Possibility Spaces:

Architecture and the Builders of Information Societies

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> *Space is a necessary* a priori *representation which underlies all outer intuitions... It must therefore be regarded as the condition of the possibility of appearances, and not as a determination dependent upon them....Space is nothing but the form of all appearances of the outer sense. It is the subjective condition of sensibility, under which alone outer intuition is possible for us.*
>
> Immanual Kant[1]

Yochai Benkler's *Wealth of Networks*[2] has been favorably embraced by Information Society scholars, but is an unlikely candidate for consideration and evaluation as an architectural theory. Yet, in many respects this work shares the formal characteristics of a conventional architectural theory — articulating desires, making claims about how the world could/should(not) be, crafting an argument infused with ideology, explaining and interpreting diagrams and schematics, and drawing on history in an attempt to define and shape the future. Beyond these structural similarities, works like Benkler's which explicate and theorize cyberspace need to be taken seriously as architectural works and should be invited to participate in the conversation that architects have been having for millennia about the nature and relations of self and society.

Trivially, theoretical works across most disciplines partake of architectural discourse since the metaphors used to describe arguments, ideas, and knowledge are often spatial. Ideas have been compared to *houses*, *caves*, and *geometries*, arguments are *built* and have *structure*, and many epistemologists have attempted to *base* knowledge on sound *foundations* throughout intellectual history.[3] Attempts to ground epistemic certainty in the perceived solidity of buildings may send shudders down the spines of architects who are aware of the inherent instability and ambiguity of the edifices in their charge, but the lesson here is easily turned inside-out. Once we reconcile ourselves to a world without absolute foundations, and acknowledge the ways in which we must

bootstrap consensual reality through collective processes, the study of architecture can provide us all with valuable feedback on the tactics and strategies for constructing our shared world. If the underpinnings of all arguments are architectural, then perhaps we can freshly evaluate the proportional distribution of functional versus decorative features from a new perspective. We can also investigate the kinds of buildings which represent the ideologies embodied in various styles of organizational arrangements, and we can learn about the balance of theory and practice from a design-oriented discipline.

Ordering the Unreal World

Additionally, the design of of cyberspace has crossed an important threshold, from a discipline that is related to architecture abstractly through epistemology, to one that has borrowed so heavily from the vast store of language and jargon that constitute the domain of architecture that it is time for architects to foreclose on their intellectual property. For decades computer professionals and scientists have been utilizing the language of traditional architecture to articulate every layer of their domain. Technical architects, hardware architects, software architects, network architects, security architects, and information architects permeate the field. Microprocessors are designed by drawing and diagramming intricate patterns of circuits whose idiosyncratic functions are differentiated by the designation of the chip's architecture (e.g. x86 or PowerPC). Software engineers have explicitly borrowed Christopher Alexander's pattern language[4] and craft their code according to analogous considerations.[5] User interfaces regularly invoke material metaphors such as *platforms*, *windows*, the *filesystem* and the *desktop*. And software development processes have been described and explicated by comparisons

to *cathedrals*, *bazaars*, *agoras*, and *commons*.[6] These architectural metaphors have thoroughly saturated the language of the field and have finally manifested their own reality.

Furthermore, in a "networked society," an even more important shift has occurred. Now that software environments are responsible for mediating human-to-human interactions and not just human-to-machine interactions, these environments are shaping the contours of interpersonal interaction. The affordances created within cyberspace catalyze, facilitate, and favor particular communicative dynamics over others. As with traditional architectural structures, these environments regulate, constrain, and condition behavior. Accordingly, we need to recognize the politics and ideologies they embody, and ideally act more deliberately and purposefully in their construction.

The conceptualization of the network society in the information age was presciently anticipated and articulated by the sociologist and communications theorist Manuael Castells in the mid-1990s. Castells' magnum opus, a three volume work titled *The Information Age: Economy, Society, and Culture*[7], analyzes power, production, culture and experience through the interrelated lenses of technology, history and political economy. His work is richly connected to traditional architectural theory and space is a central preoccupation of his analysis. In particular, he introduces the notion of the *space of flows* to capture the new relations between space and time in the information age, and the commensurate splits between groups and institutions occupying these new timeless information spaces and those mired in place-bound localities. Castells himself was a professor of City and Regional planning at UC Berkeley from 1979-2003, and won the

Erich Schelling Architecture Theory Prize in 2004, associations which are suggestive of the architectural genealogy of his theory.

