Global Discourses of Information: Questioning the Free Information Regime

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ABSTRACT
In three transnational case studies of ICT use, we unpack common social constructions of free information in the West: the market commoditization of information, the socially viral nature of information, the ethical role of information, and the physical (dis)embodiment of information. We connect these constructions under the ideology of "neo-informationalism" and explore sites of tension that this paradigm creates in global technosocial contexts. Finally, we discuss implications of this stance for ubiquitous computing and call for a reorientation on the contextualized, local, and sometimes messy present instead of an idealized global future.

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FOSS, ICT4D, information, social construction, transnational theory, values.

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H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

The field of ubiquitous computing (Ubicomp) was inspired by Mark Weiser's "proximate future" of a world saturated by information technologies [6]. Bell and Dourish point out that Weiser's 1991 article "The Computer for the Twenty-First Century," which articulated a world "just around the corner" of seamless technology penetration [56], was cited by 47% of Ubicomp papers between 2001 and 2004. However, they argue that this rhetoric and research agenda is problematic for Ubicomp: it encourages the view of current technologies, practices, and social tensions as nearing obsolescence, and it promotes a homogeneous (and quite American) vision of the future.

In this paper, we outline another proximate future popular in ICT4D (Information and Communication Technologies for Development) discourses, an area of growing popularity in Ubicomp, HCI, and related fields. In this proximate future, information is easily accessible worldwide via cheap, smart, context-aware information and communication technologies (ICTs) [24], supported by a seamless global infrastructure of information exchange. Freely accessible, ubiquitous information has been implicated in creating justice, democracy, economic prosperity, peace, and stability [9, 14, 14, 16, 21, 28, 30, 32, 36, 37, 47, 48, 50, 51]. The fact that some feel that they already live in an early version of such a world (e.g. Negroponte 1995) emphasizes how it is often presented as being just around the corner.

It is easy and alluring to frame these proximate futures in glowing utopian terms, and difficult to predict their true social effects. As we have seen for virtually all new information communication technologies (ICTs)[1] in the last century, creators, businesses, and writers use proximate futures to justify widespread adoption and suppress dissent [19, 48]. These proximate futures are commonly portrayed as not only desirable, but inevitable: "progress" is framed as a positive linear process that cannot be reversed or slowed, and is always good.

Here, we utilize theories from transnational studies and our own transnational fieldwork in China, Paraguay, and Mexico to critique the proximate future of free information. As Bell and Dourish argued about Weiser's proximate future in Ubicomp, we argue that the proximate future of free information neglects the multiplicity of locally-situated *current* practices or frames them as problems to be solved. Moreover, it often promotes Western ideals of information access, social norms, and authority, things that may be norms in the United States but may clash with practices and values elsewhere.

We turn to the field of transnationalism to provide an analytical lens in which to frame our critique of free-information. Studies in transnationalism initially examined new patterns of social connections that were a product of human migration, usually framed as studies of the host and receiving country [4]. Many social science fields followed suit by experiencing the "transnational turn," where culture and activities were examined from an international, as opposed to a national perspective [29, 23, 25, 55]. The field then expanded beyond just the flow of people to include communication [26, 44, 48, 58] and virtual objects such as credit, ideas, culture, and other subjectivities [2, 3, 18, 22, 40, 58, 61]. These scholars paid special attention to the historical and social mobility of people, ideas, and objects, as well as the unequal effects of globalization [33]. Just as in the social sciences, a transnational lens offers ubiquitous computing an opportunity to critically examine its increasingly international technologies.

As more companies turn to designing technologies for the "developing world" and use some version of the proximate future of information ubiquity to justify their actions, it is increasingly important to understand the implications of these

[1] We define ICTs with the OECD's definition that states the ICT sectors as involving all manufacturing and service industry activities in transmitting, creating, displaying, and manipulating data and information electronically (OECD 2002).

discourses. We join others who have urged Ubicomp and HCI researchers to understand and appreciate the diversity of technology uses in non-Western contexts [27, 60], as well as some researchers who have been examining the intersection of technology and transnationalism [12, 26, 54, 59]. Our contribution is an examination of how "information" is framed in transnational contexts of ICT usage.

