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Nurturing Non-Market Spaces in the Digital Environment

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Abstract

Information and communication technologies (ICTs) produce public goods for societies. Through ICTs people can be more politically active, construct their social identities, strengthen bonds with significant others, and more. However, businesses provide access to the Internet, produce and sell hardware and software, while maintaining platforms that are used for the generation of these public goods. There is a contradiction inherent in this dynamic as the continued provision of these public goods is contingent upon private entities deeming them profitable. Within the United States, federal policies have not adequately addressed this contradiction. In this paper, I argue that a change in the way ICTs are conceptualized is needed in order to increase interest in protecting the public goods produced by ICTs. To this end, I describe a model in which interconnected ICTs work in layers to produce a single digital environment. People must have access to each layer in this environment in order to benefit from the goods produced. In this environment, there is room for both market spaces that support commerce and non-market spaces that support public goods. I argue that this model can aid citizens and advocacy groups in framing and justifying the need for nurturing non-market spaces.

Contents

Introduction

Information and communication technologies (ICTs) are used to produce both private goods for the market and public goods for society. On the one hand, the production, buying, and selling of ICTs has spurred economic growth in industrialized countries. On the other hand, ICTs produce public goods for societies. People can be more politically active, can develop their identities, collaborate in new ways, and they can strengthen bonds with friends and family. In Western societies, having access to the Internet and its associated technologies is becoming a prerequisite for being an active citizen.

However, there are inherent tensions between the non-market activities afforded by ICTs and the market oriented entities that sustain them. Businesses provide access to the Internet, produce hardware and software, and maintain the platforms that are used for social interaction. Thus, the production and maintenance of the public benefits provided by ICTs are contingent upon the continued profitability of these businesses. Government policies can address these tensions by protecting and nurturing these spaces. Services such as law enforcement, fire protection and safety, and the provision of utilities such as electricity and sanitation, are considered too important to the welfare of society to have the whims of the free market sustain them. These services and utilities are directly administered by government agencies or are tightly regulated through government policy. I suggest that similar distinctions should be made between private and public goods supported by ICTs and that that the public goods should be regulated accordingly.

Unfortunately, American federal policy towards ICTs has narrowly focused on expanding markets for large telecommunications companies. I argue that a change in the way we view ICTs is needed in order to increase citizen interest in protecting the public goods produced by these systems. To this end, I describe a model in which interconnected ICTs work in layers to produce a single digital environment. People must have access to each layer in this environment in order to benefit from the goods produced. Within this new framework, there is room within the digital environment for *both* market spaces that support commerce and non-market spaces that support public goods. This framework can aid policy-makers and advocacy groups in justifying the need for nurturing non-market spaces.

United States federal policies governing information and communication technologies

Baker and de Sa [1] argue that "the modern trajectory of [American] federal communications policy has been directed toward creating and protecting competitive communications services markets." In addition to Baker and de Sa's claim, I add that the beneficiaries of these policies have primarily been large, incumbent companies. I focus on two of the more widely discussed policies — one aimed at infrastructure and one aimed at content — that illustrate this general trend.

The Telecommunications Act of 1996

The stated goal of the Telecommunications Act of 1996 was to "let anyone enter any communications business — to let any communications business compete in any market against any other" (U.S. Federal Communications Commission, 2015). The act mandated that established companies with already built communication lines must lease their networks to newer companies and companies must interconnect with each other. In this way, a newer company could use the communication lines already put in place by established companies and have access to the users on other companies' networks. Although the act was meant to increase competition among service providers, the years that followed saw a consolidation of the market (Howard, 1998; Fu, 2010; McChesney, 2013). Thus, "nearly 20 percent of U.S. households have access to no more than a single broadband provider ... all but four percent of remaining households has, at most, two choices for wired broadband access" [2].

The act also focused on "increasing access to evolving services for consumers living in rural and insular areas, and for consumers with low-incomes" (U.S. Federal Communications Commission, 2016). Several programs falling under the title of "universal service programs," funded through taxes levied on telecommunications companies, were initiated to provide access to rural and low income Americans [3]. These programs opened up new markets by subsidizing the building of communication lines for hard to reach populations. The largest program attempting to achieve universal service is the Connect America fund. This fund provides over US$500 million annually in subsidies to telecommunications company Century Link to bring 10mbps broadband service to rural areas. Similarly, AT&T was awarded over US$525 million annually for the same purpose. The benefit to consumers is that they will have access to faster Internet service. However, the greatest beneficiary of the Connect America Fund and the Telecommunications Act are large telecommunications companies like Century Link and AT&T whose access to new customers is subsidized.