Most of the iconic questions and problematics that have defined traditional architecture exist in the domain of virtual architecture. The virtual spaces, conceptual spaces, and spaces of possibilities that the Internet allows us to imagine and build are amenable to the same style of analysis conducted over conventional spaces in the material world. Just as some theoretical architects are primarily interested in buildings (or drawings of buildings) as wonderful foils to provoke a conversation about the nature of self and society, these conceptual spaces are now rich enough to function in this same capacity. As the Internet has grown into a comprehensive communications platform, complete with natives, citizens, residents, landlords, proprietors, customers, pedestrians, and tourists, the full richness of human experience – perception and emotion, thinking and feeling, communicating and sharing, all occur within these new public spheres.

Virtually Invisible Hands

Yochai Benkler is a prominent legal scholar, currently teaching at Harvard's law school and serving as the co-director of the Berkman Center for Internet and Society. He is involved with a community of scholars and activists who have been closely studying the relations between technology, politics, and law in the digital age. Free speech, privacy, and copyright/patent law are central pillars of this discourse as our rights and capacities in these domains are shifting during rapid renegotiations. As the opportunities to express ourselves increase, and the costs to do so decrease, there are many new potentials to speak, persuade, and teach. 'Remembering' is one thing that software has

always been good at, and the vast number of records that are being collected, correlated, and analyzed is transforming privacy and personal identity as we typically understand them. In a digital age every act is a copy, so a wide range of activities that were previously unregulated suddenly fall under the umbrella of older laws. Many researchers have come to believe that these areas will be a major battleground in the 21st century for civil and human rights.

In broad strokes, Benkler's work generalizes and provides a foundation for understanding a range of collective actions that have emerged as a powerful force in human production. Prior to Benkler's work, recent large-scale collaborative volunteer efforts had been described as “opensource culture”, or by reference to a particular site that exemplified that activity. Benkler systematically demonstrates that the phenomena witnessed in projects like the production of GNU/Linux, the Apache web server, and countless other free software projects is actually part of a broader generalizable trend that also describes the organization of seemingly dispearate projects such as Wikipedia, Seti@Home, and the liberation of the incriminating Diebold memos. He characterizes this activity as *commons based peer-production*, and outlines the conditions which will promote its flourishing.

> *At the beginning of the twenty-first century, we find ourselves in the midst of a battle over the institutional ecology of the digital environment. A wide range of laws and institutions-- from broad areas like telecommunications, copyright, or international trade regulation, to minutiae like the rules for registering domain names or whether digital television receivers will be required by law to recognize a particular code--are being tugged and warped in efforts to tilt the playing field toward one way of doing things or the other. How these battles turn out over the next decade or so will likely have a significant effect on how we come to know what is going on in the world we occupy, and to what extent and in what forms we will be able--as autonomous individuals, as citizens, and as participants in*

> *cultures and communities--to affect how we and others see the world as it is and as it might be.*[8]

One of Benkler's central theoretical contributions is the precision of his analysis of production that characterize open-source projects. As Siva Vaidhyanathan has argued:

> *The Open Source way is closer to how human creativity has always worked. Open Source used to be the default way of doing things. The rapid adoption of proprietary information has been so intense and influential since the 1980s that we hardly remember another way or another time. However, throughout most of human history all information technologies and almost all technologies have been open source.*[9]

Benkler's abstractions allow us to recognize a much broader trend in collaborative action, one that hearkens back to the way that culture has always been produced. This trend is most clearly visible in recent technological productions, to the point where journalists and industry analysts erroneously described all peer production efforts as "open source", even if the infrastructure is proprietary and the data is tightly controlled.[10] Benkler helps us deconstruct this loose and imprecise use of language into the relevant and essential categories that constitute this pattern of production. He then reassembles these pieces into an argument critiquing the established wisdom behind the motivation of production and the contingent Intellectual Property regime.

In the introduction to his treatise, Benkler lays out the scale of the stakes – nothing less than freedom, democracy, and justice itself are on the line. He convincingly articulates a sophisticated argument against technological determinism, but simultaneously ascribes a great deal of power to the architectural might of an environment in regulating and shaping behavioral possibilities. For Benkler, the architecture of the law as well as the code are influential, but in many respects the two are

somewhat interchangeable as the law may dictate the functions of the software. Both the legal code and the software code coalesce to create the structure of the environments which limit and constrain human choice and freedom.

