Something I No Longer Believe: Is Internet Time Slowing Down?

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Abstract
Back in 2012, I wrote an article speculating on the implications of Moore’s Law and “Internet Time” for political communication researchers (Karpf, 2012). The premise was that the Internet continues to change at such a rapid pace that it creates fundamental ceteris paribus problems for digital politics research. I still believe that is a fair assessment of the Internet of the early 2000s. But I no longer believe it holds true for the Internet today. I have come to believe that the pace of digital innovation is slowing down and that the suite of user-facing technologies that make up the mass-oriented Internet has stabilized. This article elaborates on what has led me to rethink the status of Internet Time and discusses the implications of this temporal slowdown. It draws on archival research from a study of WIRED magazine over its 25-year history.

Keywords
Internet Time, innovation, Internet history

Introduction
A 2012 article of mine pondered the pace of digital change online—“Internet Time”:

The Internet of 2012 is different from the Internet of 2002. What is more, there is little reason to suppose this rapid evolution is finished: The Internet of 2022 will likely be different from the Internet of 2012.

My central argument was that the Internet is unique among Information and Communications Technologies (ICTs) because it keeps changing even as it is adopted by larger segments of the public. This in turn wreaks methodological havoc on some of our most robust research techniques by violating key ceteris paribus assumptions. The pace of Internet Time seemed unlikely to slow in the foreseeable future.

I now wish to reevaluate that final point. I remain convinced that studying Internet-mediated politics is especially tricky because the medium has been rapidly and repeatedly reconfigured over the years. But the Internet seems to be stabilizing, and the pace of change seems to be slowing down.

Consider: Today, we are much closer to the Internet of 2022 than we are to the Internet of 2012. The Internet of 2012 (at least as it was experienced in the United States) was defined by a few iconic companies—Google (and YouTube), Apple (and the iPhone), Amazon, Facebook, and Twitter in particular. Several of those companies had not existed a decade earlier. Today, the Internet is still defined by those same iconic companies (at least in the United States and most of the Global North). Facebook in 2019 is different from Facebook in 2012, but this is a smaller change than we had grown accustomed to. The Internet of 2019 is a lot more like the Internet of 2012 than I had predicted.

While undergoing a larger archival project on the history of the digital future, this emerged as my most surprising observation. Moore’s Law and Internet Time are bedrock elements in the mythos of Silicon Valley and the digital age (Markoff, 2005). In the 1990s and early 2000s, one can observe the concrete impacts of Internet Time within the historical record. But the pace of technological breakthroughs palpably slows in the 2010s. This article will provide evidence of the slowdown and offer some commentary on what it implies.

The WIRED Study
In the summer of 2018, I conducted a study of WIRED magazine. I read the entire magazine chronologically, treating it as a historical text that documents how some of the most buoyant
promoters of the “digital revolution” viewed it contemporaneously. In effect, I was looking to construct a history of the digital future (Karpf, 2018). Several previous scholars have used WIRED as a source for studying the discourse of the digerati (Flichy, 2007; Mosco, 2004; Streeter, 2005; Turner, 2006), but their attention has been fixed on the magazine’s early years. To my knowledge, I am the first academic to take the excessive step of reading the entire back catalog cover-to-cover. (The magazine described me as an “obsessed academic.” I have decided this was a compliment.)

Leaving through the early decades of the magazine, one is confronted by the sheer pace of change online. The Internet of 2005 would be practically unrecognizable to a “Netizen” of 1995. The intervening decade included the dotcom boom, the dotcom bust, and the rise of “web 2.0” as a new overarching narrative for the digital revolution. Along the way, there were the browser wars/Microsoft lawsuit, the copyright wars/Napster lawsuit, Google redefining search, the Linux/Open Source wars, the introduction of the iPod, and the spread of WiFi hotspots. Apple went from dire straits (June 1997 cover story: “101 Ways to Save Apple”) to unbridled profitability. Craigslist, Wikipedia, Blogger.com, and MySpace all were born and rose to prominence as well. WIRED became synonymous in its first decade with a techno-optimist, this-changes-everything-style futurism. Year-by-year, it certainly appeared as though everything was indeed in a state of constant, repeat reformulation.

WIRED’s original editors were “trying to make a magazine that feels as if it has been mailed back from the future” (Karpf, 2018). Their predictions were not always prescient – sometimes comically so. The November 1999 cover story, for instance, proclaimed that “the next Web revolution” was about to arrive in the guise of a new company called “DigiScent” and its signature product, iSmell (Platt, 1999). iSmell was going to let Web users send smells to each other over the Internet (using “Reekers, instead of speakers,” according to one of the founders).

But more important than the hits or misses is the rhythm of change. The time lapse from bold prediction to altered user experience was never more than a few years. Napster was going to kill the music industry in 2000; the iPod was going to save the music industry in 2002. The debris from the dotcom bust had barely been cleared before the magazine started trumpeting the arrival of web 2.0/“Open Source Everywhere.” The magazine published an entire supplemental issue, “Unwired: Supplement to WIRED” in 2003 devoted entirely to speculating on how WiFi connectivity would change everything. WiFi was indeed everywhere not long after.

WIRED in the 1990s and 2000s confirms that Internet Time is more than just a marketing slogan. Hardware and software were indeed rapidly changing. The technology was not just diffusing through the populace; it was simultaneously morphing and being redefined. And that process continued at least through 2007 with the introduction of the iPhone. The standard explanation for this theme was Moore’s Law, Gordon Moore’s 1965 prediction that transistor capacity would grow exponentially, doubling every 18 to 24 months. Moore’s Law proved approximately true for 40 years and became an article of faith among Silicon Valley influencers (Markoff, 2005).