HOW "INFORMATION" IS UNDERSTOOD

In case studies from our fieldwork, we illustrate several ways in which the proximate future of free information is understood, embraced, negotiated, or resisted. We will start with a brief analysis of Google's struggle in the Chinese market, generally framed in market-oriented and ethical terms. Then, we discuss the local understandings of One Laptop Per Child in Paraguay, which connects South American dreams of democracy and prosperity with free software's ideas of information as "viral" and openness as an ethical imperative. Finally, we discuss the metaphors US-bound immigrants have for information resources in Oaxaca, Mexico to show how the information is embodied to simulate local expectations of authority and knowledge.

Through these case studies, we theorize four ways in which information is socially constructed: the market commoditization of information, the ethical role of information access, the socially viral nature of information, and the physical (dis)embodiment of information. We connect these constructions under the ideology of "neo-informationalism" and explore sites of tension that this paradigm creates in global technosocial contexts. Finally, we discuss implications of this stance for ubiquitous computing: we echo Bell and Dourish's concerns about proximate futures and, like them, call for a reorientation on the contextualized, local, and sometimes messy present instead of an idealized global future. Expectations of information are not globally homogeneous and that present social tensions will not necessarily disappear with more ICTs.

Information Markets, Google, and China

Our first case study involves the analysis of a recent public disagreement between China and Google and the first author's ongoing ethnographic work on how rural-urban migrants in China make use of new ICTs. The researcher has made three trips over a period of three years to conduct participant observation and information interviews with migrants about their use of search services, their online preferences, and their daily communication patterns. This case study exemplifies the sites of tension surrounding information as a commodity and as a site for ethical or moral imperialism.

In 2006, China allowed Google to create a local Chinese version, Google.CN under two main conditions, Google.CN would follow the information filtering rules that applied to all foreign internet companies operating in China and Google.com would remain blocked.[2] During the researcher's fieldwork in China in 2009, signs of discontent between Google and China began to surface as Gmail and Google.CN were intermittently unreachable. Google announced on January 2010 that Chinese hackers had attacked the accounts of users who were involved in human rights. Google said that the attacks had originated in China. China defended itself and was adamant that it held no relation to or responsibility for the attacks. Google stated that it was "no longer willing to continue censoring our results" and by March 2010, Google negotiated a plan with the Chinese government that allowed them to move their servers off the mainland to Hong Kong where its search services would remain unfiltered as Google.com.hk.[3]

During the summer of 2009, the researcher spent over 300 hours of participant observation with low-income internet users and conducted 15 interviews with non-elite digital users based in three different cites about their search practices. What the researcher discovered presented a different narrative than the media's and Google's reporting of why it was experiencing difficulty. Many news outlets argued a Google-less China would be catastrophic for Chinese netizens because they would lose access to information, freedom, and democracy. The implications of this argument is that Google was providing useful information that Chinese netizens needed and could not get elsewhere, and if this recent hacking did not happen, then netizens would be using Google. But on the basis of publicly available data and the researcher's ethnographic work in China, evidence suggested that Google's struggle in China had started long before the attacks on its servers and this was because Google failed to make relevant information-search services for Chinese users.

Interviews with non-digital elite users revealed that they did not find Google.CN's services useful. Youth explained that they did not see how any of the services offered by Google were easier to use than the ones that they were already using, such as Baidu, the largest search engine in China. Baidu makes available different types of information than Google, and mediates communication with friends in different than Google that youth found to be more useful. Most internet users in China prefer to communicate by chat, than email. Google operates in an e-mail paradigm while other local Chinese services operate in an instant messenger paradigm. Baidu offers really good mp3 music searches, Google does not. MP3 is the most common file format for digital music. Chinese consumers really like to listen to music and they are used to having easy access to it. Music is one area of the internet that is most free from censorship and mostly widely available in China. In addition to Google's irrelevant services for a Chinese market, Google and China also experienced information from two different moral positions.

