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### The web as exception: The rise of new media publishing cultures

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## 4. Open news and informed media at Slashdot, 1997–1999.

Although articulations of the web as an exceptional medium posit a radical break from the past, they are better understood as sites of more subtle continuities and transformations. So far, I have analyzed cyberculture, or the utopian discourse on the significance and effects of new media that helped shape early perceptions of the web, and showed how elements of this discourse were central to the creation and early development of HotWired in the mid-1990s. At HotWired, the utopianism and cool sensibility that characterized cybercultural rupture-talk and its primary mode of delivery combined with other influences such as Wired's publishing culture to inform its perception of "a new publishing paradigm." Ideas about the web's purpose and its native culture became implicated in editorial and design practices at HotWired and its influential offspring Suck.com, often in ways that connected these to prior publishing cultures and movements, from the New Journalism to Mondo 2000's new media cool.

In this second case study of web exceptionalism, I revisit the emergence of the tech-news website Slashdot and its community infrastructure, which would inspire journalists and academics to proclaim that the application of principles from open-source software development was bringing about a revolution in news production. Although rupture-talk of an open-source mode of news production did, to a certain degree, emerge at Slashdot, in this chapter I argue that it was in fact secondary to a more subtle, even implicit, understanding of the web's exceptional character, one that had to do with the potential for automating processes of media production, distribution and consumption, and - crucially - using registrational data to make these processes visible. Borrowing from Shoshana Zuboff's study of the use of information technology in the workplace, I call this "informed media."<sup>1</sup> Although such automation and visibility is perhaps a precondition for any effort to produce 'open' or collaborative news on a large scale, the genealogy traced here sooner suggests a connection between this quality of Slashdot's community infrastructure and information systems design in various other domains, from the informed workplaces Zuboff describes to the semantic web.

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<sup>1</sup> Zuboff, 1988.

## 4.1 Introduction: the cultural force of collaboration?

One of the central principles of Web 2.0 development is “openness,” a quality that proponents argue is inherent to the internet and the web (a relationship symbolized by collaboratively-written, open standards like internet protocols and W3C standards, as well as various open-source software projects like the Apache web server) and a source of competitive advantage for companies and organizations who deploy it.<sup>2</sup> For Kevin Kelly and other commentators, new media formats and platforms like blogs, Flickr, Digg, Del.icio.us, Wikipedia and YouTube bring this logic of openness to bear on the economics and institutional structures of the media, a move that ensured audience participation and a “bottom-up takeover” of traditional media.<sup>3</sup> This radical break from existing media, Kelly wrote in 2005, could be sourced to the “cultural force” of collaboration at the heart of the web.<sup>4</sup>

In this chapter, I revisit an early example of such collaborative media by turning to the history of Slashdot, the tech news and discussion site that by 1999 had implemented a number of recommendation features now associated with social media and web 2.0 platforms, and that was considered a harbinger of large-scale changes in news media. Slashdot’s editors, including the site’s founder and programmer Rob Malda, would select news submitted by its readers, while comments attached to articles were filtered by a collaborative ratings system to point readers to the most informative or interesting contributions. After an article was published, comments would supply additional information and commentary, and the “rapid peer-review” of the filtering system would ensure the best comments would be highlighted.<sup>5</sup> Another layer involved “meta-moderation,” a check against abuse of the moderation system. As popular accounts would soon portray it, as well as academic ones later on, Slashdot’s community infrastructure pointed the way to the web’s inevitable transformation of news production, distribution and consumption through the application of principles of decentralized, open source software production.<sup>6</sup> Openness, in this sense, meant giving the audience a say in what was published: the editors relied on users to direct their attention to news, and selected from that pool. Often, users would submit the same link or article, and the editors could choose the submission with the best summary or most background information. In

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<sup>2</sup> O’Reilly, 2005; Tapscott, Don, and Anthony D. Williams. 2008. *Wikinomics: How Mass Collaboration Changes Everything*. London: Atlantic Books; Shirky, 2008.

<sup>3</sup> Kelly, 2005; Tapscott and Williams, 2008; Shirky, 2008.

<sup>4</sup> *ibid.*

<sup>5</sup> Glave, 1999.

