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From hypertext to hype and back again: Exploring the roots of social media in early web culture[1]

Michael Stevenson

Introduction

Social media emerged in the early 2000s with the launch of sites like Facebook, YouTube and Wikipedia. According to computer industry commentator Tim O'Reilly (2005), such platforms were part of a larger paradigm shift called 'Web 2.0.' They signaled a move away from a web of static pages and towards a more dynamic, open and participatory media environment (ibid.; Kelly, 2005). As many scholars have pointed out, and as O'Reilly himself notes, the rise of Web 2.0 was more evolution than radical change. Many of the features and forms we associate with Web 2.0 and social media – personalization, networking features, user-generated content, many-to-many communication, and so on – were pioneered on the web in the 1990s or with earlier forms of networked computing such as Bulletin Board Systems (BBSs; see Chapter 2 in this volume). This raises the question of what was actually new or different about Web 2.0 and social media platforms. How should we think of the relationship between social media and the early web, and what can we learn from this history?

In this chapter I argue that Web 2.0 and social media must be seen as a particular constellation of previously existing ideas, values, media forms, and technologies. First, as I will show, values like participation and openness are often associated with Web 2.0 but were very much a part of web culture early on. Second, as sophisticated as the technological infrastructures of social media are, they also strongly echo the technical vision that accompanied the web's invention in 1989, and are rooted in other earlier technological developments such as the rise of open-source software. Third, much like their social media counterparts later on, early web companies gained both cultural legitimacy and speculative financial investment from their portrayal as 'exceptional' media that would reshape the media landscape while enhancing individual freedom and bottom-up organization.

In addition to showing us where social media come from, web history reminds us that these media were not inevitable. A widespread belief is that technology develops in a linear fashion, and nowhere is that assumption more pronounced than in popular web discourses. O'Reilly and others argue, for example, that Web 2.0 represents a natural progression driven by the medium's innate qualities. What these narratives about the 'nature' of the web hide is that a range of actors – web users, producers and investors, to name a few – are constantly making decisions about which technologies or media to promote and use, how to use them, which ones to invest in, and so on. Such choices are not simply the product of individuals making rational decisions; rather, they are shaped by culturally specific values, beliefs and practices, political and commercial interests, as well as the material constraints of available technology. So instead of our interaction with the medium being driven by some technological force such as the web's true nature, it is the opposite: these

decisions and the cultural, political and economic values they stem from have real impacts on how the web develops through time.

While we must be skeptical of concepts like Web 2.0 and the various past and present 'visions' of the web's purpose or nature, we should also not dismiss them. It is exactly because the web is shaped socially that such popular narratives must be understood critically. They set expectations, galvanize communities of producers and users, create inequalities of attention, steer financial speculation, etc. As I will argue, visions of the web's purpose are very much a part of the cultural, technological and economic history of the web, and a crucial element in the rise of social media and Web 2.0 in the mid-2000s.

This chapter is organized in an overlapping chronology, from the web's inception in 1989 to the hype surrounding Web 2.0 in the mid-2000s, with each section revealing some of the ideological and technological roots of social media. Section 1 details two utopian visions of digital culture – as an 'information universe' and a 'virtual community' – that arose in the late 1980s and early 1990s, and that continue to resonate today. In the second section, I turn to the dot.com bubble and the discursive construction of the web as an 'exceptional' medium seemingly destined to replace existing mass media. At the center of this discourse was *Wired*, the tech culture magazine that laid out the basic framework by which the web and subsequent technologies (not least social media) have been legitimated as disruptive departures from the traditional media landscape. Section 3 spans the mid- to late-1990s, when various groups of publishers, designers and amateur bloggers sought to define particular new media forms and practices as 'native' to the web. Such efforts served to establish norms and conventions, distinguishing and legitimizing certain practices and

forms in the eyes of peers, audiences, customers and investors. While much of what was called ‘web-native’ culture in the late 1990s, such as blogging, is echoed in social media platforms, there are important differences that highlight how perceptions of the web’s essential character continue to change. Section 4 discusses the rise of open source software, an important technological precursor to social media, and Slashdot, the innovative tech news and community website that prefigured many of the features we associate with ‘participatory’ social media platforms. The concluding section focuses on Web 2.0, discussing how this supposed paradigm shift brought together many of the preceding ideas and developments. In short, the chapter argues against a commonly held perception that Web 2.0 and social media represent radical (yet inevitable) departures from old media and the early web. Rather, web history shows us that both the web and how we perceive it continually evolves, and that to understand the medium in its past or present form requires attention to the cultural, economic and technological factors that shape it.

1. Early visions of digital culture

Before the World Wide Web was a household name or had even been released publicly, ambitious ideas of what could be done with networked media were already in place. In particular, excitement around the web’s potential derived from two key ideas, that of an ‘information universe’ and of a ‘virtual community.’ On the one hand, Berners-Lee’s notion of a highly organized and automated ‘information universe’ gave direction to the creation of web standards and protocols, and similarities can be seen in a range of later technical projects, including Berners-Lee’s own work in connection with the ‘semantic web’ (Berners-Lee, Hendler, and Lassila, 2001) and, in

a commercial context, Facebook's 'open graph.' On the other hand, the once-popular sense that the web was a 'virtual' space separate from the offline world has largely been forgotten, but many of the ideas, practices and values associated with Rheingold's notion of 'virtual community' were revitalized in the 2000s in connection with Web 2.0 platforms and social media.

