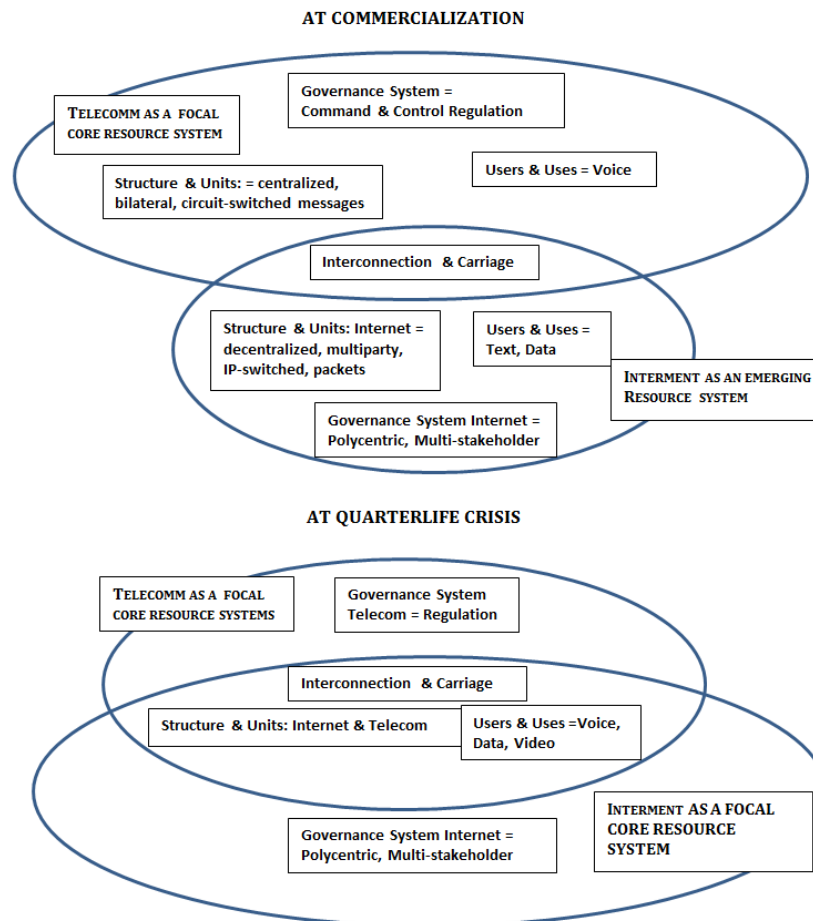### A. Principles for Adaptation of Internet Governance

The combination of the weakness of the competing institutions (the market and the state) and the success of the Internet resource system suggests that enhancing the polycentric institution between the market and the state remains a viable, preferable approach to respond to the challenges. But, it is also clear that the existing institutions must adapt to meet the challenges. This section offers a series of principles for adapting Internet governances to the maturation challenges derived from the conceptual and empirical framework described earlier. It lays the foundation for the argument in the next section that "participatory governance" is a critically important institutional innovation needed to preserve and extend the success of the Internet resource system. It locates the concept in relation to the Internet governance debate, the broader crisis of legitimacy of the state, and the ongoing debate over regulatory reform.

> 1. Priorities for Preserving the Internet Principles by
>   Expanding the Space of Governance Between Market
>   and State

Meeting the challenge of "how we shift from 'government to governance' . . . relat[ing] traditional steering activities . . . with broader coordination tasks that . . . combine the multiple perspectives and needs of all institutional and noninstitutional Internet users"[107] requires an approach that

> • recognizes the state will almost certainly be the origin of the fundamental steering choices, but
> • ensures that it sets a course that preserves the Internet principles, while expanding the scope of autonomy between the market and the state.

I have argued that this was exactly the effect of the late 1960s Carterphone and Computer Inquiry proceedings and the decision to

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107. PAVAN, *supra* note 19, at xxix.

"unlicensed" some spectrum, so this is not an impossible task. Moreover, the understanding that this is the essential challenge permeates the Internet governance debate. The International documents discussed in Section III recognize the balance that must be struck between policy goals and the preservation of the dynamic Internet resource system. Table VI-1 adds to this body of evidence in a somewhat different way. It summarizes four analyses from the 2004-2005 period, which was a high point in the international debate over Internet governance because of the approach of the World Summit on the Information Society meeting in Tunis.[108] These are fairly comprehensive discussions that included explicit recommendations. They can be summarized in a small number of principles to guide the adaptation of the Internet governance substantive policymaking effort.

Structure and Units

1. To the greatest extent possible, preserve the end-to-end principle based on open, non-proprietary standards.
2. Recognize that markets have played a central role in deploying infrastructure and developing applications to drive Internet success, but
3. policy must also recognize that (a) the threats of scarcity and the exercise of market power require vigilant attention; (b) the political goal of the flow of information is not always synonymous with private or governmental interests; and (c) the social goal of universal service is not guaranteed by markets.

Users and Uses

4. Protect free flow of information, recognizing that both good and bad information may flow freely and states or private corporations are not always the best arbiters of which is which.
5. Promote the universal deployment of resources for development and the widest possible array of uses, which are the fundamental measure of success of the resource system.

Management and Governance

6. Apply a broad subsidiarity principle to policy, which means, in general, tasking institutions with responsibilities for which they are well-suited and, in particular, not burdening technical standards with socio-ecological policy responsibilities to the greatest extent possible.
7. Strengthen   polycentric,   inclusive,   multi-stakeholder

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108. *See   World   Summit   on   the   Information   Society*,   WIKIPEDIA, http://en.wikipedia.org/wiki/World_Summit_on_the_Information_Society (last modified Aug. 18, 2012, 10:54 PM).

governance institutions.

Key to Sources: Petru Dumitriu, "The World Summit on the Information Society (WSIS): From Geneva (2003) to Tunis (2005). A Diplomatic Perspective, "**in** J. Kubalija and V. Katundjun (Eds.) Multistakeholder Diplomacy, Challengers & Opportunities (2006); **Milton Mueller, John Mathiason and Lee W. McKnight, "Making Sense of 'Internet Governance': Defining Principles and Norms in Policy Context in Don MacLean (Ed.) Internet Governance: A Grand Collaboration (United Nations ICT Task Force, 2004);** *William Drake, Reframing Internet Governance Discourse: Fifteen Baseline Propositions, In Don MacLean (Ed.) Internet Governance: A Grand Collaboration (United Nations ICT Task Force, 2004);* United Nations Conference on Trade and Development (UNCTAD), "Internet Governance," in Don MacLean (Ed.) Internet Governance: A Grand Collaboration (United Nations ICT Task Force, 2004).

PRINCIPLES	PURPOSES
Structure & Units	
The global commons	**The Internet is based on global open, and non-proprietary standards. They are published and accessible to anyone without payment of fees.**

POLICY RECOMMENDATIONS: We need to keep those doors open. Nevertheless, maximum caution is necessary when attempting to privatize essential commons. **Do not allow the commons to be privatized.**

End-to-End Principle	**Architectural principle creates an interoperable, neutral, transparent platform supporting a wide variety of applications and services**

POLICY RECOMMENDATIONS: Preserve the technical standard Management of resources should not be overloaded with **policy... Resource allocation should be consistent with the end - to-end principle... Regulation of the fraudulent and criminal activity must be directed at responsible endpoints, not at the internetworking process itself.** In all these cases, the substantive character of the issue at hand, rather than the fact that the Internet is the medium through which the problematic activity is conducted, should be the determining criterion as to what level of "governance" (from consensus building and cooperation to rule-making) and what instruments should be applied.

Inclusiveness	**The Internet has been driven "from the bottom up"**

POLICY RECOMMENDATIONS: This feature could be enhanced by consolidating or by building from scratch governance structures that are genuinely open and inclusive of governments. *The effective inclusion of developing countries requires much greater attention.... Greater attention is needed to the inclusion of civil society organizations, small and medium-sized enterprises and individual users.* First, it must be recognized that whatever the merits of the case for their reform, the loose constellation of organizations that have so far underpinned the development of the Internet have achieved remarkable success in ensuring the stability and unit of a highly decentralized network of networks with no centre and not strong rule-making authority... In order for any reform proposal to be viable, not just technically but also politically, it must provide strong evidence that it will ensure the continued stability and quality of service of the Internet, prevent its fragmentation and maintain the "bottom-Up" processes through which standards and policies have been developed so far. *Technical and policy issues often cannot be neatly separated*

Private Market	**Fosters decentralized, small scale investment and variation in approach**

POLICY RECOMMENDATIONS: Do not transform standards commons into a basis for regulating the private market. *With respect to the substance of rule systems, efficiency means devising frameworks that do not inhibit technological change, unduly constrain the development of markets, or make it difficult for governments and stakeholder to reach agreements.* No one size fits all solutions are likely to emerge... a number of questions in which technological and policy issues are particularly intertwined are likely to be best treated within a network of international frameworks (as opposed to a unified, structured organization) of cooperation and coordination for the development of the Internet... In such a cooperative framework flexibility should be a paramount consideration... Structural flexibility and lightness are also needed in order to prevent governance solutions from being rendered obsolete by technological evolution.