Digital Millennium Copyright Act of 1998

The Digital Millennium Copyright Act (DMCA) protects intellectual property, and does so in two ways. First, the act prohibits direct breaches of copyright. This includes the unauthorized duplication or sharing of music, video, and software. Second, the act prohibits tools (computer software) that allow consumers to circumvent copyright protections encoded into digital goods (DRM).

A key component of the DMCA is the 'safe harbor' provision. Safe harbor means that Internet service providers (ISPs) will not be held liable for infringing material if they disable access to the material upon request from the copyright holder. Safe harbor has also been extended to content platforms like YouTube and Google. A copyright holder can send letters (takedown requests) to platforms, claiming that videos hosted on their Web site are infringements on their copyright. The platform can avoid liability by removing the material on the good faith belief that the content is infringing. Safe harbor protects market activities by protecting the buying and selling of intellectual property.

Scholars have argued that the DMCA stifles cultural production and innovation (Lessig, 2008; Litman, 2001; Chused, 2014). The way in which the DMCA is executed makes it easier for large entities to 'bully' small companies or individuals through the use of takedown requests. In many cases, the content thought to be infringing copyright is covered under fair use policies or has been modified and remixed to the point in which it is a new cultural product. In theory, the producer of the removed content can provide to the ISP or the content platform a counter notification indicating that the material is not infringing. In practice, individuals or even small businesses do not have the resources to invest in such measures. The rise of automated takedown requests has given even more leverage to entities that have the resources to implement this technology. The number of takedown requests skyrocketed from 100 in 2009 to 345 million in 2014 (Karaganis and Urban, 2015).

The DMCA is a market-friendly policy. It protects copyright holders and the companies who make the content available to the public. However, many forms of user-generated content are less protected and in most cases their production is threatened. People use the Internet for self-expression. Even if they are using copyrighted content, it is not for the purpose of commerce [4]. There is a vibrant remix or mashup culture online of tweets, videos, text, and other memes (Lessig, 2008; Shifman, 2013). This culture generates new symbolic products from older copyrighted ones and is being hampered by clumsy digital copyright rules as well.

The FCC orders of 2010 and 2015: An example of viewing technology through a different lens

The two policies discussed above illustrate the market-centered approach that dominates American telecommunications policy. However, the Federal Communications Commission (FCC) Order of 2015 represents a deviation from this trend. It is an example of a federal policy that recognizes the public benefits afforded by ICTs and does not attempt to sustain these benefits with market-based solutions. Crucially, the justification for the passage of the order rested on a reclassification of the Internet from an information service to a public utility.

Advocacy groups had argued for some time that the principle of 'network neutrality' was in danger. Network neutrality is the principle that ISPs cannot discriminate in favor of a given content, site or platform by charging different rates for access to those platforms or changing the traffic speeds between these platforms and the subscribers on their networks (Wu, 2003). The pipes transporting data packets should be 'neutral' and handle all data on a first come, first served basis. If service providers like Verizon or AT&T could discriminate, they have a strong incentive to favor their own content, or a favored third party. Individuals or small companies producing content would be at a disadvantage as they could not pay any extra fees which ISPs may charge for a 'fast lane' service to transmit data to subscribers. A relaxation of network neutrality boosts market activities. New streams of revenue are possible as companies sell different speeds and content packages. Conversely, a tightening of network neutrality rules supports non-market activities by protecting individuals and organizations who wish to produce content or services that do not generate a profit.

In 2010, the FCC attempted to make net neutrality law by issuing their Open Internet Order of 2010. This was the first attempt by the FCC to apply network neutrality rules to service providers [5]. The proposed order would have prevented blocking (the prevention of data transmission for a given application or service) and throttling (the slowing down of data speeds). In extreme circumstances, service providers could manipulate speeds however these actions would have to be transparent to consumers. This first attempt at policy was deemed unconstitutional because the Internet had been designated by the FCC as an 'information service,' and thus could not be regulated in this manner.

In March of 2015, the FCC voted to reclassify broadband Internet as a public utility. This reclassification allows the FCC to legally enforce network neutrality rules. Mirroring the 2010 order, the FCC prohibits the blocking and throttling of data under normal circumstances. The 2015 order also prohibits paid prioritization or the selling

of ‘fast lanes.’ In this way, network neutrality rules were strengthened. As Starr (2016) writes, “the FCC has proposed a standard that achieves these goals without infringing upon innovative practices, or end user access to the open internet” [6].

