Design Proposal for A Wireless Derouter: Speculatively Engaging Digitally Disconnected Space

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Abstract

This Pictorial uses design as a way to imaginatively and critically engage with digital disconnectivity as the obverse reaction to an increasingly hyperconnected, sped-up, and always-on digital world. Design is practiced here as a mode of inquiry and the outcomes presented as conceptual tools.

ACM Classification Keywords

Design; speculative design; wireless derouting

This document uses design as a way to imaginatively and critically engage with digital disconnectivity as the obverse reaction to an increasingly hyperconnected, sped-up, and always-on digital world. Design is practiced here as a mode of inquiry, and the outcomes of this inquiry are presented as conceptual tools. With roughly equal parts criticism, cultural archiving, and speculative imagination, this work engages recent cultural countertrends of disconnecting, unplugging, and digital detoxing. Key issues articulated by researchers, artists, and designers include digital overload and distraction, anti-sociality and inauthenticity, and pervasive surveillance and privacy invasion.[1]

Critics have in turn reacted to nascent countertrends, raising concerns about the implicit politics of disconnecting. Some have observed that the strongest advocates for disconnecting are, ironically, among the privileged few most readily served by and invested in digital technology.[2]

This work brings together these issues, not to immediately resolve them, but to engage them as matters of concern and to imagine alternatives through design.[3] For this reason this work proceeds speculatively and tentatively, raising questions and concerns along the way and without (yet) arriving at firm conclusions or affirming specific design interventions.

What is offered instead is a catalog of concerns, a repository of ideas, and an interference device for clearing space to both populate and interrogate an emerging design field of digital disconnectivity. This field radiates outward from a design proposal for a wireless derouter, a device which disrupts wireless signals to create digitally disconnected spaces free from Wi-Fi, cellular, GPS, and other regulated radio frequencies. This proposal sketches the practical embodied and embedded operation of a wireless derouter along with models for conceptualizing disconnected space and ways of structuring and communicating its possible social and cultural functions.

As a proposal created for designers and researchers, the wireless derouter exhibits oscillatory conceptual functions. It functions as a simple antenna for amplifying and transmitting ideas. And it functions as an anti-antenna— an interference device—which clears space for new receptions: interrogations, critiques, and the generation of new speculative proposals for the future.

Design Proposals as Inquiry / The Proposal Document as Design Form

The rise of speculative, critical, and conceptual traditions of design has entailed experimentation with new design techniques and forms. Within these design practices, the conceptual design proposal stands out as a key tool and format for presenting design inquiry.[4] The purpose of the conceptual design proposal is not always to simply document finished work or to serve as an intermediary step within a cohesive ongoing design process. Instead the conceptual design proposal must be properly grasped as a finished unfinished form—one poised to inspire and aid in the generation of additional thoughts, forms, and interventions. Typically the goal of the speculative or critical design proposal is not to definitively affirm or advocate for the implementation of a design and its subsequent embedding within everyday contexts. Instead the function may be more vaguely and loosely articulated: speculation, critique, reflection, provocation, debate, dissensus (and always potentially more).[5] *Nonstandard academic publication formats, such as this DIS Pictorial, offer a much needed outlet for such work.*

Design Proposal for a Wireless Derouter: User's Guide

The genre and format of the design proposal accommodates diverse aesthetic and discursive styles, conceptual approaches, and methodological commitments. A few preliminary points will help the reader navigate the specifics of this design proposal.

Subtle and uncertain absurdity. This work employs visual and rhetorical language commonly found in design proposals from architecture, urban planning, and industrial and interaction design. Yet the content of the proposal is carefully poised between plausible and absurd, complicated by a number of continually shifting technical, legal, economic, social, and cultural factors.

Exaggerated commitment. Whereas many design proposals explore a diversity of possibilities, this proposal ostensibly commits to a single design direction: wireless derouting for the construction of disconnected personal, social, public, and civic spaces. But it must be understood that the conceptual point of the wireless derouter is to help clear space for imaginatively and critically engaging (and disengaging) digital disconnectivity.

Hybridizing designerly and scholarly forms. The first portion of this document is a design proposal for a wireless derouter composed of illustrations and text. The second portion—of equal importance — consists of notes, elaborations, and commentary. When faced with the question of whether the design proposal is design or scholarship, a suitable response is *why not both?*

Digital Connectivity

For many—but certainly not for all or equally—digital connectivity is no longer a luxury but a basic right.[6] Digital connectivity is rapidly becoming naturalized within industrialized contexts. Wi-Fi, cellular phones, and global positioning system (GPS) have joined television and AM/FM radio within the field of ubiquitous electromagnetic waves. Mobile devices allow virtually everything digital to be accessed anywhere, anytime, with the click of a button or swipe of a finger. Pockets of digitally disconnected space have become the exception—ones which we expect will soon be remedied.

Digital Disconnectivity

The countertrend is disconnecting. Sitting uncomfortably alongside digital connectivity are anxieties about an increasing pace of life, detachment from the physical world, social isolation, and inauthentic identity. This has given rise to buzzwords naming cultural countercurrents: digital detoxes, unplugging, disconnecting.[7]

On the surface disconnecting appears well-aligned with critiques of techno-utopian faith in technology and the neoliberal imperative to marketize every aspect of life.[8] Yet some argue that hyperconnectivity is nothing more than a first world problem of luxury, that the contemporary rhetoric around disconnecting is merely a means of recharging a productive capitalist workforce, and that the creation of alternative slow, disconnected spaces can only exist within the inequitable social relations of a speedy, hyperconnected world.[9]

Map of Digitally Connected Space

Alternatives to Ubiquitous Connectivity / Diversifications of Disconnectivity

There are clear signs of resistance alongside general acceptance of ubiquitous digital connectivity and enthusiasm for nascent and emerging technological paradigms, such as the Internet of Things (IoT) and "the cloud."[10] What alternatives exist to pervasive digital connectivity, always-on-ness, and one-click access to everything digital? How can we begin to map the landscape of resistances to hyperconnectivity, and the different values and interests at stake? Can we transcend the polarization of enthusiastic techno-utopians, on the one hand, and curmudgeonly luddites on the other? Or amplify this polarization to offer insight into desirable and undesirable futures?