Functionality/	**The Internet... development actually started from the need to perform a function.**
and *Congruence*	

POLICY RECOMMENDATIONS: If we decide to use the Internet as a tool for achieving social development objectives, the governance model we follow should not be meant only to monitor, to restrict and to regulate. We need to allow and enhance functionality by representing and adequately using a balance of interests, capabilities and needs that exist in exist in real life. *Efficiency concerns suggest that form should follow function to the extent possible... In general terms, it is desirable to optimize institutional forms so that they match the issues to be managed.* This overarching concern applies to both the substantive rules and institutional procedures in governance mechanisms. [E]volution is more likely to produce results than a voluntarist top down approach. The current system of management of core Internet resources is the result of a process that has taken place over a remarkably short time. It is clear that this evolution has not yet reached a stage of maturity that is acceptable to all stakeholders. It must also complete a process of genuine internationalization (which is not necessarily equivalent to full-fledged intergovernmentalization, but which implies representatively requirements beyond the participation of individuals/organizations of various nationalities. In doing so it is essential to reconcile demands for change with the need to ensure continued delivery of the critical services.

Users and Uses

Moral Neutrality **Self-reliance**	Transparency, speed and accessibility of information and content and services. But this communications enabling power applies to "bad ""as well as "good" information communications behavior.

POLICY RECOMMENDATIONS: Private networks or users can build electronic "fences" or adopt filters or practices that can, to some extent, shelter themselves from undesirable forms of while maintaining some form of compatibility and interconnection with the rest of the world. Whereas and traditional notions of government and governance imply uniformity, Internet permits variation in policies adopted in response to the same problem.

Resource scarcity, concentration,& control	**Scale and dependence increase value of control**

POLCY RECOMMENDATIONS: Concentration and control raise legitimate grounds to investigate bottlenecks and the economic and political impact of legacy control. *Equity concerns are equally important and will become more so as the Internet becomes increasingly pervasive and thus affects a wider range of social interests.... What about situations... where concentrated market structures allow powerful firms to in effect set generally applied rules via their business strategies, rather than through collaborative decision making?*

Internet for development	**Infrastructure development should be decentralized and competitive**

POLICY RECOMMENDATIONS: In order to help governments reach their economic and social aims, one should not look for methods to control the Internet, but for means to use its comparative advantage and prevent ICTs from becoming a factor that broadens, Instead of narrows, divides... We need to turn the technological advances into economic and social benefits; to attach societal assets to technological virtues, and to explore potential that have been unchartered. **Digital divide subsidies, if there are to be any, should go to end users and not to centralized suppliers or governments.** Providing resources to end users...to acquire those elements of end user infrastructure should serve to stimulate and encourage development while maintaining a maximum degree of choice and diversity in supply.

Governance

Polycentric **Multi-stakeholder**	**Distributed and multifarious, cannot be regulated in a top down manner** *Internet governance involves a heterogeneous array of formalized public and private sector rules that vary widely in their institutional atributes. Entails a heterogeneous and highly distributed array of prescriptions and processes that reflects the Internet's core features rather than centralized "one size fits all" control over a single system. Spontaneous expression of the consensus and discipline of the main players on the use of standards and protocols*

POLICY RECOMMENDATIONS: Multistakeholder governance should be encouraged government, private business, civil society and international organizations. If we replace the naturally normative work that has been emerging spontaneously with more systematic work, we need a common understanding of what should be expected from the parties involved. After defining those contours of governance, we may gradually move toward agreement on rules, decision-making procedures, and institutions. *Viewing these governance mechanisms in an integrative manner would allow us to evaluate the full diversity of public and private sector practices that help to shape bot the infrastructure and transactions and content, to systematically assess what works... and to consider whether there are any holes, tensions or cross- cutting issues... [I]f properly structured, it could well build a stronger global consensus that would underpin the Internet's continuing growth as an open and vibrant medium.* <u>A sustained effort of capacity building for Internet policy making is needed so that the majority of the developing countries can effectively participate in the management/governance systems.</u>

Specialization	Inclusion does not rule out specialization as a prerequisite for efficiency and effectiveness.

POLICY RECOMMENDATIONS: Internet governance should count on specialization. The separate and complementary functions of public and private governance structures, the legitimate roles of different actors, and the need to create organic and as building blocks.

Self-restraint **Accountability**	The highly technical nature of the work on standards and protocols does not imply ignoring social consequences.

POLICY RECOMMENDATIONS: While accepting the need for more governance, it is equally important for public policy to refrain from regulating what does not need to be regulated. Normal democratic procedures... will inevitably be slow in an environment of rapid change and technological development. Governments should be knowledgeable about prospects in the technical field. The same conclusion is valid for national policies and laws of the powerful countries when they set rules that affect the global community. *If they are not designed to maximize efficiency and flexibility, they may not be functionally effective or politically sustainable.* <u>Of course, it is not possible to establish a clear-cut separation between all infrastructural/technical matters on the one side and political and socio-economic questions on the other. Policy decisions very often have technological implications and vice versa. A crude device to categorize public policy issue that need to be addressed and the responses that could be explored in each case could be to distinguish between the management of the Internet as a global utility and the international governance issues posed by the use people make of the utility.</u>

TABLE VI-1: FOUNDATIONS OF INTERNET SUCCESS AND RECOMMENDATIONS FOR RESPONDING TO THE MATURATION CHALLENGES[109]

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109.   Petru Dumitriu, *The World Summit on the Information Society (WSIS): From Geneva (2003) to Tunis (2005). A Diplomatic Perspective*, *in* MULTISTAKEHOLDER DIPLOMACY, CHALLENGES & OPPORTUNITIES 33 (Jovan Kurbalija & Valentin Katrandijev eds., 2006); Milton Mueller, John Mathiason & Lee W. McKnight, *Making Sense of "Internet Governance": Defining Principles and Norms in Policy Context*, *in* INTERNET GOVERNANCE: A GRAND COLLABORATION 100 (Don MacLean ed., 2004); William J. Drake, *Reframing Internet Governance Discourse: Fifteen Baseline Propositions*, *in* INTERNET GOVERNANCE: A GRAND COLLABORATION 122 (Don MacLean ed., 2004); *UNCTAD*, *supra* note 51.

2. The Multi-stakeholder Approach to Governance

a. Support for Multi-stakeholder Approaches in the Internet Space

One area where there has been considerable consensus at a high level of generalization in the Internet governance debate involves the institutional process for policymaking. For most of the issues raised, it is generally accepted that adaptation should flow from the existing institutions that have relied on multi-stakeholder principles. Where multi-stakeholder institutions are absent, they should be created. The observations on governance process of the three international groups identified in Section III are summarized in the top part of Table VI-2. The goals of participation, transparency, fairness, and data-based decision-making are endorsed with few countervailing concerns. Thus the conception of how multi-stakeholder processes should work is universally supported.

The bottom part of Table VI-2 reflects the magnitude of the challenge in another way. It shows the four sets of Internet stakeholders identified by the WGIG document. Each of the stakeholder groups corresponds fairly closely to one of the realms of social order. Moreover, the four sets of stakeholders have a great deal to do. The essential challenge for the multi-stakeholder process is to get the many different sets of stakeholders to collaborate to ensure that they all fulfill their long list of responsibilities.

b. Broader Challenges of Legitimacy

The interest in a multi-stakeholder approach is not only consistent with the organic Internet governance institution,[110] it also responds to the perceived decline in the legitimacy of the state. An EU White Paper from 2003 on parliamentary democracy notes the challenge of maintaining the connection between representative political institutions and the public as the information age progresses.

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110. *See* Mueller, *supra* note 19, at 217 (calling them "Organically Developed Internet Institutions.").