<sup>6</sup> *ibid.*; Bruns, 2005.

some cases, readers also provided guest editorials. Ideally, openness also meant enriching a story through commentary and interaction after publication; in a sense, extending the event of publication to include further fact-checking, analysis and other discussion. Analogous to what Eric Raymond called Linus' Law, after Linux founder Linus Torvalds, the "many eyes" that made up Slashdot's audience would make it trivial to reveal any "bugs," or flaws in the reporting of a story.<sup>7</sup> This analogy would later inform Axel Bruns's theorization of Slashdot as "gatewatching," or the act of contextualizing news by a community of interest.<sup>8</sup> From this perspective, the site's extensive infrastructure (called Slash) supported what Bruns calls a basic need and desire to see information in context.

In the genealogy of Slashdot's community infrastructure presented here, I depart from these notions of open news and gatewatching in a number of ways. First, even though Slashdot was closely aligned with open source technology and advocacy, I argue that its specificity as a new media publishing culture is marked by a set of interrelated histories, including Rob Malda's biography and immersion in BBS culture as well as the dynamics of the free software movement in the mid- to late-1990s, when open source projects began to compete with proprietary vendors and generate interest from dot.com investors. Second, I reconstruct key moments in the development of Slashdot's most celebrated features, which included the moderation system and, later, its tagging scheme, and argue that the evolving logic behind them was different from the perception of Slashdot 'hacking' news media open or deploying the "secret weapon [of] the collaborative power of the Web," as Lev Grossman would suggest in 2000.<sup>9</sup> Rather, this proceeded in an ad-hoc fashion, with features often designed in response to more mundane problems like spam: a more appropriate metaphor than "open source news," I argue, is a responsive, problem-solving approach to Slashdot's community that could be called - following a short story Malda wrote in 1997 - "virtual parenting."<sup>10</sup> Finally, in section 4.4, I argue that if there was a larger goal in all of this, it was not one in opposition to traditional publishing practices but rather a vision of a fully "informed" media product, in which the events, activities and processes of media production, distribution and consumption become visible.<sup>11</sup> This understanding of Slashdot removes the association of an

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<sup>7</sup> Raymond, Eric S. 2005. "The Cathedral and the Bazaar." *First Monday* (Special Issue 2: Open Source) (October). <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/1472/1387>.

<sup>8</sup> Bruns, 2005.

<sup>9</sup> Grossman, 2000.

<sup>10</sup> Malda, Rob. 2011b. "Nerds, Unix and Virtual Parenting." *Cmdrtaco.net*. <http://cmdrtaco.net/2011/09/nerds-unix-and-virtual-parenting/>.

<sup>11</sup> c.f. Zuboff, 1988.

antagonism with mainstream media, but keeps intact the notion of the web's displacement of prior media; it also recalls cyberculture by grounding its promise in a utopian configuration of the computational metaphor.

## 4.2 Slashdot's producer culture: BBS, the open source movement and advances in web publishing technology

Rob Malda and Jeff Bates registered slashdot.org in September 1997, linking to linux and free software news and discussing it with friends in a comments section attached to each page. Within two years, Slashdot's audience numbered in the hundreds of thousands, and Wired magazine called it a new form of community journalism.<sup>12</sup> Time magazine would follow suit, explaining that where Malda had sought a place on the web to chat with fellow geeks, he had built a collaborative form of news production: "Malda has taken idea of what news was, hacked it open and rebuilt it for the Internet age."<sup>13</sup> Slashdot also found financial success: Malda and co-founder Jeff Bates sold Slashdot to Andover, a media company focused on technology and the open source movement, for \$7 million in cash and stock options. The value of that stock grew exponentially with Andover's successful IPO later that year, and again when Andover was acquired by VA Linux in 2000. (In another development typical of the dot.com bubble, however, those employee stock options would become relatively worthless by the time they could be exercised/sold.) Some of the keys to understanding Slashdot's form and its success are apparent in the site's pre-history, best viewed at the intersection of Rob Malda's biography with the height of popularity of online Bulletin Board Systems (BBSs), the history of the free software movement and its re-branding as open source, and the creation of accessible, powerful technologies for advanced web development, including scripting languages (Perl, PHP and Python) and the relational database management system MySQL.

The first relevant history, with respect to Slashdot's mix of tech news and geek culture, as well as the centrality of user contributions and comments, is Rob Malda's immersion in BBSs in the 1980s. Malda's childhood and teenage years coincided with a period of rapid growth in personal computing and computer networking, and it was his experiences with these technologies that helped shape his ideas about the uses of online media. By the age of 10, Malda was learning to program in BASIC on the computer his father brought home from work. Three years later, he had his own computer and a 1200 baud modem, which he used to connect to a handful of local BBSs, and by

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<sup>12</sup> Glave, 1999.