The FCC Order of 2015 is significant because it illustrates the importance of a conceptual change. Thinking of broadband as an information service had made it easier to rationalize the provision of this service via the free market. However, by seeing it as a public utility, mechanisms were put in place to ensure that the public can have these services. To be sure, customers are still paying a business to provide them with this public utility, which is problematic, as I will discuss below. However, the point I am making is that a conceptual change preceded a change in policy.

The tensions between market and non-market spaces

There are a number of tensions between the desires of private enterprise and the desires of the public with respect to ICTs. These tensions are inherent in the provision of public goods by private entities. In most instances, privately held businesses happily provide the public benefits that are afforded by ICTs. However, the underlying imperative to produce a profit means that this public benefit is always contingent upon its ability to aid in generating revenue. This is evident in the following examples.

Free speech

When free speech and risk of losing market share collide in market spaces, free speech loses. Several instances illustrate this point. Over the past several years, Google has made moves to restrict pornography. It has banned pornography from appearing in its online ads, from being shown publicly on its blogger site, and banned adult content from its Google Glass network. Facebook launched what it calls an ‘Initiative for civil courage online’ [7]. The initiative “aims to remove hate speech from the site by finding and then removing comments that promote xenophobia” (Griffin, 2016). Pornography and racism may be distasteful, but within an American context it is vital that the speech of others be protected. Indeed, it is only unpopular speech that needs to be protected. As private businesses, Google and Facebook have no incentive to sully their reputations by taking principled stands and protecting unpopular speech.

Coding for profit making behaviors

As companies become more adept at monetizing behavior, ICTs will be designed and coded with those behaviors in mind. “Tethered” devices — hardware that is connected to the Internet, but only modifiable by their manufacturers — severely limit the freedom users have to control their experience (Zittrain, 2008). From a market standpoint, companies have little incentive for allowing someone to tweak and modify their devices. Moreover, giving consumers flexibility with their devices increases the chances of copyright infringement. Apple has a closed system and iPhone owners who used a third party to repair their phones found that their devices had been disabled (Brignall, 2016).

Content providers are constantly experimenting with new ways of channeling consumer behavior in more profitable ways. YouTube has unveiled a new service called YouTube Red. This service offers an enhanced, advertisement-free video service. YouTube faces the same reality as other platforms, including Twitter, who rely on ad-based business models that struggle to become profitable. Despite having more than one billion users per month, as of February 2015, YouTube was not turning a profit (Winkler, 2015). Even Netflix, a content provider that is profitable, continues to tweak its services to extract as much revenue as possible. In the early days of the service, a user could buy a subscription and loan that subscription to others. Netflix has since recoded their services to protect against such sharing of services. Subscribers must now pay for multiscreen options. Possibly the most well-known example of content providers organizing human behavior are the algorithmically constructed “filter bubbles” (Pariser, 2011) of personalized information users find themselves in when using Google’s search engine.

Neglected populations

With regards to access, minority and low-income populations may be underserved because companies have less incentive to reach them. ICTs, like most products that require a heavy initial investment, are aimed at mass markets. At least in this respect, federal policy has acknowledged this tension and initiated programs to address it. While these programs recognize the shortcomings of a purely market oriented approach, as noted above, these programs are about access and ultimately provide new consumers for companies.

With regards to online content, there is still a danger that minority voices may not be heard, or rather, minority voices that do not elicit enough ‘clicks’ will be deemed unsuitable for online media outlets. The notion that the Internet can contribute to the stifling of different opinions seems at odds with general understandings. The common narrative is that the Internet has lowered barriers to entry and more people and groups are able to get their voices heard than ever before. There is some truth to this as evidenced by social movements such as #Occupy and #Blacklivesmatter. However,

Hindman (2009) has shown convincingly that in every aspect of online political consumption a few individuals or entities dominate the marketplace of ideas. The top 200 newspaper outlets (*e.g.*, *New York Times*, *Washington Post*) command *greater* market share online (measured primarily in click shares) than they do in their print versions. More worrying is the domination of the blogosphere by elites, as Hindman writes:

> Overwhelmingly, they are well-educated white male professionals. Nearly all of the bloggers in our census were either educational elites, business elites, technical elites, or traditional journalists. It is therefore difficult to conclude that blogging has changed which sorts of citizens have their voices heard in politics. [8]

In a pure market environment, the opinions of racial minorities, gays and lesbians, women, and people from working class and poor backgrounds may be crowded out. Media companies in the digital environment will clamor for clicks in the same way that traditional media in the physical environment sought listeners and viewers. The hard logic of the click may take precedence over the ethical obligation to include diverse voices.