Purposes and Principles

WORKING GROUP ON POLICY MAKING	OECD PRINCIPLES FOR INTERNET GOVERNANCE	UNESCO CODE OF ETHICS
Meaningful participation in global policy	Encourage multi-stakeholder co- development operation in policy development processes:	Member states are responsible for ensuring an an inclusive, relevant, up-to-date and legal environment for the development of the information society
Multi-stakeholder forum to address Internet-related policy issues	Foster voluntarily developed codes of conduct	
Functions: Audit, Arbitration, Coordination Regulation Structure: multilateral, transparent	Develop capacities to bring publicly available, reliable, data into the policy-making process:	
Ensure transparency, fair process, and accountability democratic inclusive: governments, private sector, civil society, Regional, national International coordination, International Orgs.	Limit intermediary liability Give appropriate priority to enforcement efforts	

Sources: OECD, *Communiqué on Principles for Internet Policy-Making*, OECD High Level Meeting, The Internet Economy: Generating Innovation and Growth, Paris, June 28-29, 2011; *Report of the Working Group on Internet Governance*, Chateau de Bossey, June 2005.

Internet Stakeholder Groups and Responsibilities

Governments (Polity)	Civil society (Socio-cultural)	The private sector (Economy)
Public policymaking and coordination and implementation, as appropriate, at the national level, and policy development and coordination at the regional and international levels.	Awareness-raising and capacity-building (knowledge, training, skills sharing).	Industry self-regulation.
Creating an enabling environment for information and communication technology (ICT) development.	Promoting various public interest objectives.	Development of best practices.
Oversight functions.	Facilitating network-building.	Development of policy proposals, guidelines and tools for policymakers and other stakeholders.
Development and adoption of laws, regulations and standards.	Mobilizing citizens in democratic processes.	Research and development of technologies, standards and processes.
Treaty-making.	Bringing perspectives of marginalized groups, including, for example, excluded communities and grass-roots activists.	Contribution to the drafting of national law and participation in national and international policy development.
Development of best practices.	Engaging in policy processes.	Fostering innovation.
Fostering capacity-building in and through ICTs.	Contributing expertise, skills, experience and knowledge in a range of ICT policy areas.	Arbitration and dispute resolution.
Promoting research and development of technologies and standards.	Contributing to policy processes and policies that are more bottom-up, people-centred and inclusive.	Promoting capacity-building.

Promoting access to ICT services.	Research and development of technologies and standards.	**Academic/technical Community (Technology).**
Combating cybercrime.	Development and dissemination of best practices.	The contribution to the Internet of the academic community is very valuable and constitutes one of its main sources of inspiration, innovation and creativity.
Fostering international and regional cooperation.	Helping to ensure that political and market forces are accountable to the needs of all members of society.	Similarly, the technical community and its organizations are deeply involved in Internet operation, Internet standard-setting and Internet services development
Promoting the development of infrastructure and ICT applications.	Encouraging social responsibility and good governance practice.	Both of these groups make a permanent and valuable contribution to the stability, security, functioning and evolution of the Internet. They interact extensively with and within all stakeholder groups.
Addressing general developmental issues.	Advocating for the development of social projects and activities that are critical but may not be "fashionable" or profitable.	
Promoting multilingualism and cultural diversity.	Contributing to shaping visions of human-centred information societies based on human rights, sustainable development, social justice and empowerment.	
Dispute resolution and arbitration.		

Source: Report of the Working Group on Internet Governance, Chateau de Bossey, June 2005

TABLE VI-2: PRINCIPLES AND STAKEHOLDERS FOR INTERNET
GOVERNANCE

Parliamentary territorial representation entails the involvement of a select few in law- and policy-making and provides a reliable basis for well-organized deliberation and decision-making. It enables in many cases more or less effective and reliable legislative action judged to be legitimate. Of course, such arrangements risk a de-coupling between Parliament and "the people." Two institutional arrangements were supposed to limit such de-coupling, namely regular parliamentary elections and a free press. But, as suggested in this [p]aper, much more is needed. Modern citizenry does not consist of a homogeneous mass public, or merely supporters of one or more parties. They are increasingly complex in their judgments and engagements. They make up an ensemble of publics and differentiated interests and competencies.[111]

Thus, the fundamental challenge in the economy of preserving a dynamic diverse product space in which consumers play a more active role has a direct parallel in the polity. A diverse, knowledgeable citizenry that wants to be and is engaged in the policy process challenges

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111. T.R. Burns, *The Future of Parliamentary Democracy: Transition and Challenge in European Governance*, green paper for the *Conference of the Speakers of European Union Parliaments*, CAMERA DEI DEPUTATI (IT.)(Sept. 22-24, 2000). http://www.camera.it/_cppueg/ing/conferenza_odg_Conclusioni_gruppoesperti.asp.

the incumbent institutions. It can be argued that the Internet is ahead of the polity in that it has provided a partial solution that took this direction, but it should also be recognized that the framework for promoting and channeling civil society engagement to build a legitimate and effective set of institutions is a work in progress.

The key to achieving the goal of enhancing democratization identified in the White Paper is that as the state recedes; it must use the remaining "legal connection" to promote participatory governance to ensure a larger direct role for the public. The principles of parliamentary reform offered as a response to this growing democratic deficit can be applied broadly to governance.

> [W]e suggest consideration of reforms of parliamentary functions, role, and institutional arrangements guided by principles such as the following:
>
> The principle of exercising high selectivity – with respect to the policy areas in which Parliament engages itself directly, for example in the formulation of specific or detailed laws and policies. This calls for explicit consideration of the reasons for such focused involvement.
>
> The principle to delegate whenever possible – a form of subsidiarity principle – to self-organizing policy sectors, at the same time holding accountable these sectors or key or powerful actors in these sectors. Part of this entails establishing effective monitoring and accounting arrangements.
>
> Institutionalizing these self-organizing policy sectors would serve also to legitimize the collective deliberations and decisions in these self-governing communities.
>
> The principle of focusing on strategic problems and issues that cannot be readily delegated or dealt with through private interests or civil society . . . .[112]

This is a road map for transferring active decision-making from the state to civil society. It is consistent with Ostrom's observations on the nesting of governance of resource systems in complex environments.

> Given the wide variety of ecological problems that individuals face at diverse scales, an important design principle is getting the boundaries of any one system roughly to fit the ecological boundaries of the problem it is designed to address. Since most ecological problems

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112. *Id.* (bullet points removed).

are nested from very small local ecologies to those of global proportions, following this principle requires a substantial investment in governance systems at multiple levels—each with some autonomy but each exposed to information, sanctioning, and actions from below and above.[113]

3. The Many Flavors of Alternative Governance

Reflecting the central theme of increasing direct participation in governance, Figure VI-1 arrays the various approaches to governance along two dimensions—the extent of state involvement and the extent of public involvement. I use the term "alternative governance" because a number of adjectives have been used to describe both the substance and process of regulatory change.[114] At the origin, the role of the industry is dominant. Along the X-axis the role of the state increases. Along the Y-axis the role of civil society increases.

Civil Society Participation

Participatory Governance
Civic Regulation
Informational Regulation
Collaborative Regulation
Reflexive Regulation

Co-Regulation   **Formal, Statutory, Traditional**
Mandated, Robust Enforced   **Command & Control**
Coerced, Stipulated,
Social Self-Regulation
Pure Self- Regulation
No Regulation
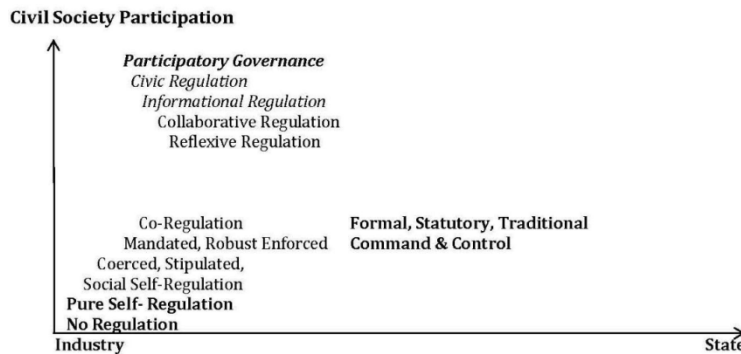Industry   State

FIGURE VI-1: THE GROWING STOCK OF REGULATORY APPROACHES

Table VI-3 provides definitions for the various types of regulation that have been discussed in the literature. They are listed in order running from least to most regulatory, as I understand the thrust of the underlying concepts.

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113. OSTROM, *supra* note 31, at 258 (citations omitted).

114. Much of the argument for alternative regulation has its origin in the experience of environmental regulation, but the concept has spread to the information, communications and media sectors. *See* Neil Gunningham, *Compliance, Enforcement and Innovation*, ORG. ECON. CO-OPERATION   &   DEV.   (2004), http://www.oecd.org/environment/environmentinemergingandtransitioneconomies/33947825.pdf; Neil Gunningham, *Regulatory Reform Beyond Command and Control*, AMSTERDAM CONF. ON THE HUM. DIMENSIONS GLOBAL ENVTL. CHANGE (May 26-27, 2007), http://www.2007amsterdamconference.org/Downloads/AC2007_Gunningham.pdf.