One of those Silicon Valley influencers was Bill Joy, cofounder of Sun Microsystems. In a 1998 interview with WIRED, Joy casually noted,

> We know Moore’s Law will run out sometime around 2010. It’s probably not going to be a crash into the wall. Things will just start slowing down. We’ve been getting a free ride with Moore’s Law. We can write worse and worse software, and the machines just get faster and faster and cheaper and cheaper—and they cover our tracks. (Reiss, 1998)

In retrospect, it seems Joy may have been right.

**The Slowdown**

Since 2010, WIRED has continued to cover the latest bold advances that promise to transform the Internet. A 2010 cover package featured expert predictions from the “brightest tech minds” on “How the Tablet Will Change the World.” The iPad was supposed to be a revolutionary device. Kevin Kelly (2010) wrote, “Don’t think of them as tablets. Think of them as windows that you carry.” Today, tablet computers are everywhere, but they function as little more than iPhones with larger screens. Also in 2010, Editor-in-Chief Chris Anderson wrote about three-dimensional (3D) printing and the burgeoning Maker Movement: “In the next industrial revolution, atoms are the new bits” (Anderson, 2010). 3D printing might indeed one day change the entire industrial economy. But, 8 years later, it is still confined to industrial applications and a Do-It-Yourself hobbyist community.

In 2013, wearable technology was the revolutionary future of the Internet. Bill Wasik covered the potential of wearable tech (Apple Watch, Google Glass, etc.) in “Why Wearable Tech Will Be as Big as the Smartphone” (Wasik, 2013). Today, the market for wearable tech has been winnowed down to exercise gear. Meanwhile, we have never really collectively reckoned with the non-adoption of Google Glass. Google Glass seemed like the inevitable future, spontaneously rejected by the mass public.

In May 2014, WIRED’s cover story featured the Oculus Rift, which was finally ushering in the era of mass Virtual Reality (VR) Goggles (Rubin, 2014). Five years later, Virtual Reality headsets are still a luxury gaming device whose sales figures never approach their marketing hype.

Likewise, the Internet of Things (IoT) has been a fixture of the near-term horizon for years now. In terms of everyday user experience, the IoT revolution has translated into individual devices such as the Nest thermostat and Amazon’s Alexa. It is far too early to call the IoT a failure. But it is clear evidence that the IoT future has not progressed as fast as expected.
(And then there is blockchain, which has managed to be the next-big-thing for a full decade now.)

I am not suggesting that any of these technologies should be confined to the dustbin of history alongside DigiScent. It is too early to make such a pronouncement, and indeed each has carved out a niche user base. But what is noteworthy here is that, just as Bill Joy suggested, the rate of change appears to be slowing down.

At the same time, we have seen remarkable stability among the big technology firms. The big technology firms of 2019 were also the big technology firms of 2009. The same cannot be said of technology firms from 1993 to 2009. If 1995 to 2005 was remarkable for its rapid turnover and constant reinvention, 2010 to 2019 had been remarkable for its extended stability. Moore’s Law may have petered out, without anyone particularly noticing.

So What?

Why does it matter if Internet Time is slowing down? I believe this matters in three ways: it matters for how we study the Internet, for the mythology we construct around the Internet, and for how we regulate the Internet.

If Internet Time is slowing down, then it means we might be arriving on firmer ground for our most robust research methods. My 2012 article argued in favor of “embracing the messiness” and cobbling together an assortment of kludgy research methods that could help us gain some perspective on the changing digital landscape. This was motivated by a concern that surveys, experiments, and other staple methods within the media effects tradition were relying on a false ceteris paribus assumption. I still see a lot of utility in the values of kludginess and transparency, but I no longer think it is a necessary starting point for digital politics researchers. The Internet of 2022 will probably look a lot like the Internet of 2019. If ceteris paribus can once again be assumed, then our more robust methods can regain center stage.

Second, and more importantly, it means expending one of the central myths of the digital era. Moore’s Law and Internet Time were especially amenable to the narrative of disruptive innovation. Disruption tells us that dominant firms are vulnerable, that they likely will not dominate for long. And that mythology has oriented researchers, journalists, investors, and entrepreneurs toward the vulnerability of old institutions and the dynamic potential of start-ups. Scholars from Jill Lepore (2014) to Matthew Hindman (2018) have drawn attention to the flaws in this mythology. But as Vincent Mosco (2004) notes, “Myths are neither true nor false, but living or dead.” My own work on Internet Time has, in its own small manner, helped breathe life into the myths of Internet Time and digital disruption. It is time for us to take a more critical look at stability and disruption. Today’s major platforms deploy the language of disruption to resist regulation. If they are behaving, in fact, more like stable monopolies, then they should be recognized as such.

Third, it requires a different approach to policy. Internet Time and disruption were important components of the cyber-libertarian ethos that has long defined cyberspace (Turner, 2006). Old institutions were “dinosaurs.” Government regulations could only stifle innovation. The Internet had to remain free from regulatory intervention, because the Internet was still being invented. This was always an oversimplification, of course, but it was more firmly grounded in real concerns when the next wave of innovation was always close-at-hand and often coming from unexpected sources. During a period of rapid media and technological change, effective regulation is extraordinarily difficult because the regulators cannot keep up with the behaviors they are regulating. But as Internet Time slows down and a few massive companies assume quasi-monopolistic market power, the regulatory challenges become more tractable.

Moore’s Law and Internet Time were rough approximations of real social forces that defined the pace of sociopolitical change for decades. They were myths, but they were highly relevant myths because they described something unique and significant about changing media and communications technologies.

But the pace of change appears to have slowed.

We should update our priors accordingly.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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