A new lens: The digital environment

The argument thus far is that American telecommunications policy takes a market-based approach, and that these policy decisions endanger the public benefits produced by the Internet and networked computing. Unfortunately, public interest in securing these benefits appears to be lacking if mainstream news coverage is any indication. For example, the debate over network neutrality has been arguably the most visible telecommunications policy issue over the last decade. Yet, a 2014 report from the Pew Internet and American Life project states:

> An analysis of 2,820 news programs from January 1, 2014 through May 12 across eight different network and cable news channels found just 25 programs mentioned the term net neutrality. What's more, six of those programs, the most of any channel, were on Al Jazeera America, a new channel that is not available in many American households. On, CNN, the second-largest cable news network, we found just a single program mentioned net neutrality in the 658 programs on CNN studied since January. [9]

This lack of interest may be because of how ICTs are conceptualized and framed within the public discourse. In this section I discuss a conceptual model of the space created by the Internet and its associated technologies that may reframe the debate. This model does not view ICTs as distinct pieces of technology or communication media. Instead, this model conceptualizes ICTs as producing a *single*, distinct environment. This environment is a lived space(s), possessing social forces distinct from the physical environment. It is these social forces that give rise to the public goods we cherish.

Seeing ICTs as producing lived spaces, as opposed to solely a mechanism for communication, mirrors Castells (2000) distinction between the "space of flows" and the "space of places." The former are places and the people in them who have taken advantage of ICTs to tap into global information flows. They are highly networked, stateless, and global in outlook. The latter have access to these flows to a lesser extent, are parochial in outlook, and value the traditions of their particular environment. As mentioned above, the FCC reclassified broadband Internet from an information service to a telecommunications service understood to be a public utility, thereby allowing the agency to enforce network neutrality rules. Changes within academia also parallel this reasoning. Scholars concerned with ICT usage and inequality have moved from exploring access to the Internet to exploring the ways in which people use the Internet. The former could be labeled "digital divide" studies and the latter could be labeled "digital inequality" studies (Attewell, 2001; DiMaggio, *et al.*, 2004). This shift in academia acknowledges the more complex behaviors that are now possible in the digital environment and the understanding that these behaviors matter for life outcomes. For example, Donner's (2015) "after access lens" for mobile Internet usage, focuses on how mobile telephony "provide opportunities for individuals and communities to reconfigure their relationship to information and space in potentially powerful, productive ways" [10]. In the paragraphs below I describe a model that also reflects this more complex understanding of the Internet.

A layered environment of interconnected ICTs

Computer scientists and engineers conceptualize the Internet and its associated technologies as a 'layered' system. Like scholars such as van Schewick (2010) and Zittrain (2008), I use this understanding to contextualize important implications that move beyond technological aspects.

Table 1 shows a model of a layered digital environment, emphasizing the social aspects of ICTs. Seven layers are presented, starting with the bottom layer of infrastructure and ending with a top layer of human users. For each layer I give a description and examples. A path of inputs can be followed from the bottom layer to top layer. The infrastructure layer comprises the cables, satellites, and cell phone

towers that allow various pieces of hardware to connect to each other. An Internet service provider, in the infrastructure layer, provides access to its broadband and Wi-Fi connection to a device in the hardware layer. These pieces of hardware are then used as platforms for the millions of software applications. Thus, Firefox is a Web browser that allows users to use their hardware to find files (Web sites) on the World Wide Web or Instagram makes it easier for users to share photos with each other. The top two layers, content and human, rely the most on human manipulation instead of code, and are the most theoretically rich for social scientists. Yet the principle of layering still applies. Through the use of software, humans have the ability to produce and consume content. This content becomes the input for the human layer, such that meanings are generated through the interpretation of text, music, and images.