ALTERNATIVE TYPES OF REGULATION

No regulation (Ofcom, 7)) Markets are able to deliver required outcomes. Citizens and consumers are empowered to take full advantage of the products and services and to avoid harm.

Self-regulation (Ofcom, 7) Industry collectively administers a solution to address citizen or consumer issues, or other regulatory objectives, without formal oversight from government or regulator. There are no explicit ex ante legal backstops in relation to rules agreed by the scheme (although general obligations may still apply to providers in this area).

> Pure Self-regulation (EMR 23)
> Stipulated Self-regulation (KLS 121)
> Robust, Enforceable Self-regulation (FTC)
> Enforced Self-regulation (EMR at 22)
> Coerced Self-regulation (EMR at 16)
> Mandated Self-regulation (R at 12)
> Social Self-regulation (GA 9)

Co-Regulation (Ofcom, 7) Schemes that involve elements of statutory regulation, with public authorities and industry collectively administering a solution to an identified issue. The split of responsibilities may vary, but typically government or regulators have legal backstop powers to secure desired objectives. (EMR)

Collaborative Regulation (EMR 15) The role and structure of the state are fundamentally transformed in a changing society. Governance is seen as a process of interaction between different social and political actors, and growing interdependencies between the two groups, as modern societies become ever more complex, dynamic, and diverse.

Reflexive Regulation (W 2) an entire infrastructure aimed at establishing… the right incentives for those bearing the costs of regulation; the right participatory structure for shaping the instruments so that all those affected have a voice in shaping them; the guarantee of legal certainty; and the possibility to hold actors accountable for the consequence of particular actions (GA 4)

Civic Regulation (GA 7, 11) The goal of civil regulation is to fill the vacuum left by the contracting state and to compensate for the "deficit of democratic governance that we face as a result of economic globalization… Under civic regulation, the various manifestations of civil society act in a variety of ways to influence corporations, consumers and markets…From civil regulation perspective, the state's role is to provide mechanisms that will empower the institutions of civil society to make corporations more accountable.

> Regulatory Pluralism ((GA at 10)
> Informational Regulation (GA 7)

Participatory Governance (GA 7) various manifestations of civil society act in a variety of ways to influence corporations, consumers and markets, often bypassing the state… However, the evolving role of civil regulation has not taken place entirely divorced from state intervention… a number of next generation policy instruments are geared to empower various institutions of civil society to play a more effective role in shaping business behavior.

TRADITIONAL, COMMAND AND CONTROL REGULATION

Statutory Regulation (GA at 4) Objectives and rules of engagement are defined by legislation, government or regulator, including the processes and specific requirements on companies with enforcement carried out by public authorities.

> Formal (Ofcom 7)
> Statutory (Ofcom, 7)
> Notice and Comment (Ofcom)
> Command and Control (EMR at 12, GA 2)
> State Regulation (EMR at 16)

Sources and key:

B	T.R. Burns, The Future of Parliamentary Democracy: Transition and Challenge in European Governance, Green Paper for the Conference of the Speakers of EU Parliaments, 22-24 September 2000, http://www.camera.it/_cppueg/ing/conferenza_odg_Conclusioni_gruppoesperti.asp
EMR	Hans Bredow Institute, Final Report: Study on Co-Regulation Measures in the Media Sector, University of Hamburg, June 2006http://ec.europa.eu/avpolicy/docs/library/studies/coregul/final_rep_en.pdf
GA	Neil Gunningham, Compliance, Enforcement and Innovation http://www.oecd.org/dataoecd/18/38/33947825.pdf
GB	Neil Gunningham, Regulatory Reform Beyond Command and Control, Earth System Governance: Theories and Strategies for Sustainability at the Amsterdam Conference on the Human Dimensions of Global Environmental Change, 24-26 May 2007http://www.2007amsterdamconference.org/Downloads/AC2007_Gunningham.pdf
H	Denis D. Hirsch, "The Law and Policy of Online Privacy: Regulation, Self-Regulation, or Co-Regulation, Theory Working Papers New York University School of Law http://lawpublications.seattleu.edu/cgi/viewcontent.cgi?article=2003&context=sulr
kln	Bert-Japp Koops, et al., Starting Point for ICT Regulation, B-J Koops, et. al (Eds.), Starting Points for ICT Regulation, ITER, The Hague, 2006http://rechten.uvt.nl/prints/upload/200662790842312037944.pdf
OfCom	Office of Communications, Identifying Appropriate Regulatory Solutions: Principles for Analysing Self- and Co-Regulation, 10-Dec-08http://stakeholders.ofcom.org.uk/consultations/coregulation/statement/
R	Ira S. Rubinsien, Privacy and Regulatory Innovation: Moving Beyond Voluntary Codes NELLCO Legal Scholarship Repositoryhttp://lsr.nellco.org/cgi/viewcontent.cgi?article=1181&context=nyu_plltwp
SLK	Laura Stein, et al., Civil Society, Participation in Multi-stakeholder Processes: in Between Realism and Utopia, LSE Research Online, 2009, http://eprints.lse.uk/27901
W	Sabine Weiland, Reflexive Governance — a Way Forward in Coordinated Natural Resource Policy?, REFGOV, Working paper series: REFGOV-GPS-19, draft versionhttp://refgov.cpdr.ucl.ac.be/?go=publications&cat=1&subcat=2

TABLE VI-3: DESCRIBING ALTERNATIVE TYPES OF REGULATION

There are two polar opposites identified in this approach – "no regulation" is the least regulatory and traditional regulation the most. No regulation is the condition in which the transaction is not governed by direct involvement of the state or any explicit regulatory mechanism. Rather, the invisible hand of the market is presumed to ensure socially desirable outcomes.[115] At the opposite extreme, traditional, formal, statutory regulation occurs where the state (through its representative institutions) sets the goals and empowers the administrative apparatus of the state to write, implement, and enforce rules. Between the polar opposites, we have long had a number of mixed approaches and the number has been growing in the past two decades. Pure self-regulation occurs where the sellers in the market band together to produce rules to discipline the behavior of sellers in the market, presumably to promote

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115. Of course the state plays a big role in creating the general conditions that make markets possible. *See* NORTH, *supra* note 15.

the common interest of the sellers. In the case of pure self-regulation, sellers adopt the institution of regulation on a purely voluntary basis. The invisible hand pushes sellers into collective action.

The large number of self-regulatory approaches appears to be grounded in the recognition that there is an incentive and collective action problem with self-regulation. The concern about the inadequacy of self-regulation includes heterogeneity of the space that is being addressed. This leads to schemes that contemplate legislative mandates and the need for external monitoring and enforcement.

Once the state becomes involved, we are no longer in the realm of pure self-regulation. However, these days the literature offers up a series of concepts of self-regulation in which it is no longer "voluntary," but still is free from state command and control. These include enforced, coerced, stipulated, mandated, and social self-regulation. In some of these cases, the threat of state regulation is seen as the factor that motivates sellers to implement "self-regulation" to avoid having regulation imposed by the state. In other cases, the state requires the industry to self-regulate, but does not take part in framing or implementing the regulatory scheme.

Co-regulation receives a great deal of attention when the options on the table move beyond self-regulation. Note that all of the attention given to co-regulation is an affirmation that self-regulation is not deemed to be adequate. In co-regulation the state imposes the obligation to institute a regulatory scheme and retains backstop authority. The thrust of the argument is to back down reliance on the state and increase reliance on the industry. The Ofcom definition in Table VI-3 is indicative of the thrust of this approach to regulatory change. It envisions a trade-off between the role of the state and the role of the industry. State authority certifies the co-regulatory structure. The partnership is between the state and the industry. There is little or no mention of any change in the role of the public.

Thus, I view the existing discussion of change in regulation as involving a substantial reduction in the role of the state's command and control over market actors and actions with little, if any, contemplation of an increase in the role of the public. I consider the self- and co-regulation arguments in the literature as overwhelmingly about deregulation, not about regulatory reform. Advocates assert that there really is no need for regulation, but, if there are problems, the enlightened self-interest of producers will call forth collective, voluntary, purely self-regulatory actions to solve the problem. If this does not happen, then the threat of regulation is posited as enough incentive to induce producers to engage in effective self-regulation. Failing that, the government could mandate or stipulate self-regulation, but should not directly regulate. However, the self-regulation experimental phase is

never limited in time and the conditions that indicate failure are never specified; nor are the actions that would be taken if failure is admitted. Co-regulation introduces a dollop of state assertion of authority with little involvement of either the state or the public. Co-regulation is intended to address the failure of self-regulation (primarily the incentive and collective action problems) with the state acting as a backstop, but depending primarily on producers to act.