The Interstitial Model

Occassional disruption to everyday routine is normal. Pervasive connectivity is in fact already punctuated by minor discontinuities and momentary interruptions. Interstices of disconnectivity are to be supported and embraced, rather than merely begrudgingly accepted as necessities.
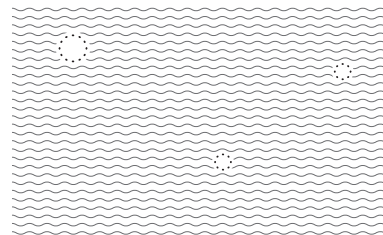
The Preservation/Restoration Model

Disconnected "dead zones" are rapidly disappearing.[11] The time has come to preserve and restore disconnected areas. Disconnected spaces of the future will serve social and ecological functions similar to the urban parks and natural preserves of today.[12]
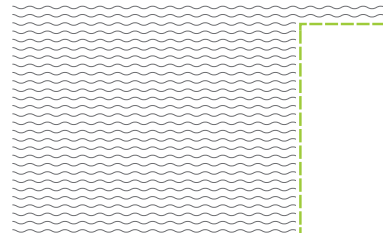
The Islands of Respite Model

Within the pervasive sea of connectivity, islands of disconnectivity are needed as alternative spaces for recuperation and refuge from our contemporary high-speed, hyperconnected, and always-on pace of life.
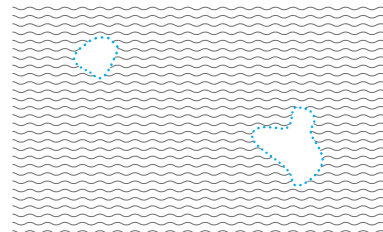
The Zoning Model

Disconnectivity is a legitimate personal, social, cultural, and economic need. As such, it must be zoned and regulated much like property, the built environment, and public infrastructure. However care must be taken to prevent discriminatory and detrimental disconnected zoning practices.
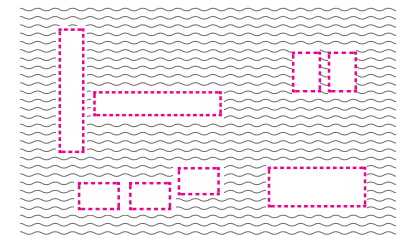
The Inverse Model

The scales have tipped too far on the side of connectivity. It is time for an inversion. With certain exceptions such as emergency service connections, connectivity will be restricted to social and economic hubs. Connected space becomes the exception not the norm.
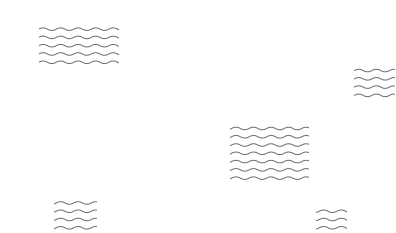
The Fuzzy Logic Model

The problematic polarization of connectivity/disconnectivity flows from the application of the binary logic of digital technology to the sociocultural level. A more integrative, pluralistic model is needed that recognizes spectrums and multiplicities of connectivity/disconnectivity.
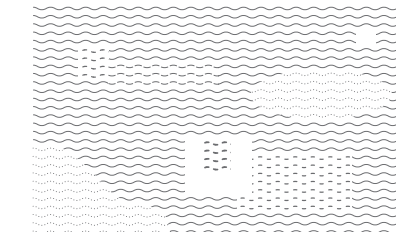
Disrupting Digital Connectivity: Legal Matters

February 2012, Philadelphia, Pennsylvania, USA. A disconnectionist vigilante uses an illegal cell phone jammer to disrupt passengers on public buses who are engaged in obnoxiously loud phone conversations. News of the incident spreads through the media and "cell phone jammer" becomes a Google top 10 search over the weekend.[13] The U.S. Federal Communications Commission (FCC) issues a statement in response reminding consumers that it is illegal to use any device that "blocks, jams, or interferes with authorized communications." The FCC "has a zero tolerance policy in this area and will take aggressive action against its violators." [14]

Around the world, it is illegal to possess or operate devices that create digitally disconnected space by actively interfering with licensed radio waves. If digital connectivity is now a basic human right, a price that is paid is absolute disconnectivity is barred by law.[15]

Disconnective Counterproducts

There is more than a glimmer of consumer need and desire for disconnective technologies. A range of consumer products currently exist, from enhanced Do Not Disturb features on smartphones to productivity tools that block distracting websites and software applications. Artists, designers, and activists continue to create works that ambiguously function as practical disconnective tools.[16]

Wireless Derouting: Speculatively Engaging the Mundane

Many speculative designs are predicated on as-yet undeveloped technologies (science fiction), far-fetched social scenarios of use (social fiction), or both. The power of design speculation comes from its potential to imagine compelling yet unlikely or impossible scenarios becoming lived reality: actually materially and socially embedded within contexts of routine, ordinary, even mundane use.

Yet speculative design can also imaginatively engage the mundane through the design of technologies that are both technically feasible and socially plausible. Illegal technologies are one crucial area where speculative designs can be offered as a way to imaginatively and critically ask what-ifs and why-nots.

What if it were legal to use devices that actively block radio waves to create disconnected space? How would the construction of new interfaces, systems, and environments develop if such technologies were legalized? As speculative anti-infrastructure, how might wireless derouters function to create digitally disconnected spaces?

Portable GPS Jammer, 2G and 3G Mobile Phone Signal Jammer (US$ 115). Isolating Signal Bandwidths: GPS: 1500-1600Mhz , CDMA + GSM: 850-960Mhz, DCS (PHS) + CDMA + GSM: 1805-1990MHZ, 3G: 2110-2170MHz. Range of up to 15 meters. Chinajiaho.com.