Table 1
The Layers of the Digital Environment

Type of Layer	Description	Examples
Human	The direct communication between users	Responses to content, meanings generated from content
Content	The information that is produced and housed on the Internet	Text, Documents, Videos, Music
Software	The programs that allow users to take advantage of computing powers of hardware	MS Excel, Internet Explorer, Firefox, MS Office, Skype
Hardware	The types of machines that transmit and receive data	Laptops, Tablets, Mobile Phones, Internet enabled everyday devices
Infrastructure	The wires and airwaves over which data is transmitted	Fiber Optic Cables, Wi-Fi Connections

An environment with unique social forces

Scholars have pointed out the many changes in micro and macro level behaviors afforded by the proliferation of ICTs. From a sociological perspective, these affordances are social forces that, once an individual enters the digital environment, enable and constrain human behavior. These social forces are, in effect, the public

benefits produced through the digital environment. There are many, and I list several of the more prominent here.

First, the production of symbolic content has been democratized. People no longer need bureaucracies and large companies to aid in the making and transportation of things that have value in society. Through personal computers, people produce texts, video, audio, ideas, and can share these with anyone. Second, time and space are compressed. Digitized data moves through interconnected computer networks at speeds that seem almost instantaneous. Distance is no longer a major barrier to communication. Third, we are pseudonymous online. Baym (2015) argued that we bring our gendered and cultural selves into the digital environment. While this is true, this importing of identity is voluntary and at any rate there remains a level of anonymity possible when navigating the digital environment. This aspect of the digital environment gives users the freedom to develop one or several digital identities (Siles, 2012; Lingel and Golub, 2015).

Fourth, human made code determines the laws that must be followed. Unlike in the physical world where people must understand and manipulate laws that are not of their making, the characteristics of the digital environment are produced. The design of a given social media platform (*i.e.*, the code used to produce the platform) has a direct influence on the type of social behaviors present on that platform (Lüders, 2008; Papacharissi, 2009). In the infrastructure layer, the decision on what protocols are used for networking hardware has been the subject of much debate (see DeNardis, 2009). Code is also an enabler, and machines can be coded to foster the public goods produced by ICTs. For example, after describing how social media companies maneuver for user attention, van Dijck writes:

> Algorithms undergirding all kinds of social acts are becoming increasingly compatible and thus interchangeable ... Code could be considered the new Esperanto of online sociality — a universal currency that makes social, cultural, political, and economic discourses interchangeable. [11]

A porous, but distinct environment

In the early days of studying the Internet, much was made of a ‘virtual world” — a world that was foreign and distant from the physical world. This understanding has fallen out of favor amongst scholars. Advances in technology make the move between the physical and digital environments almost seamless and the distinctions between them less glaring. It is well understood the ICTs have a societal impact on people, even if they are not using these technologies (see Webster, 2014). However, in order to directly experience the social forces produced in the digital environment and

manipulate the public benefits, a person must use that technology directly and enter into that environment. Therefore, another way of describing the relationship between the physical and the digital is that the boundaries separating the two are semipermeable or “porous.” This perspective recognizes the almost seamless connection between the physical and the digital, yet acknowledges that actions must be taken to move between the two.

This framing of the digital environment may seem to have little import on the understanding of ICTs, market spaces, and non-market spaces. However, I suggest that acknowledging a distinct environment is fundamental to the argument. In the simplest sense, without recognizing that people must do something in order to enter into and experience these public benefits, one cannot conceptualize its distinctness and the ways in which public policy and market forces can restrict entry.

Market and non-market spaces in the digital environment

The argument I have sketched so far is that ICTs create a single digital environment. This environment is characterized by unique social forces not found in the physical world. It is these unique social forces that give rise to the phenomena — the public goods — we have come to expect and enjoy. In order to experience and take advantage of these public goods, individuals must enter into this space.

We can imagine that within this environment are several sub-spaces where different activities take place. These spaces can be delineated by some barrier to entry — for example, a paywall for an online newspaper or the need to register for a social networking site. They may be completely free of obvious demarcation lines, but no less real. Online communities may place few obvious barriers to entry, yet someone who goes to the Web site or uses the hashtag (if it is formed through social media) will soon realize that normative patterns are present and are enforced, establishing a symbolic line of demarcation between outside and inside. In this same manner, we can imagine that within the digital environment there can be both market and non-market spaces. Market spaces are oriented towards the exchange of goods and services regulated by prices, profits, and losses. By contrast, non-market spaces are the platforms, software, communities of people, and even small collections of infrastructure that are managed without the desire to sell products. Ultimately, non-market spaces are needed to ensure non-market activities.