Benkler explicitly references Castells's "magisterial treatment" of the networked society, and contrasts their approaches, though he views his work as fitting into the trend that Castells identifies:

> *Manuel Castells's magisterial treatment of the networked society locates its central characteristic in the shift from groups and hierarchies to networks as social and organizational models—looser, flexible arrangements of human affairs. Castells develops this theory as he describes a wide range of changes, from transportation networks to globalization and industrialization. In his work, the Internet fits into this trend, enabling better coordination and cooperation in these sorts of loosely affiliated networks. My own emphasis is on the specific relative roles of market and nonmarket sectors, and how that change anchors the radical decentralization that he too observes, as a matter of sociological observation.*[11]

Benkler takes the emergences of the networked society as his starting point, and focuses his work on developing a taxonomy of coordinated social production and the implications of new hybrid forms of production on society and markets. He describes his analysis as "practical and human centric," a global theory grounded in moral agency, in contrast to the kinds of political theories which abstract humans as citizens or rights holders. For Benkler,

> *the necessity for the state's affirmative role is muted because of my diagnosis of the particular trajectory of markets, on the one hand, and individual and social action, on the other hand, in the digitally networked information environment. The particular economics of computation and communications; the particular economics of information, knowledge, and cultural production; and the relative role of information in contemporary, advanced economies have coalesced to make nonmarket individual and social action the most important domain of action in the furtherance of the core liberal commitments. Given these particular characteristics, there is more freedom to be found through opening up*

> *institutional spaces for voluntary individual and cooperative action than there is in intentional public action through the state.*[12]

These assumptions and attitudes deepen the connections between Benkler's *Wealth of Networks* and the title it self-consciously references, Adam Smith's *An Inquiry into the Nature and Causes of the Wealth of Nations*.[13] Published in 1776, the *Wealth of Nations* was a seminal economic theory that advocated free markets and postulated the invisible hand as an organizing, prescriptive principle. Both Smith and Benkler ground their analysis on the primacy of individual agency, and derive freedom and prosperity from our emergent collective behavior. In the introduction to the 1952 reprint the *Wealth of Nations,* Ludwig Von Mises writes:

> *Smith did not inaugurate a new chapter in social philosophy and did not sow on land hitherto left uncultivated. His books were rather the consummation, summarization, and perfection of lines of thought developed by eminent "mostly British" authors over a period of more than a hundred years. They did not lay the foundation stone, but the keystone, of a marvelous system of ideas. Their eminence is to be seen precisely in the fact that they integrated the main body of these ideas into a systematic whole. They presented, with admirable logical clarity and in an impeccable literary form, the essence of the ideology of freedom, individualism, and prosperity.*

Like Smith, Benkler is not sowing uncultivated land. Rather, he attempting to update the political economy Smith describes in the context of the Information Age with a precision and clarity absent from earlier academic writing.

At its core, Benkler's work is a reminder for all on the power of sharing.[14] We stopped trying to teach people to share after kindergarten, whether or not they learned the lesson. Benkler demonstrates how in a networked information economy, new modes of production emerge which challenge the prevailing economic intuition. He reminds us that "human beings are, and always have been, diversely motivated beings. We act

instrumentally, but also noninstrumentally. We act for material gain, but also for psychological well-being and gratification, and for social connectedness. There is nothing new or earth-shattering about this, except perhaps to some economists."[15] Crucially, in a networked world, these forms of social production may have profound economic side effects, as the network allows for aggregation and assembly, and the software systems accumulate and save these snowflakes, one by one, until eventually there is a substantial snowbank.

Multicast Transmissions

Benkler's work is a multifaceted theory that serves multiple purposes depending on the perspective of the reader. Teasing his book apart into its constituent arguments and identifying its intellectual vector is a difficult task, since the treatise stands as a coherent, interwoven, narrative. It is essential to identify the threads describing the transformations in communication, production, and consumption Benkler outlines, from his optimism around a possible form these transformations might take. His book seems squarely aimed at inspiring policy reform, especially in the area of Intellectual Property law. In a talk he gave about his work in May 2006 he states:

> *The emphasis I want to place here... will be on how this translates into a variety of current policy debates that are going on the policy side in the wrong direction, even though society, market, and technology are all pushing in what I consider to be the right direction. And there's a deep conflict between the direction in which the political system, the judicial system, and the regulatory system are pushing policy, trying to squelch the direction in which market, society, and technology are pushing us.*[16]

It is difficult to speculate on the intended audience for this book as Benkler is a legal scholar and historian who is role-playing as an economist. From the allusion to

Smith's *Wealth of Nations*, it is fair to infer that he intends this book as a prescription for organizing individuals, institutions, and the markets that bind them. The book will likely be read by academics, intellectuals, and entrepreneurs, but is not likely to top the bestseller list. The primary role for this book is to seed another tier of writers and thinkers who can widely disseminate these ideas in a format that is less dense and more easily digestible. Benkler positions the book as a rogue aircraft carrier, from which more nimble strikes can be mounted against the incumbent powers.