Berners-Lee's information universe

The World Wide Web was 'born' in late 1990, with the first website up and running in December of that year (Berners-Lee, 2000; see Figure 4.1). Invented by Tim Berners-Lee, the web consisted of a few core technologies that made it easy to navigate documents stored on networked computers. First was a standard for locating specific documents within existing domains, or the Uniform Resource Locator (URL). Second was the HyperText Transfer Protocol (HTTP), which is a set of conventions that standardizes how one computer (the client) requests and downloads a document from another computer (the server). This protocol is also what makes it possible for documents to be connected to one another via hyperlinks, and why a website's address always begins with HTTP. Third, Berners-Lee created HTML (HyperText Markup Language) as a way to write web-specific documents that contained hyperlinks. HTML is a markup language, meaning it describes how a document should look by giving specific instructions to the computer retrieving a document. To this day, these relatively simple protocols and standards are still at the root of much of our online activity, not least social media.

[TS: Insert Figure 4.1 here]

Figure 4.1: info.cern.ch, the first WWW page

In some ways, the web is simply an application that sits on top of the internet, alongside other applications like email or Internet Relay Chat (and largely forgotten ones like Gopher and Usenet). However, it is one that from the beginning was tied to an ambitious vision of transforming how knowledge is produced and managed. Berners-Lee proposed and built the web at the European Organization for Nuclear Research (called CERN), and the technology's stated purpose was to share information resources among scientists at the lab (Berners-Lee, 1989). But in thinking about its potential, Berners-Lee went much further than the physics laboratory. In an introductory technical paper he wrote with Robert Calliau and other colleagues, Berners-Lee described the larger 'dream' driving the project, dubbed 'the information universe':

> Pick up your pen, mouse, or favorite pointing device and press it on a reference in this document – perhaps to the author's name, or organization, or some related work. Suppose you are then directly presented with the background material – other papers, the author's coordinates, the organization's address, and its entire telephone directory. Suppose each of these documents has the same property of being linked to other original documents all over the world. You would have at your fingertips all you need to know about electronic publishing, high-energy physics, or for that matter, Asian culture. (Berners-Lee et al., 1991: 461)

The dream was a universal document system and information resource. It was imagined as a kind of ultimate reference medium, linking together every other

informational medium from telephone books and library catalogs to encyclopedias and scientific databases. It was a scientist's dream, and in fact consciously echoed the dreams of previous scientists. The web, the authors suggested, was set to fulfill the vision set out in 1945 by Vannevar Bush, who had suggested a hypertext-like system could enable more collaboration in the scientific community (Bush, 1945). It also resembled Xanadu, a hypertext system devised by Ted Nelson as part of his general advocacy of using computers for individual empowerment (Nelson, 1974). But where previous hypertext projects remained speculative fictions or stalled during development, the web would succeed. Berners-Lee began to publicize the project in 1991, and in 1993 CERN released the source code for the World Wide Web server and browser to the public domain, meaning these could be used and adapted on a royalty-free basis. Beginning with the release of the Mosaic browser (which allowed for in-line multimedia, and thus a richer user experience) in mid-1993, the growth of the web was meteoric.

What Berners-Lee created was not just a clever solution to the problem of sharing documents remotely, but a system that was utopian in its scope and ambition. Even today, a similar dream of an accessible and universal information system guides Berners-Lee's work at the World Wide Web Consortium (the W3C), the body that develops standards and protocols for the web. But this 'dream' of a perfectly organized information universe is not limited to the work of non-profits; it is clearly echoed in the products created by prominent Web 2.0 and social media companies. For example, Google's (n.d.) stated 'mission' is 'to organize the world's information and make it universally accessible and useful,' while Facebook's efforts to create a

‘social graph’ involves not only a universal mapping of social relationships but also of the connections between people and a range of places, events, interests, and so on. The technology of the web and the utopian vision surrounding it was clearly grounded in the needs and ideas of scientists, and perhaps this is why Berners-Lee did not immediately see the web’s potential in the realm of entertainment media or as the basis for social media. Nonetheless, social media should be understood in part as an extension of this initial work, both in the sense of Berners-Lee’s technical inventions and his larger ambitions for the web.

The virtual community and the WELL

While Berners-Lee was working at CERN and imagining the web as an ‘information universe,’ another vision of the future of networked computing was emerging on the other side of the Atlantic Ocean. Distinct from the scientist’s dream of a comprehensive knowledge resource and working environment, this was a vision of community, collaboration and creative expression. Similar values would eventually be tied to Web 2.0 and social media. However, in the early- and mid-1990s this technological vision was associated with an influential BBS called the Whole Earth ‘Lectronic Link (the WELL).

The WELL largely served users living in the San Francisco Bay Area, including many of the people working in the computer industry and research centers of Silicon Valley. Much like the *Whole Earth Catalog* that inspired it, the WELL brought together a somewhat strange mix of hippies and technology enthusiasts, as well as a dedicated community of fans of psychedelic rock. Like other BBSs at the time, the WELL consisted of various discussion forums (called ‘conferences’) on topics

ranging from technology to parenting. Unlike most of its contemporaries, it gained notoriety and cultural credibility largely through publicity and the presence of a few high-profile users. This group included technology entrepreneurs, journalists and emerging 'gurus' of digital culture such as John Perry Barlow and Mitch Kapor, the founders of the digital rights organization The Electronic Frontier Foundation. Most of all, the WELL's status as a key object in the history of online culture derives from the work of Howard Rheingold, another influential WELL user who wrote about the BBS in his book *The Virtual Community* (2000; originally published in 1993).