A Wireless Derouter

Wireless derouters enable the construction of digitally disconnected spaces: spaces free from email, phone, SMS, Facebook, Twitter, Netflix, Instagram, Tinder, Wikipedia, Google search and myriad other applications. While such applications are useful and enabling, their unrestricted ubiquity means there is no longer the option to have strict disconnectivity. Wireless Derouters offer the possibility of something refreshingly different: wireless voids filled with digitally disconnected things.
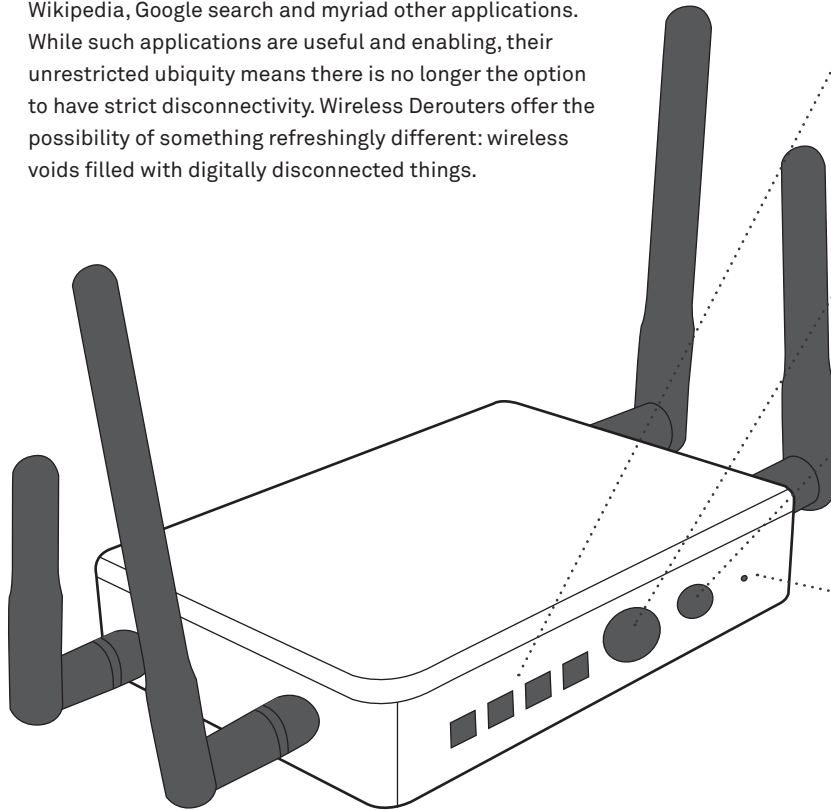
Signal Derouting Select

4 sets of wireless frequencies may be selected independently for derouting: WIFI/Bluetooth, 3G, 4G/LTE, and Cellular (CDMA/GSM/DCS/PCS).

Wifi/Bluetooth   3G   4G/LTE   Cell (CDMA/GSM/DCS/PCS)
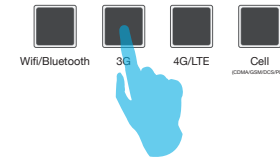
Distance (Radius of Disconnectivity)

The distance can be adjusted to create a sphere of disconnectivity with a radius ranging from 0.5 feet / 0.15 meters to 5 feet / 1.5 meters.
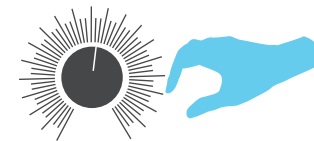
Readjustment Delay

The readjustment delay deters disabling the derouter by adjusting the distance to 0 or deselecting signals. The period of time required for a readjustment to take effect can be set from 15 seconds to 5 minutes.
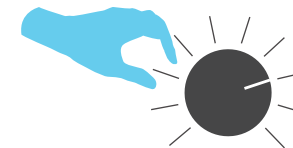
Readjustment Delay Reset

The readjustment delay reset deters readjusting the signal select or readjustment delay.[17] Prior to making a readjustment you must press the reset using a small tool such as a paper clip.

Wireless Nonspots[18] and Disconnected Nooks[19]

Wireless derouters can be used to construct permanent or temporary disconnected spaces for leisure, relaxation, work, socialization, and contemplation.

Disconected Public and Third Spaces

Disconnected spaces can be created for social and civic engagement, such as public squares, parks, libraries, bars, coffee shops, and places of worship.

Disconnected Events

Temporary disconnected spaces can also be created for events such as festivals, parties, conferences, work meetings, exhibitions, and performances.
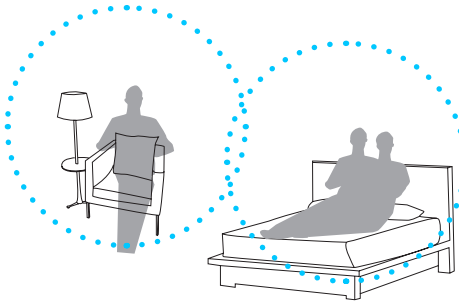
Communicating Disconnected Space

New systems will be needed to communicate digitally disconnected places and temporalities. Visual signage can be used to demarcate disconnected space and its social functions.

CELL/DATA OFF	CELL/DATA FREE SPACE	SLOW CELL/DATA	INTERMITTENT CELL/DATA	UNPREDICTABLE CELL/DATA	CELL/DATA OFF SUNDAYS	NO CELL/DATA AFTER 4PM
WIFI OFF	WIFI FREE SPACE	SLOW WIFI	INTERMITTENT WIFI	UNPREDICTABLE WIFI	FREE WIFI + WIFI FREE	TEMPORARY UNPREDICTABLE WIFI/CELL/DATA
Off	**Free (From)**	**Slow**	**Intermittent**	**Unpredictable**	**Temporal and Mixed Spaces**	

Concluding Transition
This work is unapologetically inconclusive and incomplete. The ideas that have been drawn here are tentative not definitive. The forms that have been presented appear preliminary and schematic. And a clear political position has not been explicitly advocated but rather suggested through skeptical and ambivalent proposals. But the conceptual and material lacunae formed by this design proposal are intentional. For they form potential: critical potential, speculative potential, even conventional, affirmative design potential.

Design is a tool for solving problems and improving our conditions. But design is also a tool for imagining, questioning, and reorienting. This proposal has been working as a conceptual anntena to detect and amplify clusters of concern, and as an interference device to clear space to create openings. Three clusters of concerns will draw this text to a close and transition into Notes, Elaboration, and Commentary, while hopefully continuing to extend beyond the page into other modes and forms of engagement.

1. The politics of disconnecting. Digital disconnectivity may momentarily feel freeing, but this does not mean this is the case always or for everyone equally. What are the implicit and explicit politics of disconnective technologies? Are they a politics to support, to critique, or both?

2. The potential for actual wireless derouters. Is a wireless derouter a good design concept? Would people actually want to use it? Maybe… or maybe not. One thing is for certain: it is difficult to practically and empirically investigate wireless derouting given the substantial legal barriers to operating devices that actively block radio waves.

3. Digital disconnectivity and the more and less distant futures. At this moment those of us living in a digitally hyper-connected world spend much of our time online. Increasingly our things are created, stored, and accessed in the cloud. All of this intensifies with predictions and promises of an internet of things, augmented realities, and artificial intelligences. What roles might disconnectivity play in the less and more distant futures? Amid growing concerns over intrusive and discriminatory surveillance, what opportunities lie in designing digitally disconnected spaces and things? If head, hand, and eye mounted displays and sensors continue to augment daily reality, will this intensify the need and desire for disconnected spaces and things? And if our future becomes filled with artificially intelligent domestic servants and companions, how will they feel about digitally disconnected space?