<sup>13</sup> Grossman, 2000.

high school he ran his own BBS from his room. Anecdotes from the time include how Malda was punished for misbehaving - instead of grounding him, his mother would lock his keyboard in the trunk of the car - and the fact that Malda and Bates became friends through online message boards, even though they went to the same high school. It was the kind of love for technology mixed with social isolation that geek stereotypes are made of: "I didn't really go outside, I didn't really talk to people. I was just on my computer all day," Malda would later summarize.

Even without reference to Malda's biography, it is relatively easy to see how BBSs foreshadowed the type of website Slashdot would become. Users would share files and play "door games" such as Trade Wars 2000 while using message boards to discuss a range of geek cultural topics, from new software releases to the TV shows X-Files and Mystery Science Theater 3000. The roles BBS hosts took on similarly foreshadowed the kind of work Malda would do for Slashdot: hosts, for example, had to strike some balance between determining the character of a BBS (from giving it a name to deciding which features and games to support) and acting as a facilitator - the bulk of a host's time would be spent maintaining hardware, fixing bugs and (less frequently) policing the community.<sup>14</sup>

A key point is how this heritage differs from that of other prominent actors in the early development of web publishing, and how it made Slashdot distinctive from those others. For example Suck, as discussed in chapter 3, clearly drew from a 1990s alternative publishing culture epitomized by 'zines like Spy and Might. Although Slashdot's producer culture similarly brought technology and popular media into the same discursive space (to the point that, say, Star Wars fandom was as much a sign of geek identity as using open source software), it did not display the same levels of reflexivity or media criticism. For example, although they both covered the public relations campaigns surrounding the "browser wars" and the civil actions filed against Microsoft during the 1990s, their emphases reveal basic differences. For Slashdot the story resonated with the community's passion for technological openness and confirmed a perception that the cards were stacked in Microsoft's favor, whereas Suck's take centered on the similarities between Microsoft's attempts to manipulate public opinion and those of their adversaries in the justice department.<sup>15</sup> And although Slashdot shared a link-plus-commentary format with blogging, there was a key difference: where the development of blogging's formal and stylistic conventions went hand-in-hand with attempts to define the form culturally as an alternative to mainstream news and

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<sup>14</sup> Christopher, Timothy. 2011. "SysOp Is Dead: Community Evolution and Online Games." In Monica Evans, ed. *Videogame Studies: Concepts, Cultures and Communications*. Freeland: The Interdisciplinary Press.

<sup>15</sup> Bray, Chris. 1998. "Toxic Shock." *Suck.com*. <http://www.suck.com/daily/98/04/27/>.

entertainment media, Malda rarely considered Slashdot in those terms, at least during its initial development.<sup>16</sup> The BBS model (especially when run by teenagers more interested in role-playing games than the politics of media) lacked efforts at self-definition, and instead implied small and informal community around shared topics of interest.<sup>17</sup>

At Slashdot, the primary topics of interest were Linux and other open source software projects, especially news related to their mainstream success. Technology discussion was another legacy of BBS culture, however the character of Slashdot's coverage and the level of interest it attracted is better explained with reference to a second relevant history, namely the emergence of a pragmatic, business-friendly strand of free software advocacy during the height of the dot.com bubble. Slashdot celebrated open source development at a time when economic interest and media attention spiked, and acted as a forum for the exchange of ideas related to its commercialization. Slashdot's participation in this transition went deeper as well, since the code for running the site (called Slash) would be released under GNU's General Public License in 1999, and the site would become more generally recognized as an example of the potential success of applying open source principles to areas other than software development, especially media production.

The idea that releasing source code under a free license might be a viable strategy for software development - let alone inspiration for other kinds of production - had only recently gained traction. Eric Raymond wrote "The Cathedral and the Bazaar" in 1997, contrasting traditional software production ("cathedrals") with the ad-hoc, partially distributed development of Linux and his own project Fetchmail. The bazaar model held that "given enough eyeballs, all bugs are shallow," and its principles of "release early and often" and "treat users as co-developers" not only made it different from commercial production, but also from existing practice in free software development - most notably the GNU project, Richard Stallman's attempt to build an operating system entirely free of proprietary code.<sup>18</sup> In January 1998, Rob Malda wrote a Slashdot editorial ("the first of hopefully many") called "Simple Solutions," in which he outlined why Netscape should release its source code under a General Public License, and how it would be a good move for both the company and the free software movement.