Rheingold is a noted journalist and thinker in the Bay Area's technology scene, and someone who epitomizes the Californian 'free thinker' persona with brightly-colored shirts and painted shoes to go along with his mostly optimistic views on technology. Introducing the book, subtitled 'Homesteading on the Electronic Frontier,' Rheingold wrote:

> People in virtual communities use words on screens to exchange pleasantries and argue, engage in intellectual discourse, conduct commerce, exchange knowledge, share emotional support, make plans, brainstorm, gossip, feud, fall in love, find friends and lose them, play games, flirt, create a little high art and a lot of idle talk. People in virtual communities do just about everything people do in real life, but we leave our bodies behind. (2000: xvii)

Rheingold's argument was not only that one could find real community online, but that virtual communities could provide a solution to increasing individualization and atomization of society, a trend famously described by the sociologist Robert Putnam

(2001) as ‘bowling alone’ (i.e., the decline of activities that maintain community such as bowling leagues). On the WELL, he argued, one lived in a gift economy, where one would ‘do things for one another out of a spirit of building something between them, rather than a spreadsheet-calculated quid pro quo’ (Rheingold, 2000: 49). And while he also saw potential dangers such as increased surveillance, Rheingold hoped the virtual community could ‘revitalize democracy’ (ibid.: 295) by providing a participatory alternative to the mass media, which he argued was ruined by consumerism and partisanship. Many years later, social media companies promote similar notions of giving voice to individuals and improving (inter-)cultural discussion and understanding, although with an important additional emphasis on users’ immediate social network. For example, Facebook has variously articulated its mission as giving ‘people the power to make the world more open and connected' and working to 'bring the world closer together' (Johnson, 2017).

It’s important to note that although the WELL often serves as the default example of online culture in the 1980s and early 1990s, there were many other instances of networked computing being used to build and maintain communities. These include the BBSs discussed elsewhere in this volume and by Driscoll (2014), but also non-US examples like the publicly funded Minitel network in France as well as the Amsterdam, Netherlands initiative De Digitale Stad (DDS). Funded partially by the city government, DDS consciously borrowed Rheingold’s concept, adapting the idea somewhat to envision using ‘digital cities’ as a way to enhance local community and to encourage intercultural awareness via virtual ‘travel’ to other cities and cultures (see Hinssen, 1995). Such initiatives are notable not only for how they foreshadowed

social media, but also how they differ from what came later. Not least, Minitel and DDS remind us that, unlike broadcast media, there are no popular publicly-funded social media, even if this once seemed possible.

Rheingold's vision of virtual community was powerful and prescient, but also flawed. In addition to what critics have called a naiveté or 'starry-eyed' utopianism on the part of Rheingold and other early internet commentators (Morozov, 2011: xiii), the idea of the 'virtual' should be approached critically, as should Rheingold's sense that collaboration on the WELL was a gift economy. While it seemed that the flourishing community on the WELL was made possible by the borderless nature of cyberspace, the truth was quite the opposite. As Turner (2006) argues, the WELL was so coveted by its users precisely because of its geography: the computer industry in Silicon Valley was and still is marked by rapid employment turnover, meaning workers must maintain a large number of social ties as they move from one job to another. The WELL, in addition to 'community' in the sense of friendship and discussion, was an invaluable resource for staying in the loop (Turner, 2006; for a related discussion of 'venture labor' during the dot.com bubble, see Neff, 2012). These connections to geography and work life make sense when we look ahead to social media: the distinction between offline and online networks is often hard to draw, and social network sites are an important source of 'weak ties' that act as a 'bridging' form of social capital, for example, helping (former) college students to find 'jobs, internships and other opportunities' (Ellison, Steinfield, and Lampe, 2007: 1164).

Despite its flaws, the concept of virtual community provided an important 'frame' for understanding networked computing right at the moment that the web was coming into view (Turner, 2006: 159), and its utopian undertones continue to resonate

today. It was a powerful notion both for former hippies like Rheingold, who hoped to recover a lost sense of community and public discourse online, as well as for corporations, which thought the sponsorship of online 'communities' was a promising form of commercializing the new medium (ibid.: 161). And although the concept's popularity soon declined, the underlying sense of the web as a medium of collaboration and community resurfaced in the early 2000s and played a major role in how social media were perceived and understood. In fact, it was another book by Rheingold that set the tone. In 2002 he wrote *Smart Mobs*, in which he surveyed the changing media landscape – in particular the rise of mobile computing and the use of reputation systems to engender trust in online communities – and argued that the emerging technologies had 'one thing in common: *They enable people to act together in new ways and in situations where collective action was not possible before*' (Rheingold, 2002: xviii, italics in original). With smart mobs, as with virtual communities, unprecedented voluntary cooperation was seen as the revolutionary product of technological change. Although the sense of the web as a virtual space was quickly fading, the spirit of Rheingold's notion of virtual community was once again very much alive.

2. The politics of dot.com euphoria: Web exceptionalism and cyberlibertarianism

Although Berners-Lee and Rheingold had ambitious visions for the future of networked computing, neither likely could have predicted the massive amounts of hype and financial speculation that soon followed. Soaring stock prices were fueled by a belief that the web was fated to replace existing media. In line with this belief

that the web was an ‘exceptional’ medium (Stevenson, 2014b) set to displace existing media, an important component of 1990s digital culture was the discursive construction of the web as a medium of individual and economic ‘freedom’ (Chun, 2006). This emphasis on freedom was part of a political outlook that critics called ‘cyberlibertarianism,’ which combines libertarianism – a political philosophy that prioritizes individual freedoms over collective duties and is generally opposed to centralized state power – with technological utopianism and countercultural values (Barbrook and Cameron, 1996; Borsook, 2000; Winner, 1995; for an overview and a wider perspective on the ‘non-politics’ of digital culture, see Liu, 2004: 239–282). Understanding the interrelated history of web exceptionalism, dot.com hype and cyberlibertarianism is important for, among other things, understanding how today’s social media companies portray themselves and how they operate in the political realm. For example, Facebook’s recent Internet.org initiative raises important questions about the belief in the emancipatory power of technology, ongoing attempts to ‘lock in’ large populations to a single platform, as well as how the libertarian politics of Silicon Valley companies become implicated in social and political domains such as international development (see, for example, Morozov, 2013).