A wireless derouter is one specific direction to pursue towards both critical and affirmative ends. Yet perhaps the more powerful function of a wireless derouter is to serve as but one strong point within a broader space of possibilities. This proposals has worked to help plot a broader space with a set of models as alternatives to ubiquitous connectivity / diversifications of disconnectivity.

Interstitial   Preservation/Restoration   Islands of Respite

Zoning   Inverse   Fuzzy Logic
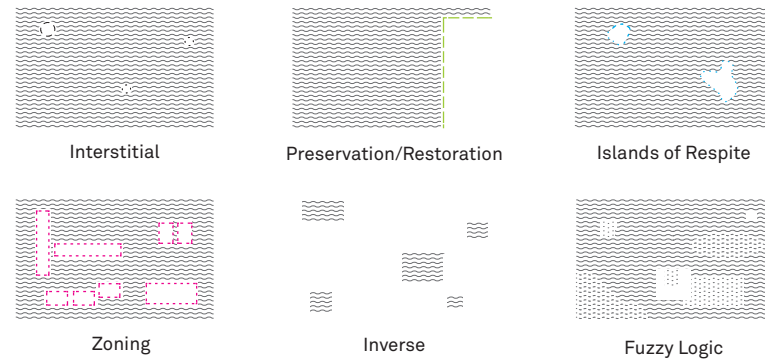
Continued engagement with these models promises to produce a richer and more diverse set of designs to stand alongside the wireless derouter and the use case scenarios proposed here.

Notes, Elaboration, and Commentary[*]

[*]
An intended function of the contents and format of these notes is to provoke and inspire by transitioning thought out of the main text and ultimately off of the page in multiple directions. Citations are typset in grey to help the reader distinguish between notes that are primarily references to related work and discursive notes which extend the main text by offering more substantive elaboration and commentary.

1
"Key issues articulated by researchers, artists, and designers include digital overload and distrac-

tion, anti-sociality and inauthenticity, and pervasive surveillance and privacy invasion."** For example, researchers within HCI and adjacent fields have examined practices related to overwork and busyness (Leshed and Sengers, "'I Lie to Myself That I Have Freedom in My Own Schedule'"), smartphone anxiety (Harmon and Mazmanian, "Stories of the Smartphone in Everyday Discourse"), and social network account closures and hiatuses (Baumer et al., "Limiting, Leaving, and (Re)Lapsing"). Design researchers have organized programs around the design of technologies for slowness (Odom et al., "Designing for Slowness, Anticipation, and Re-visitation"), reflection and ambiguity (Sengers and Gaver, "Staying Open to Interpretation"), and limitations (Pierce and Paulos, "Counterfunctional things").

Adjacent to HCI, a number of scholars drawn attention to the negative impacts of digital connectivity. For example, in her book *Alone Together* Sherry Turkle has argued for how digital connectivity can create new forms of solitude and social alienation. Richard Harper discusses related issues with digital technology in his book *Texture*, arguing that simpler technologies that ostensibly offer less are often preferable to those digital technologies that offer increasingly more.

2

"Ironically, some of the strongest advocates for disconnecting are among the privileged minority most readily served by and invested in digital technology." See Morozov, "The Mindfulness Racket" and Sharma, *In the Meantime.* See also notes 8 and 9 below.

3

"This work brings together these issues, not to immediately resolve them, but to engage them as matters of concern and imagine alternatives through design." On design as a way of engaging matters of concern, see DiSalvo et al., ""Making public things."

4

"Visual and textual proposals are one format for presenting design inquiry." In the area of graphic design, branding, and architectures, see for example Metahaven and Schmidt, *Uncorporate Identity*. For examples within conceptual and critical architecture, see the work of Archigram and Superstudio. In product design, see for example Near Future Labs, "TBD Catalog" and Beaver, Pennington, and Kerridge, "Material Beliefs." For examples related to interactive design, see for example, Gaver and Martin, "Alternatives: Exploring Information Appliances Through Conceptual Design Proposals." For more recent examples in HCI and interaction design, see Aipperspach, Hooker, and Woodruff, "The Heterogeneous Home"; Pierce and Paulos, "Some Variations on a Counterfunctional Digital Camera"; Blythe et al, "Solutionism, the Game: Design Fictions for Positive Aging"; and Lawson et al., "Problematising upstream technology through speculative design: the case of quantified cats and dogs." On the use of proposals as a method and methodology, see Gaver, "How Design Workbooks Work."

5

"Speculation, critique, reflection, provocation, debate, dissensus (and always potentially more). " On dissensus and debate as functions of design, see for example, DiSalvo, *Adversarial Design*. On critique and speculation as functions of design, see for example, Dunne and Raby, *Speculative Everything*. On critical reflection as a function of design, see for example, Sengers et al., "Reflective Design." For a discussion of critically oriented design within HCI, see Pierce et al., "Expanding and refining design and criticality in HCI." For a broader discussion of alternative and oppositional functions of design, see Pierce, "Working by Not Quite Working."

6

"For many—but certainly not for all or equally—digital connectivity is no longer a luxury but a basic right." While space becomes increasingly digitally connected, access is not equally distributed and digital divides still exist both locally and globally. Internet access is limited for many even within developed countries. For example, a 2013 Pew Research study reported that one-third of Americans making less than $20,000 a year do not go online at all and another one-third go online but do not have home internet access. Of those making $30,000 or less, 45% of mobile internet users go online mostly with their cellphones. Zickuhr, Kathryn and Aaron Smith, "Home Broadband 2013."

In a recent initiative to bring the Internet to places of the world with low connectivity rates, Facebook has launched the highly controversial Internet.org partnership. From a net neutrality perspective, this initiative has been criticized for potentially creating a "second class internet." See, Newman, Lily Hay, "Mark Zuckerberg: 'It's Not Sustainable to Offer the Whole Internet for Free,'" Slate.

Are disconnected spaces elitist when voluntary and inequitable when imposed?

7

"This has given rise to buzzwords naming cultural countercurrents: digital detoxes, unplugging, disconnecting." A selection of examples that epitomize these cultural countercurrent are presented below:

(A) *Sketch by U.K. street artist Banksy.* See Hein, "Banksy's latest sketch is a terrifying reminder of your iPhone addiction."