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<sup>16</sup> See chapter 5; see also Rodzvilla, ed. 2002; Rosenberg, 2009.

<sup>17</sup> The notable exception here of course is Howard Rheingold's "virtual community." See chapter 1.

<sup>18</sup> Raymond, 2005.

Netscape is losing money as well as browser market share. What's a company to do? Maybe the solution is simple: GPL Netscape's Source Code [...] Why would the Free Software World want to take on this project? GPL means we would have a state of the art free browser.<sup>19</sup>

For the first time, Malda saw streams rather than handfuls of hits on Slashdot. The solution was provocative, and was one Netscape had in fact already decided on: on January 22nd, Netscape announced plans to release their source code with the next version of their Communicator web suite: “This aggressive move will enable Netscape to harness the creative power of thousands of programmers on the Internet by incorporating their best enhancements into future versions of Netscape's software.”<sup>20</sup>

What was notably missing from Netscape's announcement, however, was the term “free software.” In the next few weeks, Eric Raymond attended meetings with Netscape's board and other industry executives interested in applying the bazaar model, and emerged with a “call to the community” to use the term “open source,” which he argued would be clearer and less adversarial toward mainstream computer companies, without changing the basic meaning.<sup>21</sup> Driving the point home, the next day Raymond published revision 1.29 of “The Cathedral and the Bazaar,” in which he simply replaced instances of free software with the new term. Of course, Richard Stallman and many other proponents of free software were critical of the move, and the new term solidified what had already become an important debate within the community. The latent flame war in Raymond's proposal (entitled “Goodbye, ‘free software’; Hello, ‘open source.’”) was manifest on Slashdot, where heated discussions made up a large part of Slashdot's early user activity. Slashdot provided a more centralized forum than the various Linux or free software conferences, mailing lists and IRC channels, as well as a publisher more or less committed to presenting differing views within the community. So through 1998 and 1999, Malda would regularly publish back-and-forth editorials (sent in by readers) on issues of commercialization and the principles-versus-pragmatism debate. These included essays on why the community should be more open to the “suits” and warnings that commercialization would destroy the elements of free software that had made it effective (and its advocates passionate) in the first place.<sup>22</sup> Although Malda was careful to never state Slashdot's

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<sup>19</sup> Malda, Rob. 1998b. “Simple Solutions (Slashdot Editorial).” *Slashdot*, January 12. <http://tech.slashdot.org/story/98/01/12/085000/simple-solutions-slashdot-editorial>.

<sup>20</sup> Baker, Mitchell. 2008. “January 22, 1998 - the Beginning of Mozilla.” *Lizard Wrangling*. <http://blog.lizardwrangler.com/2008/01/22/january-22-1998-the-beginning-of-mozilla/>.

<sup>21</sup> Raymond, Eric. 1998b. “Goodbye, ‘Free Software’; Hello, ‘Open Source’.” *Tuxedo.org*. <http://web.archive.org/web/20020214222257/http://www.tuxedo.org/~esr/open-source.html>.

<sup>22</sup> Koehn, Philipp. 1998. “Feature:Who Is the Software Communist?” *Slashdot*, September 15. <http://news.slashdot.org/story/98/09/15/1130201/featurewho-is-the-software-communist>; Perkins, Greg. 1998. “Feature:Open Source and Capitalism.” *Slashdot*, August 8. <http://news.slashdot.org/story/98/08/24/0854256/featureopen-source-and-capitalism>.

position, on occasion he let on that pragmatism had his personal preference, for instance when he openly worried that Slashdot's passionate advocacy would marginalize the movement and hurt the goal of making Linux what he called a "Mainstream Alternative."<sup>23</sup>

Slashdot's success brought along problems of scale. One was the hundreds of emails Malda received each week - and before long, each day - with story submissions. More noticeable for readers, there were a number of issues affecting the quality of discussion in the comments section: flame wars between users were one thing, but worse were scripts or bots created to 'crapflood' the forum, at times for spam but more often for automated flames and trolling. In fact, a few days before he posted "Simple Solutions," Malda wrote a plea to readers that they not abuse the "User Talk Back" feature; this would be the first of many similar requests, each delivered with a mix of urgency ("I want to appeal to Slashdot User's sense of decency") and self-deprecation (the byline read "from the climbing-on-the-soapbox dept.>"). The problem, Malda said, was one of a declining "signal to noise ratio":