The dot.com bubble was ushered in on August 9, 1995, when the web software company Netscape Communications held its Initial Public Offering (IPO) and doubled its share price in a single day. The excitement and financial speculation was unprecedented, as there was little evidence that the company’s business model – based on the popularity of its Netscape Navigator web browser (previously called ‘Mosaic’) and potential sales of its ‘Enterprise’ web server software – would ever work. What it

did have was a near monopoly in terms of browser market share that allowed Netscape to present itself as the web's primary 'platform,' but this was at a time when just 3% of Americans had ever logged onto the World Wide Web (Pew Research Center, 1995), and thus does not fully explain the company's rapid financial success. Rather, as Streeter (2010) argues, the excitement around Netscape relied not only on its demonstrated dominance on the web, but the 'romantic' sense that the web was a 'rebellious' force set to reshape the media landscape.

This perception of the web's inevitable triumph was widespread due to its promotion in national newspapers, magazines and broadcast news, especially after Netscape's IPO. However, it was clearly a perception that was born within and around the computing and multimedia industry. As the web came into view, the most prominent voice expressing this idea was *Wired*, the tech culture magazine created by Louis Rossetto and Jane Metcalfe, which claimed to report on and represent 'the most powerful people on the planet today – the DIGITAL GENERATION' (Rosetto, 1993). *Wired* was an upstart independent publication, and the founders wanted it to be a forum for the tech world's most disruptive thinkers and entrepreneurs, much like *Rolling Stone* had been for the music world before (Wolf, 2003). *Wired* was not the first magazine to focus on the cultural and political aspects of computing technology (there were predecessors such as *Mondo 2000*; see Boulware, 1995). However, its mix of high production values, a distinctive visual and editorial style as well as its connections to a network of influential tech journalists and entrepreneurs – in large part those who populated the WELL – helped the magazine become a key player in the emerging industry (Turner, 2006; Wolf, 2003). The magazine sought to be an arbiter of taste for the new media and offer what it saw as rare insight into the radical

changes wrought by new technology. In one of its more famous moves, *Wired* portrayed Marc Andreessen (the young co-founder of Netscape) as a young David taking on Microsoft's Goliath, and helped fan the flames of hype on the way to Netscape's historic IPO a year later (Streeter, 2010). While the magazine arguably no longer has the same cult status it did in the 1990s, it remains an important 'cultural intermediary' in digital culture that can help make or break new startups. More generally, *Wired*'s legacy can be seen in how subsequent actors in new media culture have similarly appealed to the web's 'nature' and a rhetoric of freedom in an effort to legitimize particular new technologies and media forms (Stevenson, 2016). Again, Facebook serves as an important example: in various interviews and other publicity, Mark Zuckerberg has often stated that the company's mission is to promote connectivity, openness and transparency, values that he understands as part of a larger and inevitable cultural shift inherent to the rise of the internet (see, for example, Zuckerberg's interview in *Wired*: Vogelstein, 2009). Such instances demonstrate the continued prevalence of web exceptionalism, and highlight its importance to how new media companies and technologies are promoted and legitimized.

Because of its high visibility, *Wired* was the focal point of some of the first critiques of the technological and political worldview it represented. Most famously, *Wired* and the rest of the 'virtual class' came under attack from the Marxist cultural critics Richard Barbrook and Andy Cameron in a piece called 'The Californian Ideology' (1996). In this classic touchstone of new media criticism, Barbrook and Cameron argue that the 'faith' represented by *Wired* is both contradictory and flawed:

> [T]he Californian Ideology promiscuously combines the free-wheeling spirit of the hippies and the entrepreneurial zeal of the yuppies. This

> amalgamation of opposites has been achieved through a profound faith in the emancipatory potential of the new information technologies. In the digital utopia, everybody will be both hip and rich. (Barbrook and Cameron, 1996: 1)

Wired, in line with other proponents of cyberlibertarianism (e.g., Dyson et al., 1994), essentially argued that technology and the free market would bring about positive social change. Cyberlibertarian thinkers suggested that utopia was possible in cyberspace, but were remarkably silent on traditional social issues like worker's rights and social justice (Liu, 2004: 264–265). What Barbrook and Cameron were most critical of was the fact that *Wired* and its allies had successfully crafted the perception that the only way forward was to let technology and the market do their work, and that any intervention on the part of government would amount to 'holding back' the digital revolution. The Californian Ideology automatically excluded public initiatives, and the authors put the French Minitel model forward as evidence that such alternatives were possible. In this way, Barbrook and Cameron argued that *Wired*'s digital utopianism simply served as a 'false consciousness' that aided the economic interests of Silicon Valley companies like Netscape.

Today, the most vocal criticism of cyberlibertarianism comes in the form of Evgeny Morozov's polemics against technological 'solutionism,' or the false belief among Silicon Valley types – not least social media companies – that technical fixes can and should be developed for social and political problems. In 1990s web culture, such techno-libertarian problem-solving was on display, for example, in the use of 'ignore' functions to combat verbal abuse in chat rooms and forums, much like block

lists and similar features on various social media today. A critique is that such solutionism puts the onus on victims of abuse, and that they do nothing to resolve conflict, that is, they do not form a social solution to a social problem. For Morozov, the problem of solutionism goes well beyond web communities, as more domains of social life become dependent on social media and related technology.

By the mid-1990s, then, important roots of social media were in place. On the one hand, there were two separate, influential visions of the web's significance – the 'information universe' and 'virtual community' – that helped guide the medium's development. On the other hand, there were the twin beliefs in the web's exceptional nature and in its capacity to bring about positive social change, both of which became entangled with the financial speculation of the dot.com bubble. Today, social media companies and initiatives are similarly portrayed in terms of how they form an exception to mass media and an integral part of the unfolding media landscape, and they depend on these perceptions for both cultural legitimacy and financial investment.