(B) *Shutterstock.com image #235268062.* "Smart phone addiction concept. Human hand chained to a generic smart phone, high-quality 3D render. Green phone, chain, & nail polish. Metaphor for increasing reliance on technology and connectivity." Shutterstock, "Smartphone Addiction Concept."

(C) *Digital Detox Week, by Adbusters.* In 2009 Adbusters magazine, the promoters of social campaigns including Occupy Wall Street and Buy Nothing Day, rebranded TV Turnoff Week as Digital Detox week. The Oxford Online Dictionary defines digital detox as "a period of time during which a person refrains from using electronic devices such as smartphones or computers, regarded as an opportunity
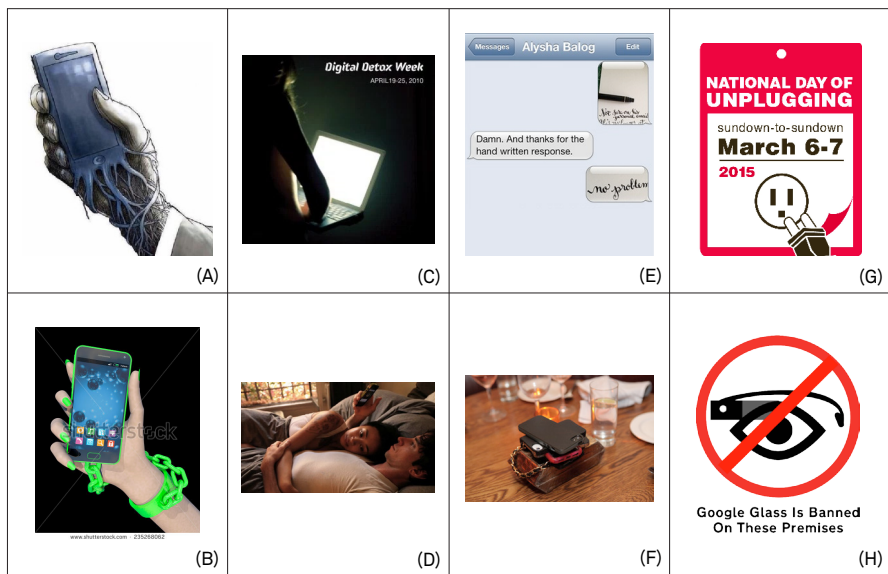
See note 7 for image credits.

to reduce stress or focus on social interaction in the physical world: break free of your devices and go on a digital detox." See, Stutner, "'Digital Detox' Becomes A Real-Life Word, Gets Added To Oxford Dictionary Online."

Digital detoxing is often framed as a matter of health, anxiety reduction, and increased mindfulness. There is no shortage of online articles extolling the benefits of digital detoxing with titles such as "7 Unexpected Benefits of a Digital Detox," "What Really Happens To Your Brain And Body During A Digital Detox," and "How To Prep For A Digital Detox In 6 Simple Steps."

(D) "I forgot my phone" video still, by Miles Crawford and Charlene deGuzman. The image of contemporary anxiety about pervasive digital connectivity and smartphone obsession is epitomized by the 2013 viral video "I forgot my phone" directed by Miles Crawford and written by Charlene deGuzman. The 2-minute film depicts a woman phone struggling to relate to everyone else around her tethered to their phones. The video currently has over 49 million views on YouTube. See, "I forgot my phone" published on Youtube.

(E) Calligraphy text messages, by Cristina Vanko. In August of 2013, artist Cristina Vanko handwrites all of her text messages by hand with a calligraphy pen. See Vanko, "I Sent All My Text Messages in Calligraphy for a Week."

(F) Phone stacking game. "Here's how it works: At the beginning of the meal, everyone puts their phone face down at the center of the table. As time goes on, you'll hear various calls, texts, and emails, but you can't pick up your phone. If you're the first one to give in to temptation, you're buying dinner for everyone else. If no one picks up, then everyone pays for themselves." Ha, "The Phone Stacking Game: Let's Make This A Thing."

(G) National Day of Unplug, by Reboot. "The National Day of Unplugging is a 24 hour period – running from sundown to sundown – and starts on the first Friday in March. The project is an outgrowth of The Sabbath Manifesto, an adaption of our ancestors' ritual of carving out one day per week to unwind, unplug, relax, reflect, get outdoors, and connect with loved ones." See, "National Day of Unplugging."

(H) Google Glass ban signs, by Stop the Cyborgs. These printable signs are offered by Stop The Cyborgs, a movement whose aim is "to stop a future in which privacy is impossible and where the iron cage of surveillance, calculation and control pervades every aspect of life." The purpose of the signage is to "encourage as many places as possible to become either 'Surveillance free zones' or 'Highly intrusive surveillance free zones.'" "Stop the Cyborgs." On January 15, 2015 Google announced it would cease production of its wearable Glass prototype but remained committed to the development of the product. In light of the news, the Stop The Cyborgs writes on their website that "resistance is not futile and that we can support technological progress without blindly accepting every creepy invasive technology that corporations want to foist upon us. It has also shown us that it is possible for public debate to help establish sensible norms around the use of technology in public places."

8

"On the surface disconnecting appears well-aligned with critiques of techno-utopian faith in technology and the neoliberal imperative to marketize every aspect of life." In *24/7:Late Capitalism and the Ends of Sleep*, Jonathan Crary offers a searing critique of digital connectivity enabled by new pervasive technologies. For Crary, sleep and other intervals of slow or vacant time are quickly being eroded as the last remaining refuges from capitalism. "Beginning with television, but especially in the last two decades," Crary writes, "one became familiar with the transitional moments when one shuts off an apparatus after having been immersed in any televisual or digital ambience for an extended period. ... One has a fleeting intuition of the disparity between one's sense of limitless electronic connectedness and the enduring constraints of embodiments and physical finitude. ... With increasingly prosthetic devices, these kinds of transitions occur everywhere, in every conceivable public or private milieu. ... Within 24/7 capitalism, a sociality outside of individual self-interest becomes inexorably depleted, and the interhuman basis of public space is made irrelevant to one's fantasmatic digital insularity." Crary, *24/7*, 88-89.