Google exemplifies a hacker ethic that can be traced back to Enlightenment ideals (1600CE -1800 CE) of individual achievement while China reflects Confucian cultural norms of social harmony that emerged 2,400 years ago during the early

[2] Even though Google.com's search service were not accessible in China, other Google services were, such as Gmail. China users who wanted to access Google.COM had to continue using third party servers. However, this type of service is usually costly and most Chinese netizens don't have a need to search on Google.COM because they don't read English.

[3] Posted to the Google blog on January 1, 2010: http://googleblog.blogspot.com/2010/01/new-approach-to-china.html

Han dynasty (206 BCE – 220 CE). These moral positions on the role of information clash when both sides have different expectations for how to handle data.[4]

Google's mission is "to organize the world's information and make it universally accessible and useful. Their mission is guided by their central motto, "Don't be Evil," a moral edict that states there is good and then there is evil. The motto sets up a moral stance that says more information is good and less information is evil; transparent information is good while obscured information is bad. It is presented as a binary: good versus evil. Google's moral order is drawn from a set of guiding principles that have created the very internet technologies that have come out of the West. This set of principles is called the "Hacker Ethic," which emerged around 1950's and 60's with the advent of computers [34]. The hacker ethic is actually a revival of the underlying ethical systems that have shaped Western thought since the Enlightenment era of 17th and 18th century Europe [13]. The principles proposed by Kant, Descarte, and Bentham introduced basic notions of individuals as being independently free, educated, and rational beings entering into a contract with society. Free individuals were supposed to challenge the state or church. One became human through independent thinking and creative information processing. So with its mistrust of authority, commitment to unfettered information accessibility, its belief that technology would trump all and that individuals would make the "rational" decisions in their choice of search engines, Google went into China thinking that their moral paradigm of "Do no Evil" would trump a society with a 2,400 year old moral order without any needs to redesign or recalibrate its expectations for the Chinese market.

China's governing principle rests on the creation of a socially harmonious society. The social harmony doctrine has guided much of China's rulers for generations and was officially endorsed as a doctrine in 2006.[5] It's critical that we try to understand the roots of the Chinese concept of a socially harmonious society in Confucianism, a 2,400-year-old social practice and state philosophy. Confucianism is very complex. Without going into an in depth discussion, we call the attention to one relevant tenet, but a far-reaching tenet: obedience. Confucianism dictates obedience to higher forms of authority starting from the king down to government officials, ancestors, elders, parents, and spouses. The doctrine effectively gives each individual a clear role in life—to be a virtuous person; a means to achieve this role—to obey higher forms of authority; a responsibility to higher forms of authority—to maintain harmony; and a social reward-acceptance. To this end, one becomes human though compliance and one becomes a subject through acceptance. Social harmony is achieved through an individual's obedience to all forms of higher authority.

In China's moral order, information that serves to prioritize the individual is "bad," and in Google's moral order, information that serves to prioritize the individual is "good." As such, it is understandable why there would be tension. A moral order rooted in Enlightenment ideals rewards rebels while a moral order rooted in Confucian ideals rewards followers. Markets have a way of bringing odd couples together in the name of profit. Businesses, governments, and individuals that may not ascribe to each others morals find themselves cooperating and collaborating, each side willing to make concessions to reach their end goal(s). But it appears that Google and China have discovered something that they cannot agree to - access to information. But disagreements are nothing new between institutions, much less between China and the US or China and Google. What appears to be emerging here is that the fundamental moral differences as understood by Google and China appear be so vast that they have decided that they are unable to work together in the way that they had originally envisioned. There's some truth to this. China and Google both want to be the ruling gatekeepers of information. Yet, they have different moral orders that inform their visions for how this information monopoly will be achieved.