3. Defining 'web-native' culture

Although an increasing number of tech journalists, entrepreneurs and investors were convinced the web would revolutionize the media industry and that new media companies would challenge their established print and broadcast counterparts, no one was quite sure what the web would look like. While today it seems obvious to say that the web is a 'social' medium and that media companies should adapt, in the mid-1990s this was not necessarily a given. Then, many existing print and broadcast companies and institutions wondered how to reproduce their products online, while

influential tech ‘gurus’ argued that the only successful strategy would be to take advantage of the medium’s affordances for interactivity. But even among those who thought the web required a new approach, there were important disagreements of what exactly that was. As early as 1994, one could begin to see what amounted to competitions or struggles to define ‘quality’ online, and these activities clearly expressed different ideas about the web’s character, especially in relation to mass and mainstream media. What is important is that while each of these approaches to ‘web-native’ culture reveal similarities with today’s social media, they also offer visions of how *else* the web might be approached, designed and used. They thus give insight not only into where social media come from, but also how social media and the web might otherwise look.

The HotWired debate

One important debate about the web’s identity occurred when *Wired*, the magazine that had hyped the web and argued it would revolutionize the media landscape, decided that it would invest heavily in its web presence. Beginning in early 1994, publisher and editor-in-chief Louis Rossetto made the decision to build the web’s first commercial site, and the first web-only professional publication (Stevenson, 2014a; Wolf, 2003). To develop a business plan, he called on Jonathan Steuer, a young Stanford graduate student with the necessary technical expertise, and a former investment banker named Andrew Anker. In addition to several editors from *Wired*’s fast-growing network and engineers brought in by Steuer, the new site was to be headed by Howard Rheingold, who brought with him the credibility gained from his publications and his presence on the WELL. In an interview with the *New York Times*,

Rossetto proclaimed that the site would point the way to the future: it would 'not be a magazine with buttons' and instead would break new ground in terms of 'context, community and interactivity' (Markoff, 1994).

Although begun with great enthusiasm, the site's development quickly stalled around a series of major disagreements that divided the team into two camps. On the one hand, Rheingold and Steuer wanted to build a site that put readers' voices and digital artwork alongside the online magazine's output, and in some sense orchestrate a 'worldwide jam session' of virtual community and participation (Wolf, 2003: 108). On the other hand, community was important to Rossetto only to the extent that it made the audience feel a bond with the *Wired* brand: for instance, a community feature Rossetto later supported was a *Wired* 'café' where audiences could chat with digital culture celebrities who were covered by the magazine. Such community features, in Rossetto's mind, should never overshadow the professional content being produced. The debates hardly ended there, and questions surrounding the site's interface, business model and editorial direction all became battlefields for the two camps (Wolf, 2003: 93–114). Similar debates about the relative value of editorial versus amateur content would continue to animate web culture, not least when Web 2.0 platforms and social media began to give user-generated content a privileged place in the mid-2000s (e.g., Keen, 2007).

In line with the larger sense that the web was an inherently different medium than existing mass media, Rheingold's and Rossetto's ideas were grounded in their individual perceptions of the web's character and significance (Stevenson, 2014b). For Rheingold, the web was an extension of the communities he had observed on

BBSs, and any successful website would reflect the web's open nature. For Rossetto, the web was an equalizer, giving independent publications like *Wired* the chance to compete with large media corporations, and a space where *Wired*'s superior knowledge of a new breed of active consumers (in other words, the magazine's tech-savvy audience) would allow the magazine to become a dominant player in the emerging media landscape. Where Rheingold saw the web as 'social' in the sense of egalitarian community and individual expression, Rossetto believed the social and participatory affordances of the medium were important only as a means for professional publications to better connect with their audiences and (once the technology had advanced sufficiently) sell targeted advertising. Their competing ideas can be compared to different understandings of social media today: on the one hand, social media are portrayed as productive of bottom-up community and organic social networks (Shirky, 2008), while on the other hand, they can be (and increasingly are) understood as tools that increase the media power of celebrities and other 'traditional' media actors and institutions (Marwick and boyd, 2011).

The HotWired debate was never an even competition, as Rossetto was firmly in charge; Rheingold and Steuer were (respectively) forced out and demoted before the site finally launched in October 1994 (Keegan, 1995). Rossetto's vision was implemented, although some of his decisions (such as forcing readers to register in order to view the site) would backfire and be reversed. The site recorded a few important firsts, such as the first banner advertisement, but was ultimately crushed under the weight of high production costs. Even after the initial debate, HotWired was the site of a number of important discussions and developments in web culture and web design. For example, it was the birthplace of Suck.com, an influential website

that published daily essays satirizing and parodying the emerging web culture (Sharkey, 2005). And in 1997, HotWired implemented a social network-like feature in which HotWired 'participants' could create a profile page and list their favorite websites. Although largely remembered for its failed ambitions, HotWired's history reminds us that the 'participatory' logic we ascribe to Web 2.0 and social media has long been a part of how the web has been imagined, and that not all perceptions of the web as 'social' are necessarily the same (Stevenson, 2014a).

Designing a 'professional' web in the dot.com bubble

Alongside the relatively high-profile debate between Rossetto and Rheingold, the issue of the web's social and participatory character was also entangled in the dynamics of a growing industry. Web production companies began to appear as early as 1994 (when, for example, a web production and marketing company called Organic Online was contracted to create advertisements and websites for HotWired's sponsors), and these would serve a range of companies and institutions for years to come. As Megan Ankerson (2010) has argued, the web's dominant aesthetics through the years can be mapped against changing industry dynamics: in addition to the rapid increase (and subsequent decrease) of economic capital during the bubble, the rise of web production companies, their alignments and competition with traditional advertising agencies, as well as changes in bandwidth technology and internet penetration could all be seen to impact web design practices. Perhaps most notably, as competition increased during the 'euphoric' stage of the bubble, producers sought to differentiate themselves by becoming experts in animated Flash websites (ibid.). Flash sites were generally intended to be large-scale, immersive and visual

experiences, and demanded heavy budgets and rare skill sets. By promoting Flash sites as more cutting-edge and 'professional' than simple HTML, producers and designers were able to take advantage of their clients' desire to stand out. At the same time, these sites served to create a clear boundary between producers/creators and users/viewers. It was only after the dot.com crash that usability became a central focus for the industry, setting the stage for the forms of 'permanently beta' web production that characterized Web 2.0 (Neff and Stark, 2003).