An argument can be made that making a distinction between market and non-market — be it spaces or activities — is artificial. For example, Banks and Humphreys (2008) argue for a change in the way scholars view the relationship between the producers of content for non-market purposes and the businesses that use this content for profit. They write:

> The consequences of commercial enterprises coming to rely on this form of [social] production to varying degrees is not necessarily outright cooptation or appropriation, but the emergence of new social network market institutions and processes, in which the commercial entities are changing shape as they seek to harness the productive activities of amateurs. [12]

Similarly, working from a feminist-Marxist perspective, Jarrett argues that "binaries are fundamentally unhelpful in understanding the complexity of economically significant but socially important labour such as ... digitally mediated social interaction" [13].

Banks and Humphreys, as well as Jarrett, introduce a theoretically fruitful level of complexity to human activities in the digital environment. However, the purpose of the conceptual model presented here is to simplify to the point where individual citizens and policy makers can envision ways of protecting public goods in the digital environment. These ends call for a clear typology of spaces and activities, so that groups and policy makers can identify and potentially produce policies based on those categories. Aside from these practical reasons, I make a theoretical claim that the *space takes precedence over the activity*. The space is the ultimate judge of productive and unproductive, competitive or cooperative activity. Market spaces in private hands produce, ultimately, market activities — even if these activities are perceived as non-market by those undertaking them.

Table 2 gives examples of activities divided by market type and layer. I discuss three of these layers — infrastructure, content, and human. I choose these three because they illustrate different types of within-layer dynamics. The infrastructure layer is heavily skewed towards the market, with little non-market activity. The content layer has a healthy mixture of market and non-market spaces. The human layer appears to be dominated by non-market activity, but in reality these are market spaces that have monetized non-market activities.

Table 2
Activities Done in Market and Nonmarket Spaces by Layer

Layer	Sample Market Activities	Sample Nonmarket Activities
Human	Allowing users to use a platform in exchange for the monetization of their behaviors (e.g. Twitter, Facebook)	Sharing content for identity development, social movements, online communities
Content	Using online platforms that either sell content (e.g. Netflix) or fund access through selling of advertisements (e.g. YouTube; Netflix)	Creating open access content, copyleft content (e.g. Creative Commons, First Monday)
Software	Buying and selling of software (e.g. Microsoft Windows)	Use of Free and Open Source Software (FOSS) (e.g. R statistical program, Linux operating system)
Hardware	Buying and selling of hardware (e.g. laptops, mobile phones)	Using government funded subsidies for the purchasing of hardware
Infrastructure	Selling of Internet subscriptions	Community run broadband, Wireless Community Network

The infrastructure layer is dominated by a market space where Internet subscriptions are bought and sold. In most markets, consumers only have one or two choices for gaining Internet access. Given the lack of choice and the fact that the infrastructure layer is the most necessary layer, there is an urgent need for nurturing non-market spaces in this layer. One option is for a local municipality to build a network for its citizens. Access to the network is then provided at no cost or for a fee that is well below that of commercial ISPs. In this way Internet infrastructure is run like a public utility. The long-term feasibility of municipal broadband is still unclear as it has had its share of failures (see Tapia and Ortiz, 2010) as well as successes in Chattanooga, Tennessee (Wyatt, 2014) and Lafayette, Louisiana (Jervis, 2012).

The content layer is characterized by vibrant market and non-market activities and spaces. This is in spite of the DMCA, which has given a disproportionate amount of power to large companies that produce content. In the content layer, spaces that support the buying and selling of video on services like Netflix and Hulu are alongside spaces that sustain the sharing of content that have less stringent or no copyright protections. The open access movement, an effort to offer academic research without cost to scholars and the public, has grown over the past decade (see Suber, 2012). The non-profit organization, Creative Commons, has established a set of copyright licenses that allow owners of creative works to grant varying levels of

copyright permissions. This is a remedy to the restrictive 'all rights reserved' copyright attached to most creative works. Wikipedia has adopted an 'Attribution-ShareAlike' license. Content can be copied and shared from Wikipedia as long as it is properly cited and any remixed content must also be licensed as Attribution-ShareAlike.

It is in the human layer where the bulk of scholarly work within the social sciences has taken place. This is the layer that scholars credit for aiding numerous modern social movements like the Arab Spring and the Occupy Movement. This is also the layer where the various types of virtual communities reside. The increased level of political participation is also best understood as occurring in the human layer. The bulk of public goods that scholars explore and laypersons cherish are found in this human layer. The irony here is that the layer that produces the most identifiably public goods is also the layer most dependent upon private companies. Most of the social movements, virtual community building, and political participation occur through for-profit entities like Twitter, Facebook, and Instagram who monetize user behaviors (technically speaking, it is the manipulation of content made possible by proprietary software giving commands to a piece of hardware).