This seems to be a treadmill never intended to get to effective regulation, and a review of the literature supports such a view. The available contemporary alternative regulation literature can easily reinforce the concern of those who fear alternative regulation is a cover for weak regulation. The literature provides a severely disproportionate amount of attention to the ways in which alternative regulation gives greater deference and influence to the industry interests that are affected by regulation.

Fortunately, co-regulation does not exhaust the possibilities for approaches to regulation that reduce the role of the state, however. There is some discussion of increasing the role of other stakeholders in the regulatory process. Collaborative and reflexive regulations envision broader notions of involving and representing **all** stakeholders and interests in the regulatory process. Participatory governance and civic regulation focus on the participation of civil society groups.

VII. PARTICIPATORY GOVERNANCE

This section picks up on the public participation threads in the literature and weaves them into an alternative. It argues that the narrow focus on expanding the freedom and influence of producers is unjustified as a general proposition and counterproductive to the effort to respond to the quarter-life crisis. There is every reason to believe that the pubic (consumers) can benefit from and contribute to improved regulation as much as industry (producers), just as end-user innovation has enhanced the performance of many areas of the digital economy.[116] Balancing the approach may also reduce political tension. If regulatory approaches can be identified that are seen as effective but more flexible than traditional regulation, resistance may be reduced on both sides.

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116. *See* ERIC VON HIPPEL, DEMOCRATIZING INNOVATION (2005), *available at* http://web mit.edu/evhippel/www/democ1 htm.

A. The Continuing Need for Good Governance

1. Conditions that Favor Oversight

With all these alternative forms of regulation available, it is natural to ask whether certain characteristics of or conditions in a sector point toward different forms of regulation as likely to be more successful or preferable.   The regulatory reform literature provides the key link between the maturation challenges and the alternative forms of regulation, as shown in Table VII-1.

Replacement/High Risk: "when people can no longer do things off-line but can only perform them online. The government should then create guarantees for accessibility."[1]

Fundamental Rights/Strong Public Interest Concerns: – "[Co-regulation] is only suited to cases where fundamental rights or major political choices are not called into question,[1] Self-regulation is not suitable if fundamental norms and values of democratic rule or law are at stake… this holds especially with respect to protecting classic human rights of citizens and preventing and investigating infringements of the rule of law and state security. In these cases, agreements between parties cannot suffice and legislation will be necessary."[2]

Industry Lack of incentives/organization: "We will establish whether the industry has a real incentive to resolve the issue, rather than just a publicly stated intention… where such incentives do not exist, a purely self-regulatory solution is less likely to succeed. But a form of co-regulation may be appropriate if weaknesses in incentives can be strengthened through statutory regulation… we should consider the incentives for members to cheat… and what monitoring and enforcement measures could be put in place for the scheme to be effective."[3]

Heterogeneity of Products: "We should therefore consider whether measurable objectives and simple rules can be established for the operation of the scheme. This include considering the complexity of the citizen and consumer objective, the diversity of the companies potentially taking part, the number and complexity of the service covered, and the availability of expertise in designing a solution." [3]

Instability of Technology/ Heterogeneity of Products: "if… stability is achieved. Then to promote legal certainty, perhaps codification of norms established by self-regulation could take place."[2] "[Self-regulation] should not be used where rules need to apply in a uniform way." [2]

Source: [1] <u>Dutch Guidelines for Regulation</u> [2] <u>European Governance: White Paper</u>, European Commission, cited in **Bert-Japp Koops, et al., Starting Point for ICT Regulation,** B-J Koops, et. al (Eds.), Starting Points for ICT Regulation, ITER, The Hague, 2006http://rechten.uvt.nl/prints/upload/20062790842312037944.pdf, 133-136, [3] Office of Communications, Identifying Appropriate Regulatory Solutions: Principles for Analysing Self- and Co-Regulation, 10-Dec-08http://stakeholders.ofcom.org.uk/consultations/coregulation/statement/, 16.

TABLE VII-1: CHARACTERISTICS THAT PLACE LIMITS ON SELF/CO-REGULATION

Replacement is the central concept.   Replacement occurs "when people can no longer do things off-line but can only perform them online,   the   government   should   then   create   guarantees   for accessibility."[117]   The shift of activity online and the nature of that

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117. *Report from the Commission on European Governance*, EUR. COMM'N (2003), http://ec.europa.eu/governance/docs/comm_rapport_en.pdf; EUROPEAN COMMISSION, DUTCH GUIDELINES FOR REGULATION EUROPEAN_GOVERNANCE: White Paper, European Commission, *translated* in STARTING POINTS FOR ICT REGULATION: DECONSTRUCTING PREVALENT POLICY ONE-LINERS 133 (Bert-Jaap Koops et al. eds., 2006).

activity lay the basis for regulation. In the case of the Internet, it is a combination of things that could not be done offline and things that can be done much more efficiently online that creates the urgency to provide access and ensure that the activities that took place in physical space are available in cyberspace.

When the activities that have been replaced involve fundamental rights or important political activities are at issue, the need for regulation is greater.   The list of fundamental rights and important activities includes human rights, the rule of law, and state security.   These are prominent in several of the maturation challenges that the Internet faces.

Where the need for regulation might be met with self-regulation, other considerations can mitigate against it, if the activities are so important that they cannot be left to uncertain self-regulation.   Finally, where technology has stabilized significantly and there is a need for uniformity, self-regulation may not be the preferred approach because it cannot produce the desired homogeneity. Complex goals, complex products, and services delivered by diverse companies raise concerns about the ability of self-regulatory schemes to succeed.

2. The Ingredients of Successful Alternative Regulation

With an array of diverse problems and a large set of possible solutions, it is critical to have a clear idea of what successful alternative governance would look like.   The literature provides clear insights (see Table VII-2).   Even reviews that are friendly toward reducing reliance on traditional regulation recognize that key weaknesses of the alternatives must be addressed.

> The widely observed lack of openness and transparency points to a fundamental question of co-regulation as regards the scope of relevant stakeholders.   Most of the systems do not include consumer or viewer/listener groups in a way, which provides for formal influence with the process of decision making. . . .   While transparency is a generally accepted value of good regulation the openness to specific groups is a design feature of a co-regulatory system.   How the interests are balanced defines the working of the system, its acceptance and legitimacy.[118]

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118. HANS-BREDOW-INSTITUTE, UNIV. OF HAMBURG, FINAL REPORT: STUDY ON CO-REGULATION MEASURES IN THE MEDIA SECTOR 122-23 (2006), *available at* http://ec.europa.eu/avpolicy/docs/library/studies/coregul/final_rep_en.pdf; *see also* STARTING POINTS FOR ICT REGULATION: DECONSTRUCTING PREVALENT POLICY ONE-LINERS 123-25 (Bert-Jaap Koops et al. eds., 2006).

Transparency/Openness
Clarity of Purpose
  Dialogue
  Consensus
  Informing policy process
  Influencing decisions
  Planning
  Implementation
  Monitoring and evaluation
  Data gathering and analysis
Clarity of Process/Rules
  Governance
   Convening
  Decision rules
   Voting
       Unanimity (Veto)
       Super Majority
       Majority
   Non-Voting
       Rough Consensus
  Right of Appeal, Dissent
Scope of "Authority"
  Rules only
  Review of operations &
      goals

Participation
Public Awareness
  Rights - Redress
  Public consultation
Inclusiveness
  Access
  Representativeness
  Organization of groups
  Resources
  Expertise
  Role of independents
Adequacy of Resources
   Overall
   For NGOs
Industry Coverage
   Achieve Critical Mass
   Avoid "Capture" &
       Ballot packing

Desired Results
External
  Credibility
  Legitimacy
  Effectiveness
  Efficiency
  Adaptability
  Flexibility
Internal
  Building Trust
  Shared Knowledge
      & Expertise
  Culture of Cooperation &
      Leadership

Legal Clarity
Relationship to
    government
Formal
  Sponsored
  Recognized
  Status of Decisions
      Safe Harbor
      Reg.-Neg.
      Sponsored
      Recognized
      Preferred
      Advisory
Informal
  Bully Pulpit- Nudge
  Procurement
  R&D
International

Enforcement – Compliance
  Accountability
  Fairness
  Speed
  Appropriateness
  Complaint and Audit
  Adequacy of Resources

TABLE VII-2: ATTRIBUTES OF AN EFFECTIVE ALTERNATIVE
REGULATION STRUCTURE[119]

Even though the objective of regulatory reform is to reduce the role of the state, one of the key ingredients of success is political – the establishment of the legitimacy of the alternative regulatory process. Legitimacy is a quintessentially political concept that is accomplished by (1) designing internal structures and processes that are seen as participatory, transparent, and fair building trust, leadership, and skills among the participants and (2) achieving external results that are effective.