Ankerson's case study on Flash reminds us that there is nothing natural about dominant perceptions of web culture or about what counts as quality design practices at any given time. Rather, such perceptions and standards of quality are defined through cultural processes and often shaped according to the economic, ideological and professional interests of those involved. Another important case discussed by Ankerson (2015) is the controversy surrounding two projects designed to capture and publish a single day in the emerging history of the web. The first of these was *A Day in the Life of Cyberspace*, instigated by MIT professors to celebrate their Media Lab's tenth anniversary. The project would showcase life online, with 'bits' added from online citizens from around the globe. Not everyone on the project wanted to publish users' unedited contributions, and professional photographer Rick Smolan left *A Day in the Life* to work on his own project, called *24 Hours in Cyberspace*. In contrast to MIT's participatory platform, Smolan's project imagined a highly professional, global media production, translating the high standards and production values of existing media industries into a polished, interactive product online. Similar to the debate at HotWired, there was a sharp contrast in how participants valued editorial expertise

and control (Ankerson, 2015). In an ironic development that demonstrates the complexity of the history of the web and social media, the software developed for Smolan's 'read-only' project was later commercialized and marketed to non-professionals, thus becoming a support for the 'read/write' web as celebrated in the context of Web 2.0 and social media (ibid.). As Ankerson argues, while it is tempting to oppose the early, static and professional Web 1.0 to today's social and participatory Web 2.0, these oppositions do not hold up so well upon closer historical inspection.

The rise of blogging: personal publishing, content management and web filtering

In many ways today's social media can be seen to extend blogging, the web genre that rose to prominence in the late 1990s. Distinct from online diaries, which were relatively common on the web as well (see, for example, the online diary history project: http://diaryhistoryproject.org/), weblogs mixed individual expression with linking and other practices related to establishing and maintaining ties within a blogging 'community.' This self-awareness and feeling of belonging formed what bloggers argued was the genre's authenticity, and what they believed was a contrast to the extravagance of dot.com websites and the impersonal voice of mass media (see, for example, Rodzvilla, 2002). Although opinions differ as to who the first blogger was, the label is usually granted to one of three people: Justin Hall, Dave Winer and Jorn Barger. What's more important than 'firsts,' though, is how their individual stories illustrate the genre's key elements and the different ways in which blogging can be thought of in relation to social media.

For Justin Hall, the web was first and foremost a vehicle for self-expression. Having grown up frequenting BBSs and inspired by *Wired*'s talk of digital revolution, Hall started his website links.net from his college dorm room in 1994 (Rosenberg, 2009). On the site, Hall shared links to content on the web (the most popular of which were links to adult content) while also sharing intimate details of his own life. Hall went on to document events from his personal life, from internal conflicts during his employment at HotWired to the ups and downs of his personal relationships. In addition to Hall's youthful enthusiasm and status as one of the web's first 'micro-celebrities' (Senft, 2008), his story is notable as a very early example of oversharing, a story that he himself has recently documented in an excellent video autobiography (see http://overshare.links.net/; for another classic story of blogging and oversharing, see Gould, 2008).

For Dave Winer, a software developer and tech columnist, a crucial question was what news should look like online. The prevailing organizational metaphor at the time was spatial, as evidenced by the term 'cyberspace.' This spatial logic was apparent in how, for example, the personal homepage hosting service Geocities (created in 1995) was divided into 'neighborhoods,' and in the general prevalence of spatial and domestic metaphors (such as 'front door,' 'lobby,' and so on). Against this background, Winer made an important contribution by adding a feature to his Frontier publishing suite that organized new content in reverse-chronological order, so that the newest content was always at the top of the page (Winer credited the idea to HotWired, another sign of that site's influence). This newspage addition was an important technical development in the establishment of the early blogging community (Ammann, 2009), and in general Winer's Frontier content management

system foreshadowed the various easy-to-use weblog publishing applications that would become available from 1999 (starting with Pyra, the company that would later become Blogger and was sold to Google).

For Jorn Barger, who built his site *Robot Wisdom* with Winer's Frontier suite and coined the term 'weblog' in late 1997, the web's virtues were openness and transparency, as enabled by its hypertextual form. Linking, if done right, would ideally lead to the best content and bring light to the most accurate and useful information. Barger set out to create a movement (not unlike an artistic or literary movement) dedicated to filtering the web, one that would ensure the web provided an open alternative to the editorial hierarchies and deliberate misinformation that characterized older media environments (Ammann, 2009). Although Barger's influence within the blogging community would wane amid various conflicts (not least with Winer), his efforts and his 'rules of art' for weblogs are significant for how they evoked Berners-Lee's original vision of the web as a highly sophisticated information resource, and prefigured forms of collaborative information management such as social bookmarking.

Although the genre would diversify at the same time that it 'stabilized' (Siles, 2012), these three early bloggers helped shape the genre's core conventions and expectations of it. They each believed the form would take advantage of the web's specific affordances and thereby offer a distinct alternative to mass media, although how much of an alternative this was would later be called into question and critiqued (Lovink, 2008). Blogging would be a source of personal expression, with collections of posts and links providing an unfiltered view of the self. Blogs would be written with professional-grade publishing infrastructure and presented in a reverse-

chronological format that better suited the medium. And blogs would ultimately be a collaborative effort, where the sum was greater than the parts. This vision of a collaborative effort echoed Rheingold's earlier vision of virtual community, but it also echoed Berners-Lee's 'information universe,' as a key feature was that blogs would work together to curate and annotate the best links. With such advantages in mind, early blogger Rebecca Blood called blogs 'native to the Web' (Blood, 2002). The term 'web-native' suggests a kind of 'pure' web form, one that connects a set of cultural values such as individual expression and collaboration with perceived characteristics of the medium. In this way, the efforts of the early bloggers were similar to that of HotWired's creators and the producers of *24 Hours in Cyberspace* and *A Day in the Life of Cyberspace*: their accomplishment was not just about the media product they created, but an ability to tie it to a larger story about the web's nature and future direction.