Google is emblematic of a new paradigm of capital growth, the generation of wealth through information. This is based on the assumption that any form of culture, experience, and ideas can become digitized into bytes. So for example, when a physical book is digitized, that means it can be transformed into a digital file where the words are searchable and therefore commodifiable. Google's wealth generation from information is historically situated in the transition from Fordism to Post-Fordism. Whereas labor was once the fundamental source of economic growth under a Fordist regime, in Post-Fordist economies information becomes the source of economic expansion. But Google presents their work as a project in maintaining information freedom, despite all the money that they make in information commoditization. They argue that they are ultimately delivering information that *should* already be available and accessible. They say that their priority is bringing information freedom and choice to users around the world, but since they are a corporation, their actions are also driven by the search for profit.

Viral Information, Software Libre, and OLPC

Nicholas Negroponte, who founded OLPC to great fanfare in 2005, has stated that OLPC's colorful "XO" laptops were meant to overhaul education around the world by training a generation of technology-literate free thinkers – in essence, hackers [1]. The vision behind the One Laptop Per Child project has been shaped by two complementary forces: MIT's Media Lab, led by self-professed digital utopian Nicholas Negroponte, and the do-it-yourself learning philosophy Constructionism, developed by MIT professor Seymour Papert [41, 42]. Nicholas Negroponte and others in OLPC's leadership openly acknowledge that Seymour Papert's Constructionist learning theory directly inspired OLPC [41, 42], advocating independent, playful learning assisted by a computer, the "ultimate tool to think with" [42]. .

[4] To be clear, these moral orders are contested spaces and neither of them are totalizing.

[5] The Chinese government drew upon this doctrine as a way to ensure that the contradictions and social costs of economic growth would be ameliorated in the coming years by giving more attention and dedicating more of the budget to non-economic aspects of society, such an the environment, education, and health.

The results of this combination of Papert's Constructionism and Negroponte's digital utopianism are demonstrated in OLPC's Five Core Principles: Child Ownership, Low Ages, Saturation, Connection, and Free and Open Source (OLPC, 2010). These principles reflect OLPC's educational mission, but also expose some of the biases and blind spots in its approach. Beneath these goals is an unspoken belief in *information determinism,* belief in the power of information (even apart from any specific technological artifact) to create social change: the XO laptop will enable children to access the world's knowledge, and having access (via computers) to complete information will liberate them and empower them to do their best and ultimately bring about peace and an end to poverty [38].

Moreover, OLPC developers see the XO laptop and its Constructionist software as a *shortcut* to these changes: most developing countries would have to allot the equivalent of "just" a few years of their educational budget to purchasing the laptops, and the laptops had been designed to more or less maintain themselves. In a 2007 interview at the MIT Museum, Walter Bender called the laptop project an "end-run" to significant change while traditional efforts were merely "treading water" [8].

How will the laptop accomplish this, and why do developers see this project as the best solution, rather than more investment in teachers, schools, and textbooks? The laptop is often framed as a "subversive" influence, just as Papert has framed Constructionist learning. Both Negroponte and Walter Bender have described the laptop as a "Trojan Horse," slyly integrating Constructionism into what governments might just view as an "ebook reader" [8]. Many at OLPC, including Papert and Negroponte, feel that the current educational system in developing countries is broken, with badly-educated, drunk, or absent teachers [8, 38]. At a 2007 meeting OLPC developer Chris Blizzard said that the laptop will have impacts in many areas, and will empower people to "have initiative" (that they are presumably currently lacking) in their lives [10]

The belief that the XO-1 and its Constructionist software can provide a shortcut to peace and prosperity, even if governments don't actively recognize its potential for this, reflects a faith in the power of information, a phenomenon I call *information determinism*. Information determinism is related to technological determinism, the belief that technologies or technological artifacts can trump individual agency and *create* social change. OLPC could also be accused of technological determinism based on their faith in the laptop (and a particular educational philosophy, Constructionism) to create social change, but more predominant is their rhetoric regarding the benefit of information in a more abstract sense: a belief that the more widespread information is, the more good it does, independent of its medium.