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119.   HANS-BREDOW-INSTITUTE, *supra* note 125, at 118-23; European Governance, *supra* note 119, at 133-40; Bart Cammaerts, *Civil Society participation in multistakeholder processes: in between realism and utopia*, *in* MAKING OUR MEDIA: GLOBAL INITIATIVES TOWARD A DEMOCRATIC PUBLIC SPHERE 83 (Laura Stein, Dorothy Kidd, Clemencia Rodriguez eds., Hampton Press, 2009).

3. Expanding the Space for Alternative Governance

a. *Constitutional and Collective Choice Decisions*

The process by which the space for alternative governance can be expanded can be seen as a challenge in the realm of Constitutional and Collective Choice decision-making, as depicted in Figure VII-1, which uses the recommended principles of parliamentary reform discussed above.

CONSTITUTIONAL & COLLECTIVE CHOICE,
STATE-BASED DECISION TO DELEGATE

Selective & strategic delegation of responsibility to self-organized self-governing policy sectors

Holding accountable the sectors and powerful actors by establishing effective monitoring and accountability

Institutionalizing self-organizing policy sectors would serve to legitimize the collective deliberations and decisions in these self-governing communities

OPERATIONAL RULES

Information Rules   Aggregation Rules

Boundary Rules   PARTICIPANTS INFORMATION CONTROL

Assigned to   about   over

Positions Rules   POSITIONS ——→ linked to ————————→ OUTCOMES

Assigned to

Choice Rules   ACTIONS

NET COSTS & BENEFIT

assigned to

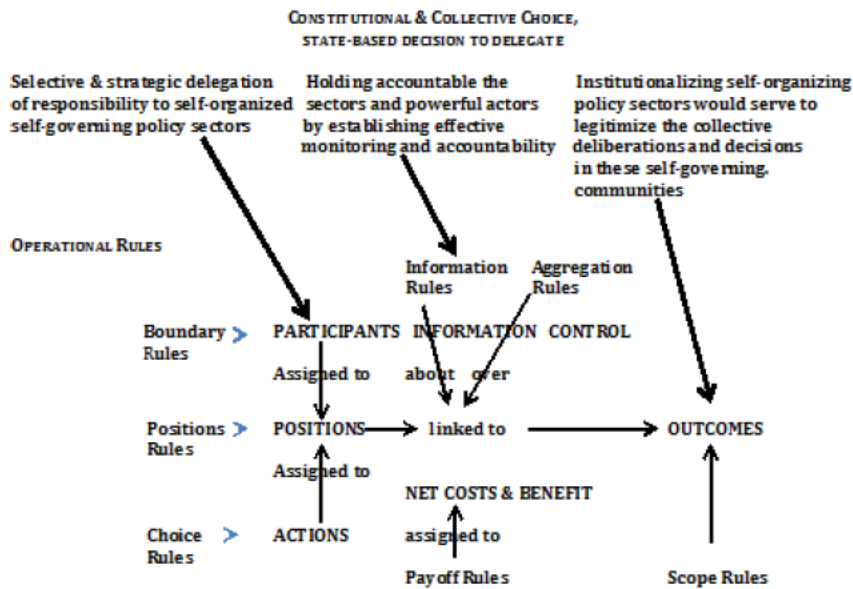Payoff Rules   Scope Rules

FIGURE VII-1: EXPANDING THE SPACE BETWEEN STATE AND MARKET

In building the legitimacy of alternative governance models in both the economy and the polity, the state has the important role of gracefully getting out of the way, while providing the important legal underpinning that makes significant contribution to the legitimacy of the alternative governance model. The state must provide legal clarity in selectively delegating more authority to autonomous, self-organizing policy sectors. Whether it chooses to delegate or regulate, it must reserve authority over areas where replacement has occurred and important values are at stake. In all cases, it is extremely important to seek to ensure that the institutions exhibit the key characteristics for successful oversight,

including monitoring institutions for transparency, participation, and accountability.

The process of institutionalization discussed earlier is important. While it is clear that the state plays an important part in launching the authority of the alternative governance approach, over time, successful and effective alternatives build independent authority and trust. The ability of the state to revoke the authority shrinks. Eventually, any effort to rescind the authority becomes illegitimate.

b. Operational Framework for Participatory Governance

As described in Figure VII-2, participatory governance is envisioned as a multi-stakeholder process that involves industry, civil society, and technologists in both the writing and enforcement of rules. The ultimate goal is to foster compliance, rather than enforcement. The participants are the three sets of non-governmental interests. The activities are rule writing and enforcement. It is supported by the state in the delegation decision.
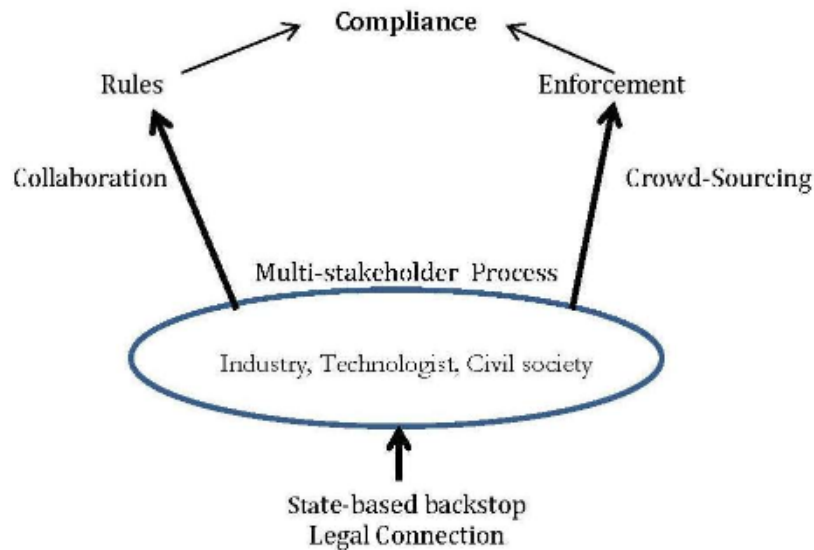

FIGURE VII-2: THE STRUCTURE OF PARTICIPATORY GOVERNANCE

We can envision two sets of possibilities, beginning with increasing activity that feeds into the regulatory process with the ultimate goal of shrinking the scope of regulatory process as the alternatives demonstrate their ability to do their job of governances (preserving the dynamic expansion of the Internet, while ensuring that the social goals are

advanced).

Codes of conduct need to be developed by the multi-stakeholder process – not solely at the discretion of the industry. Codes of conduct that are developed through collaborative processes could be afforded special treatment by regulatory agencies and go into force on a fast track, but they need not be if self-regulatory enforcement and norms are strong enough. Enforcement of rules would open the door to crowd-sourcing enforcement in which the public participates directly. Complaints that are the result of the collaborative process could be granted special status and be handled in an expedited manner by the regulatory agency, or their enforcement could be through industry-based sanctions and processes.

In order to ensure that participatory governance attracts the participation necessary to make it effective and legitimate, it must fill the four voids left by the exit of the state (transparency, participation, legal clarity, and enforcement) and compensate for the failure of self-regulation. The right to appeal directly to the state would continue to exist, but the burden for success for complaints would be heavy for issues that had not been subjected to the participatory process. Complaints outside of the multi-stakeholder process cannot be prohibited, but they should bear a significantly heavier burden (a higher threshold and burden of proof). On the other hand, failure of businesses to participate should also come at a price, making complaints subject to accelerated consideration.

The most important ingredient is to ensure that the output of the new institutions is given a great deal of weight. This will provide an incentive to participate. The greater the authority of the intervening institutions, the more attention the structure should and will get. The multi-stakeholder group will have to be representative. Collaborative deliberation should be inclusive. In both cases, internal decision rules will have to be implemented (e.g., veto, super majority, majority, concurrence, and dissent).

The multi stakeholder processes would be subject to standards of representativeness, inclusiveness, and participation, which are more explicit and likely to result in better representation than the current, inchoate approach that prevails in traditional regulation. Thus, the resulting structure will have a statutory core as the underlying legal foundation, but the bulk of the work of rule writing and enforcement will be transferred into the co-regulatory and participatory activities.