4. Open-source software and the data turn

While new genres like blogging developed and understandings of the web's nature continued to evolve, the technologies underlying web production also changed, greatly impacting the medium's capacity and scope and paving the way for the kinds of dynamic, data-intensive social media platforms we use today. Alongside many advances in infrastructure – the further growth of personal computing, increases in internet penetration and bandwidth, the rise of mobile internet, etc. – the 1990s saw the proliferation of professional grade software that was affordable and in many cases free-to-use. In this respect the most important development was the rise of 'free' or

'open source' software (F/OSS), meaning 'nonproprietary but licensed software' (Coleman, 2012: 1).

F/OSS is generally licensed in a way that source code is made freely available and software can be adapted to a user's particular needs. 'Open source' also connotes a distributed, partially self-organizing form of production (Benkler, 2007; Raymond, 2005): beginning with the operating system Linux, one began to see large-scale software projects being carried out by large numbers of developers across the world, using the internet to coordinate and collaborate. Such open source production distinguished itself from traditional software not only by the fact that collaborators generally volunteered their time and that they had a large say in the direction of a project, but also through continuous updates ('rapid prototyping') to the software that ran counter to the idea that software is ever 'finished.' In addition to connoting a particular mode of production, the label 'open source' was created in 1998 to promote the idea that freely available software could be highly profitable, as developers could earn money from services attached to their non-proprietary software (this was a controversial move within the free software community – see Kelty, 2008: 99–117). As the dot.com bubble began to peak in 1999, 'open source' companies like Red Hat held successful IPOs and F/OSS was declared the next big thing.

The rise of F/OSS impacted web culture in the 1990s and early 2000s in two significant ways. First, in a material sense, the fact that open source software was such high quality and did not have to cost much more than the time necessary to master it, meant that a greater user base had the opportunity to produce highly sophisticated websites and web applications. Second, it provided an analogy that,

coupled with existing visions of the web's participatory potential, made it seem as if the web would make traditional media companies obsolete. If a group of volunteers spread across the world could outperform traditional software companies like Microsoft and Oracle, why couldn't a group of bloggers outperform CNN?

Slashdot as early example of a participatory media platform

The tech news site Slashdot.org is an important touchstone for understanding how open source affected web production and provided a new impulse for envisioning the web's impact on the media landscape. The site was built in 1997 by a 21-year-old programmer named Rob Malda to publish, as he put it on the site's masthead, 'News for Nerds. Stuff that Matters.' The site's audience quickly grew, not least because of growing excitement around Linux and other free software. Built largely using the scripting language Perl, the site was continually updated with new features, most notably a streamlined system for submitting stories to Malda and the site's other editors and a custom-built, automated moderation system that distributed the work of moderation to the site's 'trusted' users (Stevenson, 2015). The site's infrastructure helped the site's editors deal with the twin problems of information overload and entropy: measures were taken, for example, to ensure submissions could be efficiently organized and searched by editors, while the moderation system allowed users to choose whether to see all comments or just recommended ones, thus minimizing the impact of spam, trolls and other undesirable content. On top of these key features, Malda regularly added features for personalizing and customizing Slashdot, so that readers would see news based on their preferences, as well as expanding the ability of

users to add content through journals and a social networking feature (ibid.). Such complex systems of collaborative media production and consumption had not previously been built, and although similar forms of collaborative filtering were increasingly being used by e-commerce sites like Amazon in their efforts to 'profile' consumers and recommend products (Elmer, 2003), Slashdot represented the first application of such technology in the context of web publishing. As early as 1999, the site's success prompted commentators to call Slashdot 'open source' news (Glave, 1999), and Slashdot eventually formed a central example in Bruns's theories of 'gatewatching' (Bruns, 2005) and 'produsage' (Bruns, 2008).

Slashdot not only foreshadowed many of the elements we recognize as part of social media platforms today, but also hinted at criticisms that these later platforms are regularly faced with. One recurring debate surrounded the fact that Slashdot's many features required surveillance in the form of authentication (i.e., registering and logging into the site) and browser cookies (used so that the server could 'remember' a user's activities and preferences) (Stevenson, 2015). This breach of privacy was mitigated by the fact that users were still allowed to read content and comment anonymously, but nonetheless it highlighted the potential clash between creating desirable interactivity, on the one hand, and the potential for personal data to be used for commercial or other purposes. Another critique was that Slashdot did not offer enough user freedom, as editorial control was ultimately in Malda's hands even if certain elements, such as moderation, were distributed and automated. This critique was voiced by Kevin Rose, founder of Slashdot's competitor Digg (Andrews, 2005), and the subsequent exchanges between Malda and Rose (held primarily in the media,

e.g., Kushner, 2007) were an early example of debate surrounding 'algorithmic gatekeeping,' or automated forms of information management for selecting, ranking and recommending content (Bozdag, 2013).

Slashdot was an early example of 'informated media,' notable not just for enabling user participation but for doing so in a way that automatically incorporated data generated from user activity (Stevenson, 2015). This interest in experimenting with web technology to create new media forms was also apparent in Everything (http://everything2.com/), a site created by Malda's friend Nate Oostendorp. Everything was an ambitious project, a 'flexible web database' of individual nodes (or 'things') and their links to other nodes, each of which would be written by the site's users in an attempt to 'find the best way to store and link ideas' (Oosterdorp, 1999). Although it never gained the audience or attention its creators hoped for, Everything (like Slashdot) was notable for how it integrated a vision of participation and community with one of a highly-ordered information medium – that is, how it articulated a hybrid version of Rheingold's vision of community and Berners-Lee's vision of the web as an information universe.