Benkler's optimism about the possible emergence of a democratic networked public sphere is a rhetorical persuasive device that functions as a carrot in his story about why we should care about network protocols and copyright law. He convincingly demonstrates ways that decisions made at the technical and legal layers of these networked systems percolate through the socio-cultural layers, so there are a politics of routers and algorithms. First, if the hardware and software are proprietary, and not transparent, it is impossible to discern these politics. But, as with Robert Moses' bridges[17], these features of the system permit, suggest, and constrain behaviors throughout the network and their influence extends beyond the machine room.

He largely omits the dystopic directions these developments could follow, barely examining the social implications of living in a world where all social interactions have been commodified, and personal favors have all become transactions. The possibilities for exploitation in a networked information economy are in some respects more brutal than exploitation in an industrial economy, as an information worker's creativity, emotions, and identity are exploited, not just their bodies and labor[18].

Benkler's treatise on the networked information economy is punctuated with many architectural analogies and a few diagrams and graphs and that illustrate the topologies that his theory is built upon.

> *The fundamental elements of the difference between the networked information economy and the mass media are network architecture and the cost of becoming a speaker. The first element is the shift from a hub-and-spoke architecture with unidirectional links to the end points in the mass media, to distributed architecture with multidirectional connections among all nodes in the networked information environment.*[19]

A few diagrams show the mathematics of network theory – normal distributions and the long tail, others show the complex distribution patterns of collective action. There were also occasions where Benkler used tables of numbers and concepts that would have certainly benefited from a more stylized visual treatment. In particular, Table 2.1 on Ideal-Type Information Production Strategies synthesizes the main thesis of the book[20], but the presentation and detail is somewhat sloppy and unimpressive. Overall, if works like these were regularly regarded as architectural in spirit and nature, the expectations around communicating their messages visually would be much higher, and their effectiveness and persuasiveness might be vastly improved.

Perhaps the most effective way to illustrate the extent of the vacuum that an image deprived, spatial theory leaves behind is to contrast the abstract language of "a distributed architecture with multidirectional connections among all nodes" with a whimsical map of online communities that instantly conveys the nuance and the degrees of freedom that a distributed architecture affords.

Online Communities – http://www.xkcd.com/256/

While the destruction of a single, centralized, "hub" of control *might* lead to freedom and equality, a distributed architecture is an under-determined description. If every node in the network is connected to every other node in the network, we could also describe this state as the heat death of the communicative universe — a uniform, flattened, and homogenized reality. Otherwise, we need to discuss the actual and idealized cartography of the network, an exercise in urban planning.

Broadcast Rituals

Benkler insisted upon taking the bold step of releasing his work under a Creative

Commons license, and the entire work is available for download in multiple formats, with the explicit permission to remix the work as long as the derivative is attributed to the author. Furthermore, Benkler created a wiki site containing the full text of the book where anyone can join and comment or annotate the on contents of the book. These actions performatively demonstrate the core message of the work – there are many motives for creative production other than monetary market forces. Unfortunately, the wiki also negatively confirms a sub-theses of the work which attempts to describe the ideal conditions for effective peer-production – the wiki is a ghost town, attracting mostly spam and pornography, and not much substantive discourse. Recently, Yale University Press has set up an alternative environment[21], with a slightly different participatory architecture than the older Mediawiki[22], presumably in the hopes of encouraging a higher quality of engagement.

Benkler's book focuses on the present, and his case studies draw on recent Internet history, already fading fast. A deeper historical perspective on social production would likely stabilize and illuminate his perspective and help shape the debate around this work. He does not openly account for the tremendous investment that goes into building the Internet's infrastructure, and his analysis of marginal costs assumes this infrastructure is already in place. Similarly, he does not account for the losses incurred as we all attempt to absorb the costs of overcommunication, miscommunication, and communication overload.[23] His analysis is largely rooted in the western democratic world, as the architecture of the infrastructure elsewhere does not match the constraints he focuses on. The oppressive conditions in the third world and under non-democratic

states testify to the fortuitous state of today's western Internet.