B. *Enhancing the Democratic Process*

Participatory governance can address many of the areas of concern about effective regulation. It can enhance public awareness, transparency, and independence of the regulatory structure by drawing

members of the public and leaders of the public interest community into the process. Participatory governance also brings additional resources to enforcement, resources that are volunteered by the public in the form of participation, although the structure needs to provide additional resources for technical expertise.

The idea is to deepen democratic participation by building civil society institutions that fill the gap left by the traditional institutions of the polity. This idea has strong roots in democratic thinking in two highly developed aspects of democratic theory – the contemporary view of the public sphere and the traditional view of the press. I believe there are generally strong parallels between the two.

The unique role of the press as a civil society, public sphere institution that provides oversight over the polity and the economy has similarities to the role I envision for participatory governance. The above citations from the White Paper on representative democracy made this point directly. Elections are the primary form of participation in representative democracy that is no longer deemed sufficient for more knowledgeable, engaged publics. The press provides a primary oversight function of an engaged part of civil society.[120]

Democracy theorists and institution builders have believed for a quarter of a millennium that the press plays a central role in democracy by fulfilling two functions. The most prominent in their thinking was the role of the fourth estate to monitor and report on the other estates in society,[121] as shown in Table VII-3. However, in their prolific production of pamphlets they practiced the Fifth Estate function of mobilizing the populace to political action. The challenge with respect to participatory governance is to design structures that allow the Fifth

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120. NORTH, *supra* note 15, at 54-55.

121. *Fourth Estate,* WIKIPEDIA, http://en.wikipedia.org/wiki/Fourth_Estate (last modified Sept. 17, 2012, 19:44) ("The Fourth Estate (or *fourth estate*) is a societal or political force or institution whose influence is not consistently or officially recognized. "Fourth Estate" most commonly refers to the news media; especially print journalism or "The Press". Thomas Carlyle attributed the origin of the term to Edmund Burke, who used it in a parliamentary debate in 1787 on the opening up of Press reporting of the House of Commons of Great Britain. Earlier writers have applied the term to lawyers, to the British queens consort (acting as a free agent, independent of the king), and to the proletariat. The term makes implicit reference to the earlier division of the three Estates of the Realm. In current use the term is applied to the Press, with the earliest use in this sense described by Thomas Carlyle in his book *On Heroes and Hero Worship*: "Burke said there were Three Estates in Parliament; but, in the Reporters' Gallery yonder, there sat a Fourth Estate more important far than they all." In Burke's 1787 coining he would have been making reference to the traditional three estates of Parliament: The Lords Spiritual, the Lords Temporal and the Commons. If, indeed, Burke did make the statement Carlyle attributes to him, the remark may have been in the back of Carlyle's mind when he wrote in his *French Revolution* (1837) that "A Fourth Estate, of Able Editors, springs up; increases and multiplies, irrepressible, incalculable." In this context, the other three estates are those of the French States-General: the church, the nobility and the townsmen. Carlyle, however, may have mistaken his attribution . . . .").

Estate to compensate for the declining oversight functions of the state. Table VII-3 identifies the key functions of the press, which is defined as non-governmental oversight. It plays both mediated (Fourth Estate) and direct mobilization (Fifth Estate) roles.[122]

TABLE VII-3: JOURNALISM AS A PARADIGM FOR NON-GOVERNMENTAL OVERSIGHT

Role	Relationship to the Public	Function	Complex Democracy's Ideal Media
Fourth Estate	Mediated	Monitorial	The Checking function Independent of both government and private economic power Grounded in the pluralism of the life world Nurture non-market structures to capture positive externalities
Fifth Estate	Direct	Participatory	Participatory Democracy's Ideal Media Pluralist: Distribute politically and culturally salient media in an egalitarian manner Supports interest group formation Mobilize interests Convey public opinion to policymakers Communal: promote agreement on common good Inclusive Thoughtfully discursive Self-Reflective Inform public about itself Contest dominant opinion Criterion to measure government responsiveness

Source: C. Edwin Baker, *Media Markets and Democracy* (2003), Chapter 6.

TABLE VII-3: JOURNALISM AS A PARADIGM FOR NON-GOVERNMENTAL OVERSIGHT[123]

I refer to the Fifth Estate for ease of reference and because the concept is being applied to the impact of the Internet on the contemporary communications and media landscape. It captures the essence of the direct participatory role of the public. Dutton describes the Fifth Estate[124] as follows:

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122. C. EDWIN BAKER, MEDIA, MARKETS, AND DEMOCRACY 149, 151 (2002). ("Complex democracy seeks a political process that promotes both fair partisan bargaining and discourses aimed at agreement.") (also asserting the press should be pluralist, providing individuals and organized groups with information that indicates when their interests are at stake and help mobilize people to participate and promote their divergent interests, making policymakers aware of the content and strength of people's demands. The press should promote agreement on a society-wide common good, by being inclusive and promoting thoughtful discourse, not merely being factually informative, and supporting reflection and value or policy choice. The press should promote self-reflection, informing the public about itself, so that those who disagree with the dominant opinion can contest it and provide criteria to measure government responsiveness.).

123. *Id*. at 129-53.

124. My use of the term "5th estate" has similarities and differences with the use Dutton

> More generally, the networks comprising the Fifth Estate have two key distinctive and important characteristics: 1. The ability to support institutions and individuals to enhance their 'communicative power' . . . by affording individuals opportunities to network within and beyond various institutional arenas.   2. The provision of capabilities that enable the creation of networks of individuals which have a public, social benefit (e.g. through social networking Web sites).[125]

The analogy between the press and participatory governance can be strengthened by locating these two institutions within the public sphere.[126] The public sphere mediates between the private sphere (which comprises civil society in the narrower sense, the realm of commodity exchange and of social labor) and the Sphere of Public Authority, which deals with the state. The public sphere crosses over both these realms. Through the vehicle of public opinion it puts the state in touch with the needs of society. This area is a site for the production and circulation of discourses, which can be critical of the state. These distinctions between state apparatuses, economic markets, and democratic associations are essential to democratic theory. The study of the public sphere centers on the idea of participatory democracy and how public opinion becomes political action.

Figure VII-3 depicts a map of the media in a public sphere that has become much more complex and the make-up of the media much more diverse. The Figure is drawn to emphasize the fact that the growth has been in those areas of the media that are best suited to Fifth Estate functions.   The challenge is to harness the Fifth Estate energy to accomplish the Fourth Estate oversight functions.

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makes of the term. Dutton, *infra* note 129. I agree that the emergence of the 5th estate stems for the dramatic expansion of access to information and the ability to communicate across institutional and geographic boundaries. I disagree with the suggestion that the 5th estate can supplant the 4th estate without building structures that are intended to accomplish that purpose. Interestingly, the only other reference to the explicit use of the term 5th estate that Dutton makes is to a web site that adopted the name. The web site described itself as serious and satirical commentary and appears to be defunct (with no entry after July 2009). This example underscores the two characteristics of the 5th estate that distinguish it from the 4th estate. It is largely commentary and its durability over time at the level of individual organizations is suspect. Others have argued that the 5th estate is necessary to monitor the 4th estate. Ironically, if the 4th estate were doing a better job, the need for and role of the 5th estate in this regard would be reduced, but its broader role in democratic discourse would continue.

125. William H. Dutton, *The Fifth Estate Emerging Through the Network of Networks*, 27 PROMETHEUS   1,   3   (2009),   *available   at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1167502.