5. Web 2.0 and social media

So far, this chapter has recounted several interrelated strands of 1990s web history: early visions of the medium's potential as 'information universe' and 'virtual community,' the widespread belief that the web would transform the media landscape and an accompanying financial speculation, the various attempts to define the dominant forms of (social) media on the web, and the rise of open-source infrastructures and recommendation systems that would form the technological basis

for social media platforms. These cultural, economic and technological developments all played a role in shaping how the web would eventually be understood as 'social.' The wave of social media platforms that began to appear in the early 2000s and promised a more participatory media environment were imagined, financed and built in ways that display continuity with the early web.

Despite the many connections between 1990s web culture and our present social media era, the transition was hardly routine. In 2000 and 2001, the internet bubble burst. Dot.com stock prices began to drop, and initial successes like Pets.com (an online pets supply store) and Webvan (a grocery delivery company) declared bankruptcy and became symbols of how badly investors had been swindled. But as Dale Dougherty (an executive at O'Reilly Media) noted in 2003, certain companies like Google seemed to have come out of the stock market crash stronger, and what appeared to make these companies successful was similar to what enabled a new wave of web platforms and services like Wikipedia, del.icio.us and (a year later) flickr to grow so quickly: namely, an ability to 'harness' mass user activity in a way that improved the overall product, as well as the principle that the product itself was never 'finished.' With that insight, Dougherty coined the term 'Web 2.0' and O'Reilly Media held its first annual Web 2.0 conference in 2004. In the widely cited article called 'What is Web 2.0?,' O'Reilly (2005) argued that the term was more than a marketing buzzword, and outlined the new 'rules' for building a successful web business. At the top of the list was the idea of profiting from user contributions: the basis of Google's search engine was the implicit participation of webmasters whose links could be repurposed to index and rank websites, much like Amazon repurposed

user activity (such as browsing, ranking and buying products) in order to make better recommendations. As with Slashdot's rise to prominence a few years earlier, a key analogy for this kind of automated media production was once again open source software development. O'Reilly argued that the key to harnessing collective intelligence was building an 'architecture of participation' by lowering the threshold for users to contribute. In addition to leveraging user activity, an important characteristic of Web 2.0 companies was an emphasis on building valuable databases.

Web 2.0 thus brought together the two distinct visions of the web's nature outlined at the beginning of this chapter. On the one hand, Web 2.0 platforms like Wikipedia, Digg and flickr, along with later social media like Facebook, suggested an egalitarian or communitarian structure where anyone could participate and no central authority controlled the activities of users: although the term 'virtual' had waned, these companies and platforms certainly encourage characterizations of their users as a 'community' in the sense that Rheingold meant it (for example, see the many 'community guidelines' or variations thereof found on social media platforms). On the other hand, social media and Web 2.0 platforms are essentially intricately organized information systems, and because of this resonate strongly with the 'information universe' imagined by Berners-Lee: the indexes and archives being created by Google, Facebook and others represent impressive attempts to create useful reference media out of the vast databases each of these companies own. Similar to Berners-Lee's ambition of creating a 'semantic web,' their efforts represent a desire to create universal data formats to allow search engines and other applications to distinguish between entities and to map their relationships – such work clearly has commercial implications, but must also be understood critically in terms of the

epistemological and ontological assumptions they carry (for an introduction to the semantic web and discussion of its relationship to Web 2.0, see, for example, McCool (2005, 2006); for a critique of epistemology and ontology of the semantic web and similar schemes, see Cramer (2007)).

Similarities with the 'virtual community' and 'information universe' should not obscure the fact that Web 2.0 is as much a business concept as it is a grand vision of the web's distinctive nature. Where 'participation' often has a positive connotation and implies collective action (such as with democratic or civic participation), here the meaning was much more neutral. Effectively building an architecture of participation, O'Reilly argued, was not so much a matter of inspiring volunteers but of ensuring that 'participation' happened even when users acted out of self-interest – for example, although one might actively rate or review products on Amazon (and even receive the prestige and perks of being a 'Vine Voice' or trusted reviewer), one already contributes to Amazon's efforts to improve its recommendations simply by browsing the site or buying a product. Terranova (2004) argues that such models benefit from users' 'free labor,' while Gehl (2014: 23) similarly points out that social media and Web 2.0 platforms profit from users' 'affective processing' of the valuable archives they control. Likewise, the utopian connotations of knowledge graphs and social graphs are countered by the obvious commercial aims guiding Facebook's and Google's actions. As Gehl argues in relation to Facebook, it is important to see how the particular variables and values it incorporates into its database – from demographics such as age, education and occupation to various 'likes' or interests such as one's favorite music or movies – match closely with the needs of advertisers (Gehl, 2014: 92–116).

Finally, it's worth noting that O'Reilly's Web 2.0 article closely followed the format of *Wired*'s celebrations of the emerging dot.com bubble, in that it portrayed a radically altered media landscape as a foregone conclusion. Web 2.0 was not just a dry description of business concepts, but a reconfiguration of the web's promise of a more open and participatory media environment. As new as Web 2.0 seemed, and as disruptive as the latest social media startups appear to be today, it is important to understand that these concepts and companies emerge from historical processes, not least from evolving understandings of what the web is and what 'works' on it, which themselves are products of cultural, social and economic processes. Meanwhile, our understanding of web history is itself still taking shape, and it is hard to overstate how much work is being carried out, or will be, to preserve and study the medium's history. The importance of such work should not be underestimated, as any attempt to understand and determine the future of the web and social media will benefit greatly from further efforts to uncover their past.

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