9

"Yet some argue that hyperconnectivity is nothing more than a first world problem of luxury…" Technology critic Evgeny Morozov interrogates the "disconnectionist movement" and asks us to consider why and by whom the virtues of disconnecting from technology are being preached: "In essence, we are being urged to unplug—for an hour, a day, a week—so that we can resume our usual activities with even more vigor upon returning to the land of distraction. … why we disconnect matters: We can continue in today's mode of treating disconnection as a way to recharge and regain productivity, or we can view it as a way to sabotage the addiction tactics of the acceleration-distraction complex that is Silicon Valley." Morozov, "The Mindfulness Racket."

Morozov's words echo the concerns offered by Sarah Sharma writing about the politics of slowing down. Based on her ethnographic studies of temporality as it relates to practices such as corporate yoga, Sharma offers a counter-narrative to the emancipatory rhetoric around the design of slow spaces: "Slow spaces are spaces where anxieties about the pace of life are deliberately pacified in order to produce a different experience of time. As alternative temporal spaces they instead depend on the inequitable social relations of the fast and divisive world they rail against … It is time to cast aside the individualistic and privileged weight of busyness, sacred space, and generalized precarity found in the laments over speed. If we want to grasp the complex intersections of social differences under global capital, we need to take the temporal seriously on its own terms." Sharma, *In the Meantime*, 19-21.

Sharma and Morozov both highlight interests in "disconnecting" and "slowing down" as largely upper and middle class conceits. Both Sharma and Morozov point out that the white-collar professionals and Silicon Valley technologists who are most loudly lamenting the excesses of technology are precisely the privileged few that already have more than enough. For Sharma and Morozov, among others, emerging digital countertrends in turn form the subject of counter-critique. While digital limitations hold the potential to be experienced as emancipatory, at the very same time they hold counter potentials to support overwork and speed under the guise of respite from the relentless productivity associated with modern technology and capitalism.

10

"'The Cloud.'" In *A Prehistory of the Cloud*, Tung-Hui Hu observers that "over the last twenty years, the Internet has been variously described as a "series of tubes," an "information superhighway", an "ecosystem," a "commons," a "rhizome," a "simulacra," a "cloud" … Each terms brings with it an implicit politics of space." Hu, *A Prehistory of the Cloud*, xxiv.

What are the politics of space implicit in disconnectivity?

11

"Disconnected 'dead zones' are rapidly disappearing." A partial list of endangered disconnected

spaces: subways, airplanes, basements, elevators, old construction with chicken wire wall supports, natural wilderness.

12

"Sanctioned areas of disconnected space serve social and ecological functions with similarities to urban parks and natural preserves." The emergence of digitally disconnected spaces could exhibit parallels with the cultural history of natural wilderness. Ancient explorers saw wilderness as dangerous, untamed space—the opposite of the profanely sacred spaces in need of preservation and restoration today. To early settlers of the United States, for example, wilderness was chaotic, terrifying territory. In contrast, cities were regarded as islands of security and order. In present day America the situation has flipped: wilderness is often regarded as exclusive space ideal for recreation and escape from chaotic, 24/7 urban life. Historian Robert Nash writes that "today's appreciation of wilderness represents one of the most remarkable intellectual revolutions in the history of human thought about land. … Wilderness has evolved from an earthly hell to a peaceful sanctuary … Such a perspective would have been absolutely incomprehensible to, for example, a Puritan in New England in the 1650s." Nash, Roderick, *Wilderness and the American Mind*, xii.

To current residents of so-called developed contexts, natural wilderness is a place to electrically "unplug" and digitally "disconnect" (though not necessarily to mechanically "unwind"). It is perhaps not so incomprehensible that urban dwellers of the near-term future will experience disconnected spaces not as frustrating and unsafe "dead zones" but rather as peaceful sanctuaries.

13

"A disconnectionist vigilante uses an illegal cell phone jammer to disrupt passengers on public buses who are engaged in obnoxiously loud phone conversations." See Gross, "Why the interest in illegal cell phone jammers?" See also FCC Enforcement Advisory responses, Federal Communications Commision, "DA-12-347A1," and Federal Communications Commision, "DA-11-249A1."

14

"It is illegal to use any device that 'blocks, jams, or interferes with authorized communications.' The FCC 'has a zero tolerance policy in this area and will take aggressive action against its violators.'" Federal Communications Commision, "DA-12-347A1."

15

"Around the world, it is illegal to possess or operate devices that actively create digitally disconnected space." There are thus some substantial legal challenges confronting wireless derouting research, design, and development. Countries that ban or restrict the ownership and operation of radio signal

jammers include Australia, Brazil, Canada, EU, India, New Zealand, Pakistan, Singapore, South Africa, Sweden, Ukraine, United Kingdom, and United States. For example, in the United States, The Communications Act of 1934 "prohibits willful or malicious interference with the radio communications of any station licensed or authorized under the Act or operated by the U.S. Government (47 U.S.C. § 333)." Federal Communications Commision, "Jammer Enforcement."

Accordingly, it is illegal to block cellular telephone, GPS or Wi-Fi, even within the confines of one's private property. As a 2014 FCC advisory notice explains, "In order to prevent harmful interference to critical public safety communications and authorized radio services, federal law prohibits the marketing and sale of 'jammers,' i.e., equipment designed to intentionally block, jam, or interfere with licensed or authorized radio communications. This long-standing prohibition applies to any type of jamming equipment, including devices that interfere with cellular and Personal Communications Services (PCS), police radar, Global Positioning Systems (GPS), and wireless networking services (Wi-Fi). Jammers not only disrupt authorized radio services, but also jeopardize critical public safety communications, such as 9-1-1 calls, and could compromise law enforcement efforts. Ensuring the public's access to these vital services is critically important, and the Enforcement Bureau is committed to strict enforcement in this area." Federal Communications Commision, "FCC Enforcement Advisory No. 2011-03."

Passive, as opposed to active, jamming using fine-meshed Faraday cages or shields is often permitted by law. Electromagnetic field (EMF) shielding material is commercially available through retailers such as LessEMF.com, a site that caters to security and safety conscious users, such as those suffering from EHS (electromagnetic hypersensitivity). LessEMF offers an array of EMF shielding products including baseball caps, underwear, shirts, duvet covers, bed canopies, sleeping bags, and tents.

16

"Disconnective Counterproducts." A selection of disconnective counterproducts by various artists, designers, engineers, activists, entrepreneurs, and corporations:

(A) *I-Bomb, by Eric Paulos.* Creates an electro-magnetic pulse disabling and destroying electronics. See, "Experimental Interaction Unit."