*Please play fairly kids. I like reading the comments- most of the time reading you guys comments really makes my work seem worthwhile, but when I see **crap** posted I feel like I have no choice but to just remove that feature from the site. Don't make me do that guys- think before you post.*<sup>24</sup>

At the time, the comments section was a simple, chronological list attached to each article, with a form for entering new comments at the bottom of the page. Since there was no registration or use of browser cookies, commenters would fill in their information each time they posted, and there was no way to prevent users from posting as, say, "Rob Malda" or any other target of abuse. On the back end, comments were not entered into a database but automatically converted to HTML and attached to the end of the article's text file. There was no way to establish a connection between comments or to see which posts a user had commented on (i.e. to delete multiple comments by a single user). Malda would only moderate comments sparingly, and doing so meant manually removing the offensive comment.

As Slashdot continued to grow in early 1998, a more pressing concern than abuse of the comments section was the ability to keep up with increasing traffic loads. Slashdot was being run out of the office where Malda had a part-time job building websites for an advertising company, on

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<sup>23</sup> Malda, Rob. 1998c. "How Not to Kill Linux (editorial)." *Slashdot*, April 5. <http://linux.slashdot.org/story/98/04/05/1034239/how-not-to-kill-linux-editorial>.

<sup>24</sup> Malda, Rob. 1998a. "Slashdot User Abuse." *Slashdot*, January 8. <http://news.slashdot.org/story/98/01/08/093100/slashdot-user-abuse>; Malda is somewhat infamous for his poor spelling and grammar. I've chosen not to add the adverb "sic" to each instance, but these appear intentionally and each quote has been reproduced verbatim.

a box that doubled as a mail server (the situation was similar for many independent web publications at the time, since hardware and bandwidth were too expensive for what was more or less a hobby). Malda began looking for a more efficient solution, and in April rewrote from scratch the software that organized the site's content. Among the improvements were a web-based system for managing user submissions and "an actual honest to god SQL database" to replace the slow system of flat text files.<sup>25</sup> These made the site faster, but also provided the infrastructure for many of the innovative features that would be added to the site later (and which are discussed in the next section). Alongside the Linux operating system, the Apache web server and a new implementation in Perl (which Malda had also used to create the first, "stupid simple" Slashdot content management system), Malda ported the site to mod\_perl (a module that embeds a Perl interpreter in Apache, speeding up the processing and delivery of dynamic content created by Perl scripts) and added MySQL.<sup>26</sup> This was the software stack that would become commonly known as LAMP (Linux, Apache, MySQL and php, Perl or Python), and the emergence of this relatively easy-to-use, free software set-up forms a third history relevant to Slashdot.

On the one hand, the history of LAMP is one of an accumulation of advances in free software (in the classic technological history sense of sophistication and dissemination). Linux, for example, had become a popular alternative to proprietary operating systems around 1993, just before Malda went to college, while Apache had solidified its position as the most popular server software by 1998. Together, these technologies inspired the famous "Halloween" documents - two leaked Microsoft reports that identified the open source software development model as a threat, and recommended spreading "fear, uncertainty and doubt" (or FUD) about the stability and security of open source software.<sup>27</sup> On the other, the presence in LAMP of Perl (alongside other scripting languages) and MySQL also points to significant shifts in the overall direction of web publishing at the time. First, Perl and MySQL not only represented open source alternatives to existing technologies, but were specifically designed for easier use and were thus more suited to a growing share of casual or non-professional web development. Scripting languages like Perl can be distinguished from system languages such as C and C++ in that they are higher-level, meaning they automate many of the details of tasks while sacrificing some performance and capacity for

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<sup>25</sup> Malda, Rob. 2007. "A Brief History of Slashdot Part 2, Explosions." *Slashdot*, October 10. <http://news.slashdot.org/story/07/10/10/1445216/a-brief-history-of-slashdot-part-2-explosions>.

<sup>26</sup> Malda interview, 2011.