126. Here I paraphrase the formulation offered in Wikipedia. Wikipedia is a perfect example of how the public sphere has expanded through the creation of new forms of mass communications. *See Public Sphere*, WIKIPEDIA, http://en.wikipedia.org/wiki/Public_sphere (last modified Sep. 5, 2012, 21:11).
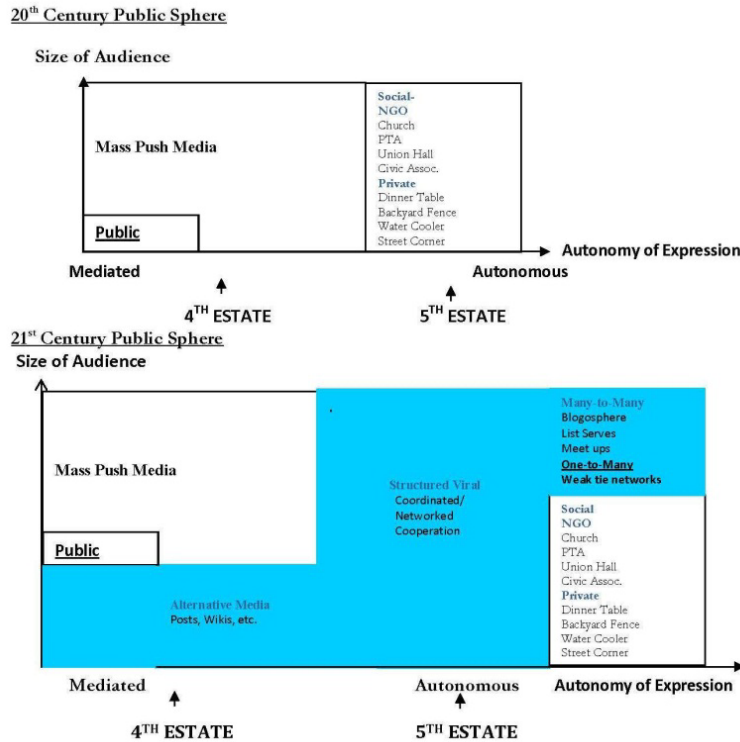
FIGURE VII -3: INCREASING DIVERSITY IN THE EXPANDING DIGITAL
PUBLIC SPHERE

The Fifth Estate function is distinct from the Fourth Estate function, although it is generally hoped that monitoring society and informing the public will get them to act, but mobilizing is a different type of activity and the ability of Fourth Estate activity to mobilize people in the 20th century is debatable. The ability of unmediated viral communications to create strong collective action in the digital age has been widely noted.[127] Unmediated communications predominates in cyberspace because the medium is naturally suited to do this. There is a lively debate about whether the commercial mass media accomplished it function in the 20th century when commercialism overwhelmed journalism.[128] The goal of

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127. *See, e.g.,* CLAY SHIRKY, HERE COMES EVERYBODY: THE POWER OF ORGANIZING WITHOUT ORGANIZATIONS, 2009; REBECCA MACKINNON, CONSENT OF THE GOVERNED: THE WORLDWIDE STRUGGLE FOR INTERNET FREEDOM, 2012.

128. BAKER, *supra* note 131, at 184, 187, 191 (The critique of 20th century journalism stems in large measure from the fact that its functions became obscured by its transformation into a commercial mass media enterprise.) ("[C]omplex democracy fears that the watchdog will be muzzled, whether by government or private power. . . .[M]onopolization or corrupted

participatory governance is to expand the role of public sphere institutions as the state role shrinks. In the analogy to the press, I propose that participatory regulation can play a Fourth Estate function and infuse it with Fifth Estate energy.

VII. CONCLUSION

Because the Internet and the digital networks on which it rides have become central institutions in societal and global communications and commerce, they can be described as "affected with a public interest."[129] The concept of public obligations falling on private enterprises is as old as capitalism itself.[130] While this term might strike fear into the hearts of some Internet stakeholders, because it evokes the specter of the utility-style common carrier regulation of the 20th century, the concept has a much longer and richer history that encompasses many forms of regulation that are much less intrusive.

While common carrier, public utility regulation was applied to certain large infrastructure industries over the course of the 20th century, many activities deemed to be affected with the public interest have been

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segmentation will suppress or disfigure media pluralism," because "[m]arket-determined segmentation predictably disfavors, for example, media focusing on political ideology, non-market-valued ethnic and cultural divisions, economically poorer groups . . . . When properly performing its various democratic functions, the media generates significant positive externalities – that is, benefits to people other than the immediate consumer of the product. The economic meaning . . . is that . . . free markets will under-produce these quality products.").

129. *Business Affected with a Public Interest*, THEFREEDICTIONARY.COM, *available at* http://legal-dictionary.thefreedictionary.com/Business+Affected+With+a+Public+Interest (last visited Sept. 12, 2012) ("A commercial venture or an occupation that has become subject to governmental regulation by virtue of its offering essential services or products to the community at large. A business affected with a public interest is subject to regulation by the Police Power of the state to protect and to promote the General Welfare of the community which it serves. Such a designation does not arise from the fact that the business is large, or that the public receives a benefit or enjoyment from its operation. The enterprise, as a result of its integral participation in the life of the community or by the privilege it has been granted by the state to serve the needs of the public, is regulated more strictly by the state than other businesses. What constitutes a business affected with a public interest varies from state to state. Three classes of businesses have been traditionally regarded as affected with a public interest: (1) those carried on pursuant to a public grant or privilege imposing a duty of making available essential services demanded by the public, such as common carriers and Public Utilities; (2) occupations considered from the earliest times in common law to be exceptional, such as the operation of inns or cabs; and (3) businesses that although not public at their inception have become such by devoting their activities to a public use, such as insurance companies and banks. A business affected with a public interest remains the property of its owner, but the community is considered to have such a stake in its operation that it becomes subject to public regulation to the extent of that interest.").

130. *See* James Speta, *A Common Carrier Approach to Internet Interconnection*, 54 FED. Comm. L.J. 225, 254 (2002).

governed by criminal[131] and common law[132] (e.g., restaurants and other public places), prudential regulation (e.g., banks and insurance companies), or subject to self-regulation (e.g., professions like medicine and law).

On the one hand, it can be argued that in the 500-year history of the treatment of the public interest in capitalist society, command and control regulation is the exception, not the rule. On the other hand, it can also be argued that in the 500-year history of capitalism, the means of communications and transportation of commerce have always been regulated and have been required to shoulder unique responsibilities.

Thus the history of the concept of "affected with a public interest" argues for a careful consideration, not whether the Internet should shoulder new responsibilities, but how the obligations that the digital revolution must shoulder can be implemented in a way to preserve its dynamic nature. There is no reason to believe that one-size will fit all. In fact, the challenges have different causes and interact with the Internet ecology in different ways. Therefore, different institutional structures are likely to be better suited to meet specific challenges.

This analysis indicates that the successful model should not be asked to take on tasks for which it is not well suited. Internet governance involved highly technical issues that were debated primarily by technicians in an open format. The challenges that are primarily economic, social, and political will be difficult for the Internet institutions to deal with. The ability to separate technical from policy issues is sufficient to promote this balanced outcome. To a significant degree technology creates possibilities, while policies influence which paths are chosen. The perception of the nature of the challenges varies greatly across stakeholders and nations, with some seeing the functionalities technology provides as positive or negative, depending on the point of view of the stakeholder. In every area, technology has two sides, as noted above. For example,

- The ability to gather, store, and seamlessly transfer large quantities of information about consumers is seen as a threat to privacy by public interest advocates, while content owners and Internet companies see it as a positive way to fund and target the distribution of content and services.
- The ability to gather, store, and seamlessly transfer large quantities of perfectly replicable data is seen as a threat to intellectual property by content owners, who brand it as

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131. *Criminal Law*, WIKIPEDIA, http://en.wikipedia.org/wiki/Criminal_law (last visited Sept. 11, 2012).

132. *Common Law*, WIKIPEDIA, http://en.wikipedia.org/wiki/Common_law (last modified Oct. 1, 2012, 17:15); *Civil Law (Common Law)*, WIKIPEDIA, http://en.wikipedia.org/wiki/Civil_law_(common_law) (last modified Oct. 1, 2012, 20:57).

piracy, while public interest advocates see it as a major improvement in the ability of consumers to make fair use of content.

- The ability to monitor and prevent disruptive uses of the Internet is seen as an important tool to improve cyber security by some, or as a threat to freedom of speech, an invasion of privacy, or denial of freedom of assembly, by others.

- The winner-takes-most nature of digital markets that creates huge, dominant entities in many areas of the digital economy is seen as the efficient outcome by some and a major threat of abusive market power by others.

If we try to solve each of these important social policy challenges by tinkering with the basic structure of the resource system to impose changes, we run a very high risk of destroying its core structure (its communications protocols and governance institutions) and undermining its ability to function at the high level to which we have become accustomed. Responses to the maturation challenges should be crafted at the layer and in the realm in which they arise. Because the digital revolution has had such a profound and beneficial impact across all the realms of social order, reaching across layers and realms to solve problems is likely to have negative, unintended consequences. This is particularly true when the technology layer is involved.

The goal of a communications standard is to make activity possible. The more activity the standard supports, the better. The goal of policy is to direct activity in socially beneficial directions and dissuade socially harmful actions. The combination of successful self-regulation of the Internet and the light handed regulation of nondiscrimination on the telecommunications network was the bedrock of the digital revolution and produced decades of unparalleled innovation and growth in communications. They deserve a great deal of deference. Above all, those who would abandon the model or break the Internet altogether by abandoning its principles bear a heavy burden of proof. This applies to governments, network operators and civil society groups.