Fuchs' (2008) model of cooperation and competition parallels some of the ideas presented here. By comparing the present model to Fuchs' well-known work, I can more clearly delineate the present model's distinguishing characteristics. First, Fuchs's model is meant to explain the information society writ large. His levels climb from individual actors to institutions to international communication ecologies, and its scope spreads to all domains of life from the economy to culture to politics. By contrast, the model I present here assumes that technologies produce a distinct environment that can be considered separately (and thus, be more amenable to regulation) from the institutions that have traditionally ordered the physical environment — education, economy, etc. This distinction is important. If, for example, one sees the buying and selling of hardware as not unlike the buying and selling of automobiles, then there is little justification for applying a different logic to the former. It is imperative that hardware be conceptualized as contributing to a distinct space where we live, and on that basis requires special consideration.

Second, Fuchs' theoretical perspective is Marxian. Fuchs' assumption is that the antagonism between cooperation (*e.g.*, non-market) and competition (*e.g.*, market) activities needs to be resolved, with the competitive components of the information society withering away. In writing about competition and cooperation in the economy, Fuchs argues:

> The future could either be a society totally controlled by political-economic monopolies, which could very well result in a new

> totalitarianism or fascism, or a cooperative society in which the common production processes of the multitude become the determining societal force to that self-determination, cooperative ownership, and participatory democracy can flourish. [14]

The model I present does not assume that the profit seeking and competitive aspects of society are inherently detrimental to the digital environment as a whole. The digital environment model suggests that market and non-market activities can co-exist provided the proper regulatory structure is in place.

Policy changes using the digital environment model

The purpose of this paper was to (1) show how federal policy has emphasized the growth of market oriented spaces in the digital environment; (2) explain how this growth has threatened the non-market activities cherished by many; and (3) present a conceptual model that can galvanize efforts to nurture non-market spaces through federal policy. In this section, I illustrate how citizens and advocacy groups can use the digital environment model to justify changes in policy.

Discussions of policy do not need to assume a zero-sum game between market and non-market activities in a given layer. In the same way that life in the physical environment is not completely commodified (although neoliberal ideology pushes us in that direction), so too with the digital environment. The digital environment is vast, providing an array of experiences. And so, the subsidizing of non-market spaces by government funding or changes in policy that orient our institutions to nurturing non-market spaces need not be interpreted as existential threats to business concerns.

One way of thinking about this is by applying the ‘long tail’ phenomenon to the digital environment model. The long tail describes the many niche markets that extend out from mainstream markets in a long tail (imagine a bell curve with one tail of the distribution extending out to infinity). The hip-hop and country music market is mainstream with millions of people buying these products. By contrast, the market for Gregorian chants is niche, with only a relative few people interested. Arguably, the most popular account of the long tail is that of Anderson (2008) who showed how online retailers leveraged the affordances of new technologies to sell niche products and compete with big box stores. Through the selling of niche products in the long tail — including Gregorian chants — online retailers like Amazon and eBay were able to compete with traditional big box stores. The long tail has clear implications for market

spaces and the market activities these spaces foster. But, if we consider the digital environment as a distinct environment where we live, we can broaden the implications of the long tail to niche non-market activities.

For example, consider an organization looking to develop an e-health software application designed specifically for non-English speaking Hispanic males living in racially segregated areas in the United States. The application would facilitate communication with healthcare professionals. The rationale behind this application would be that Hispanic males have poorer health outcomes than white males and this is exacerbated by living in highly segregated areas containing limited healthcare facilities. This application would take into account the specific values, beliefs, and structural barriers of that group and as a consequence would be a niche product in the 'long tail' of e-health applications. This application should not be a commodity that is produced and sold to individuals or health care agencies. Instead, it should be a public good that is supported by government funding — a non-market space supporting what *should* be the non-market activity of communicating with a healthcare professional.