This belief is not unique to OLPC; it is prevalent in the open-source community more generally and also appears in Papert's writings on Constructionism. Even though OLPC developers would likely see the statement "information will lead to prosperity and peace" as absurd, their thinking is nevertheless premised on this very assumption or something like it and this is built upon the premise that "all information should be free" that so strongly resonates through the open-source community.

If OLPC's developers hope that the XO will change the world by eliminating poverty, how will this come about? The quotes above suggest that connected laptops will provide people access to information and Constructionist learning will empower them to act on it to eliminate the inequalities in their lives. One of the long-term benefits of Constructionism that Papert discusses is that children will become (or, more accurately, remain) free thinkers, not unquestioningly relying on authority figures for information [42]– just like hackers, at least according to hacker values.

What are the consequences of this freedom? We argue that one possible consequence of making education an individual experience where everybody (in theory) has all the tools they need to succeed is to shift the burden of failure from the "system" – a flawed educational model, a corrupt government, an unjust economic structure, etc. – to the individual, and that Papert and some in the hacker culture have suggested that only some individuals are capable of this free thinking. With the kind of individual access to computers and other tools-to-think-with that he promotes in his books, Papert boasts that education can become a "private act" with "new opportunities for imagination and originality" [41] . In a 2006 interview about OLPC, he reiterated this belief in individualized learning, referencing the "millions" of people (such as those who have adopted the hacker ethos) who learned to use computers on their own, "without anybody teaching them" [43] .

While this do-it-yourself education appeals to the idiosyncratic natures of the OLPC developers who have adopted hacker values, such individualism is not universal. Constructionism is, in effect, a do-it-yourself education model. Papert's own accounts of other experiments with computers and Constructionism generally discuss a few children who took to the computer like fish to water, while most did not become as engaged with it. Papert focuses on these few students, but we may ask, what *does* become of the "average" learner? Do Papert and OLPC's developers care?

In Steven Levy's 1984 account, Douglas Thomas's 2002 analysis, a 2002 analysis of Carnegie Mellon's male computer culture, and my own conversations with developers, it sometimes becomes clear that these individuals feel that they are part of an elite, though often misunderstood, class. While it is true that they want to evangelize their values such as free information, they also want to keep the doors of their hacker "clubhouse" [35] closed to people who are not free thinkers in the way that they are. Those who are talented "naturals," or work hard to teach themselves the hacker ethos, are welcome, but open-source circles are notoriously hostile to people who appear clueless to them. Certainly OLPC's contributors *hope* to reach as many children as possible, but just as only a few others in their school were drawn to computers like they were, they may well *expect* that even OLPC's laptop may only work for a lucky, clever, elite subset of the students using the

laptops. This selectivity takes on greater import when we realize that open-source programmers, who in many ways exemplify hacker values and who have contributed substantially to OLPC, are a remarkably homogeneous group, and in particular, are 98.5% male.

Interestingly, OLPC's passions have connected well with an interest across Latin America in promoting open-source software [15] OLPC benefits from conceptions of information among South America's elite in line with those in the free and open-source (FOSS) software movement: that information "wants to be free," that "liberated" information replaces colonialist influences with locally-created content (or at least the potential for it), and that free information is connected to democratic nations with socialist ideals. Though many of the elite throughout Latin America went to U.S. universities, and though many free software developers are from the United States, they nevertheless see free software as a way to liberate themselves from American influences and companies. Moreover, they are well aware of OLPC's vision to create a generation of hackers: they hope these hackers will become the work force that develops local economies. While those who are being commodified in this way generally love their laptops and the opportunities (especially games) they provide, they are generally unaware of the larger expectations about open-source software that OLPC and their country's elite have for them.

The Disembodied Coyote

The third case study is an ethnographic story drawn from an ongoing, multi-sited ethnographic research project with rural villagers who migrate between Oaxaca, Mexico and Southern California, United States. The first author conducted fieldwork along with her colleagues in both locales for over three years. In this example, the uneven geopolitical laws that define human movement between Mexico and the US are overcome with highly trusted and life-risking information embedded within local networks.