(B) *Faraday Chair, by Dunne and Raby*. An unconventional chair offering refuge from everyday EMF radiation. See Dunne and Raby, "Hertzian Tales, 1994-1997." For a more sustained provocative engagement with electromagnetic space and radio blocking devices, see Dunne and Raby, Design Noir and Dunne, Hertzian Tales.

(C) *Web 2.0 Suicide Machine.* "Lets you delete all your energy sucking social-networking profiles." See the "Web 2.0 Suicide Machine" website.

(D) *Monotask phone covers, by Paolo Cardini.* 3D-printable covers covert your iPhone into a montasking device. 3D files available at the "Monotask covers" Thingiverse website.

See note 16 for image credits.

(E) *NoPhone.* "A fake phone for people who are addicted to real phones" Available from the Official NoPhone Store for US$ 10. The NoPhone Kickstarter crowdfunding campaign was successfully funding within 48 hours, raising US$ $18,316 from 916 backers. See, the "No Phone" website.

(F) *HERS: Treatment for Hyperactive Electronic Response Syndrome, by Luke Loeffler.* "Text 'start' to (505) 672-8718 and wait for a response." See Loeffler, "HERS" online project description. Work created for the Institute For New Feeling's Felt Book.

(G) *Dear Cell Phone User Cards, © 2004 Coudal Partners Inc. all rights reserved.* A method for combating obnoxious phone conversation SHHH! (Society for Handheld Hushing), cards available for download at the "Cloudal Partners SHHH" website.

(H) *Somebody iPhone app, by Miranda July.* An app for sending text messages that are delivered in person. "Conceived as an art work, created with Miu Miu, and launched with a companion film, the app that asked strangers to deliver messages between friends exploded in ways we couldn't have foreseen. Despite the ridiculous challenges, one in four messages were delivered, and an average of ten thousand people used the app every day. The next step could only be to form a real company — a start-up! — to expand and improve on our user's dedication. Or… to choose an end date and let Somebody go out as it came in: a wild experiment in public art, marking a particular moment in time." The iPhone app

was removed from Apple's App Store on October 31, 2015. See the "Somebody" website.

(I) *MIc Jammer, by Allison Burtch, Eric Rosenthal, and Andy Sigler.* "Like taping over your webcam, but for audio." See, Burtch, "Mic Jammer" online project description.

(J) *Cyborg Unplug.* Pivacy appliance that detects and optionally disconnects devices known to pose a risk to personal privacy. Available from the "Cyborg Unplug" website.

(K) *Freedom app.* A productivity app that blocks distracting apps and websites. Available from the "Freedom" website. Other distraction-blocking apps include StayFocused, BrowseControl, FocusMe, Focus, Quiet, Anti-Social, SelfControl, StopProcrastinating, AppDetox, FocusNow, and Productivity Owl.

(L) *iPhone Do Not Disturb feature.* Silences calls, alerts, and push notifications. Allows scheduling and exceptions to be specified.

17

"Deters readjusting." The Readjustment Delay and Readjustment Delay Reset features can be read as examples of "undesigning interaction" through "self-inhibitive options." See Pierce, "Undesigning Technology," 961 and passim and Pierce, "Undesigning Interactions," 38 and passim.

18

"Wireless nonspots." Wireless nonspots offer non-options to connect. There is a subtle yet crucial distinction to be made between a non-option and an option-to-not. Within most digitally connected spaces there are numerous *options-to-not* connect: turning off Wi-Fi on your laptop, setting your phone to airplane mode, putting your digital devices away, etc. However *non-options* to connect, or the strict absence of connective options, are much more rare. Leaving your phone at home when you go out, for example, creates a non-option to connect via your phone. With the non-option to connect (i.e., without the option to connect, or disconnect), one is no longer tempted or enticed to do so. A non-option removes technological potential, effectively functioning as a *negative affordance*. In the case of a salient non-option it is a negative affordance of the perceived variety.

19

"Disconnected nooks." A simplified (and legal) do-it-yourself version of a wireless derouter can be constructed using a power strip, remote switch, or outlet connected to a wall switch. Simply connect your wireless router to a switch-controlled outlet. Turn the router off when you want to create disconnected space. Turn it on when you want to connect. The noticeable lag time upon startup while establishing a connection may help inhibit you in a way similar to the function of the derouter's Readjustment Delay feature. The setup will likely require negotiating socially shared connected and disconnected space.

References

Aipperspach, Ryan, Ben Hooker, and Allison Woodruff. "The Heterogeneous Home." In *Proceedings of UbiComp 2008*, 222–231, 2008.

Baumer et al., "Limiting, Leaving, and (Re)Lapsing: An Exploration of Facebook Non-use Practices and Experiences," In *Proceedings of CHI 2013*, 3257–66, 2013.

Beaver, Jacob, Tobie Kerridge, and Sarah Pennington, eds. "Material Beliefs." London: Goldsmiths College, 2009.

Blythe, Mark, Jamie Steane, Jenny Roe, and Caroline Oliver. "Solutionism, the Game: Design Fictions for Positive Aging." In *Proceedings of the CHI 2015*, 3849–58, 2015.

Burtch, Allison, "Mic Jammer," "Mic Jammer," http://www.allisonburtch.net/mic-jammer/, retrieved January 15, 2016.

"Cloudal Partners SHHH," http://www.coudal.com/shhhcards.pdf, retrieved January 15, 2016.

"Cyborg Unplug," https://plugunplug.net/, retrieved January 15, 2016.

Crary, Jonathan, *24/7: Late Capitalism and the Ends of Sleep*, Verso, 2013.

DiSalvo, Carl, *Adversarial Design*. The MIT Press, 2012.

DiSalvo, Carl, Jonathan Lukens, Thomas Lodato, Tom Jenkins, and Tanyoung Kim, "Making public things: how HCI design can express matters of concern." In *Proceedings of CHI 2014*, 2397–2406, 2014.

"Digital Detox," April 17, 2009, Internet Archive, https://web.archive.org/web/20090503022415/http://www.adbusters.org/campaigns/digitaldetox.

Dunne, Anthony and Fiona Raby, *Speculative Everything: Design, Fiction, and Social Dreaming*. Cambridge, Massachusetts; London: The MIT Press, 2013.

Dunne, Anthony, *Hertzian Tales: Electronic Products, Aesthetic Experience, and Critical Design*. Cambridge, Mass.; London: The MIT Press, 2008.

Dunne, Anthony and Fiona Raby, *Design Noir: The Secret Life of Electronic Objects.* Birkhauser, 2002.