Table 3
Sample Policies that Nurture Non-Market Spaces by Layer

Layer	Sample Policy
Human	Education in schools devoted to "civic digital literacy"
Content	Funding for individuals and organizations that build platforms supporting open access content
Software	Funding for individuals and organizations that create open source software
Hardware	Tax breaks for companies that make discounted or refurbished hardware available
Infrastructure	Funding for local communities building Wi-Fi networks

Table 3 lists examples of policies by layer. Recall that federal policy has traditionally looked to market based solutions, and has focused primarily on access in the infrastructure layer. I suggest that policies be aimed at non-profit organizations or individuals pledging to make their products freely available. For three of these layers — content, software, and infrastructure — funding could be in the form of research grants or subsidies. This is a straightforward measure and it would help nurture non-market spaces that would ultimately support non-market activities. The hardware layer presents a challenge because of the degree of capital investment required. However, policies can continue to incentivize companies to make older versions of

their hardware available to underserved populations through tax breaks. More creatively, funding can be provided for organizations that refurbish older pieces of hardware for use by underserved populations.

Policies in the human layer are concerned with how we educate citizens about ICTs. In the United States emphasis is placed on training citizens to be productive workers in the information economy. Students are taught coding or computer networking with the express purpose of leveraging these skills in the labor market. Given that we live so much of our lives in the digital environment, citizens need to know 'civic digital literacy,' along with the current market based emphasis on technology education. Educational institutions can offer more courses and develop programs that focus on, for example, the history of the Internet, its current regulatory structure, its benefits for society, and so on. Civic digital literacy classes are, in effect, producing non-market mental spaces that pave the way for future non-market activities.

Within the United States there are already such policies in place to a limited degree. Research is already being funded, corporations already received tax deductions for charitable giving, and there are numerous secondary and post-secondary institutions that teach courses with aspects of civic digital literacy (although they are not called as such). However, as I discussed above, public interest in nurturing non-market spaces remains low. I believe this is because the conceptual foundations are not present to justify this greater interest. My hope is that individuals and advocacy groups using the digital environment model, or other similar models, can grow this interest.

Conclusion

One of the better arguments for nurturing non-market spaces alongside market spaces can be found in MacKinnon (2012). MacKinnon argued that a "digital commons" can be a counterweight to government and corporate power. MacKinnon's premise is also adopted here. Like MacKinnon, I believe that market and non-market spaces can co-exist. Private enterprise has spurred tremendous innovation and growth in the number of ICT users over the past several decades. The nurturing of non-market spaces within various layers of the digital environment does not imply, then, a desire to repress market spaces. Instead, what I am arguing is that the public benefits that society receives from ICTs are not the ultimate purpose of businesses. These are simply means to an end, and as a result are always contingent upon their economic viability.

We are several decades into the Internet revolution — when networked computing became widely available. Since that time entering into and navigating the digital environment has become essential for full participation in modern life. Such an important space cannot be trusted wholly to the whims of the market. I have presented in this paper a conceptual model that I hope can galvanize interest in nurturing spaces, non-market spaces, that can ensure that more people have an opportunity to express their humanity in the twenty-first century.

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Notes

1. Baker and de Sa, 2010, p. 287.

2. McChesney, 2013, p. 112.

3. The Universal Service Fund is paid for by contributions from providers of telecommunications based on an assessment of their interstate and international end-user revenues. Examples of entities that contribute to the Fund are telecommunications carriers, including wireline and wireless companies, and interconnected Voice over Internet Protocol (VoIP) providers, including cable companies that provide voice service.

4. For a firsthand account of how copyright law is used to stifle creative production, see Cornblatt (2011).

5. The order was defined by three broad rules meant to establish network neutrality as the normal state of affairs. (1) Transparency — Broadband providers must disclose information regarding their network management practices, performance, and the commercial terms of their broadband services; (2) No Blocking — Fixed broadband providers (such as DSL, cable modem, or fixed wireless providers) may not block lawful content, applications, services, or non-harmful devices. Mobile broadband providers may not block lawful Web sites or applications that compete with their

voice or video telephony services; (3) No Unreasonable Discrimination — Fixed broadband providers may not unreasonably discriminate in transmitting lawful network traffic over a consumer's broadband Internet access service.

6. Starr, 2016, p. 107.

7. https://www.facebook.com/onlinecivilcourage/.

8. Hindman, 2009, p. 128.

9. Olmstead, *et al.*, 2014, n.p.

10. Donner, 2015, p. 64.

11. Van Dijck, 2013, pp. 156–157.

12. Banks and Humphrey, 2008, p. 416.

13. Jarrett, 2015, p. 102.

14. Fuchs, 2008, p. 212.

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