Our story takes place in, Bicuhuini, an ethnically indigenous village with under 900 people in the State of Oaxaca. Although the state is located near the southern tip of Mexico, migrants from Bicuhuini and other villages make their way into the United States without any legal documentation to enter the country. Most migrants traverse thousands of miles of desert and mountains to find jobs that will allow them to send money back to their families in Mexico [45]. There is very little economic opportunity in Mexico for rural citizens who typically do not have a high-level of education.

Over half of Bicuhini's population resides in Southern California because of out-migration. In order for any individual to cross the US border, a prospective migrant must hire a *coyote*. A coyote is a person who is in the business of escorting undocumented people across international borders [31] . It is one of the most profitable jobs in a transnational world, forming the backbone of a multi-million dollar industry, where immigration laws, nation-state border surveillance, and physical environments are overcome and with local knowledge of transportation routes.

During our last field trip in 2009, we spent time with Geraldo, a coyote from the village who was famous among the surrounding community for never having been caught by immigration authorities in US or Mexico. He told us that he knew a special route through the deserts that was not known to other coyotes. He also explained that the authorities knew none of his false identities and phone numbers used for human transportation. We spent some time with Geraldo over the course of an afternoon and witnessed several talks of prospective migrants inquiring about his human transportation services. ICE had just caught one man, Tibo, without documentation in Southern California and they had just been sent back to Mexico after spending a week in a US jail for undocumented migrants. He wanted to return to the US so that he could begin work as soon as possible. In his previous trip, he had hired another coyote but that coyote's track record was no longer reputable due to recent borders changes in the US. Geraldo recounted to Tibo his process and what it would take to get him into the US.

Geraldo later explained to us he has personal networks in cities from Oaxaca to the border. When he transports people across the border, they travel from Oaxaca and stop every few days in each city where he rents a house with a phone number. He works with a close coterie of contacts to support the transportation process. Sometimes a trip can take one week or up to two weeks, depending on what his sources tell him. When they arrive at Tijuana, he waits for notifications from his contacts about border conditions, ranging from the desert's temperature, to the level of surveillance on the US side, and news from other coyotes such as recent border arrests, failed crossings, or drug-related problems.

Geraldo told us that the majority of his news comes from his contacts. He does not rely on the news, internet sources, or strangers. His contacts call him on the cellphone that he uses for coyote work or the landline at the apartment in Tijuana. He has been in this business for over ten years and has crossed into the US along all the possible entrances. His knowledge of the border is extensive. Once he is able to transport all the humans into the US side, he works with his US-based set of networks to transport people to their destination. He has cars in the US and Mexico all registered under names within his network of friends.

Geraldo's story shows that even when movements of people are transnational, global networks are not necessarily virtual. The information that flows within their networks is embodied, meaning they are attached to people and can only be accessed through direct contact with people. While they may communicate with cellphones and landlines, the communication is one-to-one, it is not stored online or broadcasted out, nor is it impersonal. Information streams are contingent upon the trust established within Geraldo's network.

NEO-INFORMATIONALISM

Finally, we connect these social constructions of information under the ideology of neo-informationalism, the belief that information should function like currency in free-market

capitalism—borderless, free from regulation, and mobile [56]. While the last 20 years of neoliberal fiscal policy has made apparent that currency does not function this way, organizations in positions of power, including transnational corporations and governments, are often invested in creating institutions which bypass or selectively follow local or national laws voted by citizens in order to move (and make) money more seamlessly.

Transnational Implications of Neo-Informationalism

We have explored some of the global implications of the "proximate future" of free information, as promoted by various U.S.-based companies and universities. In these case studies, "free information" is a common goal, promoted by those in positions of power (technology designers and governments) on behalf of those without power. Using a transnational lens, we can see that these organizations have been prone to the common problem of methodological nationalism, a method that "subsumes society under the nation-state" [5].

While researchers in Ubicomp and related HCI fields do not generally conduct their analyses with the "state" in mind, they do their analyses from the perspective (and with the values) of a particular culture on individuals who are also embedded in a culture. Researchers may abstract their conclusions for design, deployment, or needs based on the studies of a few individual users without accounting for these cultural contexts, resulting in global assumptions that are overly generalized and homogenized. Transnational theory offers insight into how we can avoid generalizing narratives such as free information.