Dunne and Raby, "Hertzian Tales, 1994-1997," http://www.dunneandraby.co.uk/content/projects/67/0, retrieved January 15, 2016.

"Experimental Interaction Unit," http://www.eiu.org/orig/experiments/i-bomb/info.html, retrieved January 15, 2016.

Federal Communications Commision, "DA-11-249A1" https://transition.fcc.gov/eb/Public_Notices/DA-11-249A1.html, retrieved January 15, 2016.

Federal Communications Commission, "DA-12-347A1," https://transition.fcc.gov/eb/Public_Notices/DA-12-347A1.html, retrieved January 15, 2016.

Federal Communications Commission, "Jammer Enforcement," https://www.fcc.gov/general/jammer-enforcement, retrieved January 15, 2016.

Gaver, "Making Spaces: How Design Workbooks Work," In *Proceedings of CHI 2011*, 1551–1560, 2001.

"Freedom," https://freedom.to/, retrieved January 15, 2016.

Gaver, Bill, and Heather Martin. "Alternatives: Exploring Information Appliances Through Conceptual Design Proposals." In *Proceedings of CHI 2000*, 209–16, 2000.

Gross, "Why the interest in illegal cell phone jammers?," CNN, 2012.

Ha, Anthony, "The Phone Stacking Game: Let's Make This A Thing," TechCrunch, 2012.

Harmon and Mazmanian, "Stories of the Smartphone in Everyday Discourse: Conflict, Tension and Instability." In *Proceedings of CHI 2013*, 1051–60, 2013.

Harper, Richard, *Texture: Human Expression in the Age of Communications Overload.* 2012, MIT Press.

Hein, Buster, "Banksy's latest sketch is a terrifying reminder of your iPhone addiction," http://www.cultofmac.com/293535/banksys-latest-sketch-terrifying-reminder-iphone-addiction/, retrieved January 15, 2016.

Hu, Tung-Hui, *A Prehistory of the Cloud*. 2015, MIT Press

"I Forgot My Phone," https://www.youtube.com/watch?v=OINa46HeWg8, retrieved January 15, 2016.

Institute For New Feeling's Felt Book, 2014-2015, http://www.institutefornewfeeling.com/feltbook, retrieved January, 15, 2016.

Lawson, Shaun, Ben Kirman, Conor Linehan, Tom Feltwell, Lisa Hopkins, and others. "Problematising Upstream Technology through Speculative Design: The Case of Quantified Cats and Dogs." In *Proceedings of CHI 2015*, 2663–2672, 2015.

Leshed and Sengers, ""I Lie to Myself That I Have Freedom in My Own Schedule": Productivity Tools and Experiences of Busyness," In *Proceedings of* CHI 2013, 905–14, 2013.

Metahaven (Daniel van der Velden and Vinca Kruk) and Marina Vishmidt eds., *Uncorporate Identity*. Lars Muller Publishers, 2010.

"MonoTask covers," http://www.thingiverse.com/thing:26578, retrieved January 15, 2016.

Morozov, "The Mindfulness Racket," New Republic, 2013.

Near Future Laboratory, "TBD Catalog." Excerpts available at https://www.dropbox.com/s/nejxlbin5fb6bse/TBD-Catalog-Excerpts.pdf

Newman, Lily Hay, "Mark Zuckerberg: 'It's Not Sustainable to Offer the Whole Internet for Free,'" Slate, May, 4, 2015.

"National Day of Unplug," http://nationaldayofunplugging.com/about-us/, retrieved January 15, 2016.

Nash, Roderick, *Wilderness and the American Mind*. Yale Univeristy Press, 1982, third edition.

"No Phone," https://www.kickstarter.com/projects/nophone-usa/the-new-and-unimproved-nophone, retrieved January 15, 2016.

Odom, William, Abigail Sellen, Richard Banks, David Kirk, Tim Regan, Mark Selby, Jodi Forlizzi, and John Zimmerman, "Designing for Slowness, Anticipation and Re-visitation: A Long Term Field Study of the Photobox," In *Proceedings of CHI 2013*, 1961–70, 2013.

Pierce, James, "Working by Not Quite Working: Resistance as a Technique for Alternative and Oppositional Design," PhD diss, Carnegie Mellon University, 2015. http://reports-archive.adm.cs.cmu.edu/anon/hcii/CMU-HCII-15-109.pdf

Pierce, James, Phoebe Sengers, Tad Hirsch, Tom Jenkins, William Gaver, and Carl DiSalvo, "Expanding and refining design and criticality in HCI." In *Proceedings of CHI 2015*, 2083–92, 2015.

Pierce, James and Eric Paulos, "Some Variations on a Counterfunctional Digital Camera," In *Proceedings of DIS 2014*, 131-40, 2014.

Pierce, James, and Eric Paulos, "Counterfunctional things: exploring possibilities in designing digital limitations," In *Proceedings of DIS 2014*, 375-84, 2014.
Pierce, James, "Undesigning Interaction." *interactions* 21 no 4(2014): 36-39.

Pierce, James, "Undesigning Technology: Considering the Negation of Design by Design," In *Proceedings of CHI 2012*, 957–66, 2012.

Sengers and Gaver, "Staying Open to Interpretation: Engaging Multiple Meanings in Design and Evaluation," In *Proceedings of DIS 2006*, 99-108, 2006.

Sengers, Phoebe, Kirsten Boehner, David Shay, and Joseph 'Jofish' Kaye, "Reflective design." In *Proceedings Critical Computing 2005*, 49-58, 2005.

Sharma, Sarah, *In the Meantime: Temporality and Cultural Politics*. Duke University Press, 2014.

Shutterstock, "Smartphone Addiction Concept," http://www.shutterstock.com/pic-235268062, retrieved January 15, 2016.

"Somebody," http://somebodyapp.com/, retrieved January 15, 2016.

"Stop the Cyborgs," http://stopthecyborgs.org/google-glass-ban-signs/, retrieved January 15, 2016.

Stutner, Suzie, "'Digital Detox' Becomes A Real-Life Word, Gets Added To Oxford Dictionary Online," Huffington Post, 2013.

Turkle, Sherry. *Alone together: Why we expect more from technology and less from each other.* Basic books, 2012.

Vanko, Cristina, "I Sent All My Text Messages in Calligraphy for a Week," Atlantic Online, 2013.

"Web 2.0 Suicide Machine." http://suicidemachine.org/, retrieved January 15, 2016.

Zickuhr, Kathryn and Aaron Smith, "Home Broadband 2013," Pew Research Center, 2013.