Fred Turner's *From Counterculture to Cyberculture*[24] tells the story of how a suite of technologies originally developed by and for the military-industrial complex came to embody the techno-utopian dream. He reminds us vividly how it this architecture, and the way it is furnished and lived in, was neither necessary nor planned. As Lawrence Lessig has argues in his updated *Code: Version 2.0*, the Internet of 1995's end-to-end principle[25] can be easily thwarted by additional layers of control. Similarly, Jonathan Zittrain argues in *The Future of the Internet and How to Stop It*[26] we might be hurtling towards a world where proprietary networks and devices shatter the Internet as we know it into isolated fragments, controlled by the power elite. Benkler is connected to both Lessig and Zittrain, and they all attend many of the same events, review and recommend each other's books, and serve on the boards of the same organizations. He is not oblivious to these arguments – rather he has chosen to advance his vision of the future by focusing on the positive realities we can collectively choose to construct.

Benkler himself was actually a member and treasurer of Kibbutz Shizafon from '84-'87, according to his own CV.[27] Cursory research turned up that this Kibbutz collapsed sometime after he left, though another one has been founded on the same site.[28] Benkler's membership in a socialist agrarian community, where peer-production is peer-driven and motivated by peer pressure surely influenced his worldview. *** A standard critique of Benkler draws parallels between the Free Software movement and the unsustainability of Kibbutz-style socialism, which often collapses after the first generation of pioneers. There may be hope, however, in the distinction between projects

organized around a common ideology rather than an individual charismatic leader.

Theoretical Permits

The Wealth of Networks works by weaving together a compelling narrative around some recent case studies that defied popular intuition and demand an explanation. It also feeds our desire to believe that we are living in a unique and formative moment in history, and that if we choose wisely, we can shape a bright future. It views history as progressive and mostly stable, punctuated by shocks that disrupt the equilibrium:

> *Social and economic organization is not infinitely malleable. Neither is it always equally open to affirmative design. The actual practices of human interaction with information, knowledge, and culture and with production and consumption are the consequence of a feedback effect between social practices, economic organization, technological affordances, and formal constraints on behavior through law and similar institutional forms. These components of the constraints and affordances of human behavior tend to adapt dynamically to each other, so that the tension between the technological affordances, the social and economic practices, and the law are often not too great. During periods of stability, these components of the structure within which human beings live are mostly aligned and mutually reinforce each other, but the stability is subject to shock at any one of these dimensions.*

Many sociologists would take issue with this stance, as despite its provisions, it still downplays the notion that change comes from within. Benkler is telling us a story we want to hear. That the material conditions in the world around us are changing in ways that many of us will find appealing. We mostly need to stay the course, and do not need to struggle significantly, since the (enlightened) market forces are amazingly aligned with the best interests of democracy, freedom, and justice. While this approach may be better than the politics of fear, it needs to be read within the broader context of Benkler's colleagues to situate his optimism within a realistic frame. Nonetheless, his work is a powerful and convincing treatise on the forms of hybrid economies that networked

participatory architectures are pressuring us towards, though their cultural impact is under-determined.

The *Wealth of Networks*, and the larger discourse it is embedded within, engages the core issues that Architecture has contended with since its conception. Information society theorists aspire to capture the divine proportions of democracy, freedom, and justice within the cosmos of cyberspace. The digital commons needs fully constituted "master builders" (arkhitekton) if we are to enjoy the potential benefits of its structures and environments. The history, theory, and criticism of Architecture has many lessons to teach these prodigal builders. The values represented in the education of an architect, the design methodology centered around the studio and the critique, and the cultivation of an aesthetic sensibility informed by social and cultural theory, can easily be transposed to the network. It is imperative that we embrace this paradigm or we face and endless stream of social software that is the moral equivalent of grain silos and "The Big Duck."[29]