The Normative Aspect of Free Information

One of the insights of transnationalism is that it refocuses attention on the variety of unique and hybrid ways in which similar products are consumed around the world. With this insight, we argue that transnational approach to information would value the diversity of information practices. Our case studies show the various ways in which the free-information regime can take on a normative approach to framing information. The logic of neo-informationalism rests on an ethical framework that is tied to we call "information determinism," the belief that free and open access to information can create real social change [1]. As we have seen in Google and OLPC, companies benefit from an ethical system that prioritizes free information regime: anyone who leaves an information trace becomes a worker (albeit unpaid) for these companies, since that data can be monetized through advertising and other means.

Likewise, what counts as *unethical* information consumption is socially constructed. For example, mp3 files of song artists can be easily downloaded from the homepage of Baidu, the most popular search engine in China. But for Google, downloading copyrighted songs through the internet is framed as piracy through United States copyright law. The lesson is that both Google and China are trying to enact an ethical code of information consumptions.

Thus, free information is presented as an ethical issue where there is little room for heterogeneous information practices. Expanding upon the ideas in Post-Colonial Computing [27] , we argue that the free information regime is inherently based on a development discourse, where those in the "third world" or "developing nations" are expected to follow in the footsteps of those considered "developed."

Objects vs. Governance

Transnational scholarship also pays close attention to governance. One of the consequences of neo-informationalism is that social change is expected from objects (including information or individuals with information), not from governance processes. Neo-informationalism and neo-liberalism work symbiotically to create what Brown calls the governed citizen who seeks solutions in products as opposed to the political process [11]. While Brown was not speaking of technological objects *per se*, we make the case that this is indeed a variant of the hacker ethic; social change is made through direct programming of software code and interaction with technological devices while maintaining distance from the state.

OLPC's individualist model of education illustrates this issue by placing responsibility for education on individual action (teaching oneself via the laptop), ignoring structural inequalities. However, Google has encountered resistance to this when its filtering policies were at odds with China's; its solution has been to circumvent the state in the name of information freedom. While we do not necessarily condone China, we also want to critically examine the implications of Google's preemptive move to abandon a non-public dialogue with the Chinese government to accomplish their end goal.

Global Practices

Finally, transnational studies show us that the issues in our globally connected world are not just based on geo-political borders of traditional nation-states. Transnational studies also focuses on the practices that bind people together beyond nationalities, ethnicities, or class. As the case study on Mexican migrants show, information networks are embodied in people. Neo-informationalism tends to assume that all social networks will become disembodied, virtual, and digital, but this ignores the reality of millions of people who are in the informal economy and would be at risk if they were to mediate their identities and lives online. The Mexican coyotes show us how authority and trust is established in face to face and very personal networks. For them, information is not as trustworthy if they were to find it through an unverifiable online resource.

CONCLUSION

The local understandings of information we have presented here illustrate some of the problems with the proximate future of free information. Just as Dourish and et. al. illustrated the ways that "problems" in Ubicomp could be interesting design opportunities instead, we propose that different conceptions of information are not necessarily problematic but rather an opportunity to create technologies that take into account a wider diversity of information narratives [20].

If we want to better understand local practices in information, we have to think about the differences in how and why people, institutions, and communities regulate information flows, and who is affected by them. A critical reflection upon alternatives

to the dominant free-information paradigm can potentially help designers and businesses save money or confusion up front if they invest in the time to understand the intricacies of social information.

The reality is that many of ICTs are being designed, deployed, evaluated, and used in transnational settings. For practical design considerations in a transnational world, we argue that our case studies speak to the important of understanding local practices of knowledge sharing. Prior to user testing, ethnographers with a critical lens could provide insight into the cultural norms that underlie everyday practices surrounding information, allowing a two-way exchange of information that empowers both designers and users.

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