[1]Immanuel Kant and Norman Kemp Smith, *Critique of Pure Reason* (London; New York: Macmillan ; St. Martin's Press, 1964). A24, A26.
[2]Yochai. Benkler, *The Wealth of Networks : How Social Production Transforms Markets and Freedom* (New Haven [Conn.]: Yale University Press, 2006).
[3]Paul Thagard and Craig Beam. "Epistemological Metaphors and the Nature of Philosophy." Metaphilosophy 35.4 (2004): 505-516
[4]Christopher Alexander, Sara Ishikawa, and Murray Silverstein, *A Pattern Language : Towns,Buildings, Construction* (New York: Oxford University Press, 1977).
[5]Erich. Gamma, *Design Patterns : Elements of Reusable Object-Oriented Software*, Addison-Wesley professional computing series (Reading, Mass.: Addison-Wesley, 1995).
[6]The Cathedral and the Bazaar analogy was made famous by Eric Raymond. Eric S. Raymond, *The Cathedral and the Bazaar : Musings on Linux and Open Source by an Accidental Revolutionary* (Beijing; Cambridge, Mass.: O'Reilly, 2001).
[7]Manuel Castells, *The Rise of the Network Society: The Information Age: Economy, Society and Culture, Volume I (The Information Age)* (Blackwell Pub, 1996), *The Power of Identity: The Information Age: Economy, Society and Culture, Volume II (The Information Age) (Blackwell Pub, 1997), End of Millennium: The Information Age: Economy, Society and Culture, Volume II (The Information Age) , (Blackwell Pub, 1998).*
[8]Benkler, p. 2.
[9]Vaidhyanathan, Siva,Open Source as Culture-Culture as Open Source. OPEN SOURCE ANNUAL 2005, Clemens Brandt, ed., Berlin: Technische University, 2005. Available at SSRN: <http://ssrn.com/abstract=713044>.
[10]See, for example, descriptions of Barak Obama's internet campaign, which was widely described as "open source," although it would be more accurate to describe the campaign as peer-produced, but not commons based. E.g. Shailagh Murray and Matthew Mosk, "Under Obama, Web Would Be the Way," *The Washington Post*, <http://www.washingtonpost.com/wp-dyn/content/article/2008/11/10/AR2008111000013.html>.
[11]Benkler, p. 18.
[12]Benkler, pp. 21-22.
[13]P. J. O'Rourke and Adam Smith, *On The Wealth of Nations*, Books that shook the world (London: Atlantic Books, 2007).
[14]Many of the criticisms of Benkler's theory were developed over many great conversations with my cohorts here at the Columbia School of Journalism. A summary of some of our conversations is posted here: <http://www.columbia.edu/~bjp2108/blog/2008/03/anna-schwartz-reviews-and-i-respond-to.html>. Accessed October, 26 2008.
[15]Benkler, p. 6.
[16]<http://public.resource.org/20060531_Benkler.html>. Accessed October 26, 2008.
[17]An (apocryphal?) example of the ways in which artifacts have politics are the bridges that Robert Moses built in Long Island, which were purportedly too low for buses to pass underneath them, keeping the masses (who traveled by public transit) from visiting the beaches. The historical accuracy of this story is contested, but is irrelevant for the purposes of this rhetorical point. Winner, Langdon (1980) "Do Artifacts Have Politics?" in Daedalus, Vol. 109, No. 1, Winter 1980, Boston, MA.
[18]For a detailed critique of the exploitation of the knowledge worker in the networked information economy, see: Nigel Thrift, (2006) "Re-inventing invention: new tendencies in capitalist commodification" *Economy and Society,* Volume 35 Number 2 May 2006: 279306
[19]Benkler, p. 212.
[20]Benkler, p. 43.
[21]<http://yupnet.org/benkler> - A site running CommentPress, a wordpress-based (<http://wordpress.org>) commenting/annotation platform.
[22]The free/open source Mediawiki software is the same engine that powers the Wikipedia website <http://www.mediawiki.org>.
[23]Rasmus Neilson, "The Labors of Internet Assisted Activism: Overcommunication, Miscommunication, and Communication Overload" (paper presented at Politics: Web 2.0, April 17, 2008). Available at <http://tinyurl.com/6s8lx8>.
[24]Fred Turner, *From Counterculture to Cyberculture : Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (Chicago: University of Chicago Press, 2006).
[25]Lawrence. Lessig and Lawrence. Lessig, *Code : Version 2.0* (New York: Basic Books, 2006). p. 44.
[26]Jonathan Zittrain, *The Future of the Internet and How to Stop It* (New Haven [Conn.]: Yale University Press, 2008).
[27]<http://www.benkler.org/CV.html>. Accessed October 26, 2008.
[28]<http://newfarm.rodaleinstitute.org/international/israel/nov/index.shtml>. Accessed October 26, 2008.
[29]The Big Duck (<http://www.nps.gov/history/nr/twhp/wwwlps/lessons/6roadside/6visual2.htm>) is an iconic giant duck-shaped duck shop, criticized by many contemporary architects as ugly and kitch.