<sup>27</sup> Wikipedia contributors. 2012. "Halloween Documents." *Wikipedia, the Free Encyclopedia*. Wikimedia Foundation, Inc. [http://en.wikipedia.org/w/index.php?title=Halloween\\_Documents&oldid=482487675](http://en.wikipedia.org/w/index.php?title=Halloween_Documents&oldid=482487675).

complexity.<sup>28</sup> MySQL, meanwhile, focused on the “niche” of web applications, and intentionally left out some features associated with professional databases such as database transactions (which separates actions and saves state, providing more stability) and foreign keys (used in complex databases to define relationships between objects in different tables).<sup>29</sup> Second, whereas with earlier web publications (such as HotWired) pages were often ‘hand-coded’ and manually organized in a file system, this practice would be supplanted by increasingly powerful content management systems (CMSs) that automated much of this work. Without the relative ease-of-use of LAMP, or the free licenses, content management systems were prohibitively complex and expensive for independent or amateur applications (one example of a project failing due to CMS costs comes from Howard Rheingold’s Electric Minds, an elaborate attempt in 1995 to build a ‘virtual community’ on the web).<sup>30</sup> By 1998, however, various amateur CMSs such as Dave Winer’s Frontier software were made freely available, and the first examples of widely distributed blogging software were being developed.<sup>31</sup> Third, and perhaps most important in this context, Perl and MySQL made it much easier to manage user activity at the scale that Slashdot would eventually take on. Perl (like php and Python) is well known for its suitability for working with large collections of text files - using regular expressions, one can quickly and easily identify and manipulate highly-specific strings of data (e.g. a series of actions to format a user’s submission or comment as html).

The heterogeneous set of actors discussed here - from BBSs and geek culture to open source advocacy and Perl - all helped shape the site in terms of its content and form. So these were not a set of preconditions so much as elements that would continue to resonate, and their influence was taken more or less as a given by those involved. For Malda, there was no reason to reflect on what the site was becoming, since it felt like a logical extension of the forums and newsgroups he had grown accustomed to. This was the case even when geek celebrities like Eric Raymond and Bruce Perens spent time on the forums, and the site more generally became a central node for everyday news, discussion and debate around free software and open source. And Slashdot’s reliance on

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<sup>28</sup> Ousterhout, John. 1998. “Scripting: Higher Level Programming for the 21st Century.” *Computer* 31 (3) (March): 23 – 30. doi:10.1109/2.660187.

<sup>29</sup> Holck, Jesper, Volker Mahnke, and Robert Zicari. 2008. “Winning Through Incremental Innovation: The Case of MySQL AB.” In *IRIS 31*. Are, Sweden.

<sup>30</sup> Rheingold interview, 2010.

<sup>31</sup> A development related to the move towards more standardized content management was the gradual adoption of the Cascading Style Sheets standard, which separated instructions for presentation (color, layout, etc.) from site content. Together, these helped provide the technological conditions for the creation of various widely used CMSs, most notably blogging software.

improving technology for web publishing was both a simple means to an end, and a source of enjoyment in itself - site maintenance news would generally be dryly recorded in stories on the front page, but pleasure and pride were involved when this news conveyed clever hacks or an ability to solve performance issues with limited time and hardware. These histories were also visible as Rob Malda created, implemented, modified and made sense of the increasingly elaborate Slashdot feature set that would be praised as a major innovation in news production and web publishing, and be the impetus for the site's legacy as a significant forerunner of Web 2.0.

### 4.3 “Open news” or “virtual parenting”? The emergent logic of Slashdot's community infrastructure

In the summer of 1999, there were few web publications generating as much buzz as Slashdot, and this would translate to financial as well as critical success for the site. In June, Malda and Bates sold Slashdot to Andover, with a contract clause that they retain (in their words) “complete and total creative control.”<sup>32</sup> Malda was appointed to Andover's board, and the deal included a few million dollars in stock options. Along with the announcement (in the same month) that the Linux distribution Red Hat would go public, Slashdot's acquisition was interpreted as proof of the transformation of “open source software from a serious hobby to a serious business proposition.”<sup>33</sup> This was primarily due to Slashdot's status as the most popular destination for news about open source technology; however, excitement around Slashdot was also about *how* it produced news. Dan Gillmor, for instance, wrote that Slashdot “makes us think about journalism's inevitable evolution as the Web takes hold.”<sup>34</sup> The effect on news media would be described in popular and academic accounts with technological metaphors, and Wired News was the first to argue that Slashdot's was “open-source journalism,” and a thus threat to traditional, closed modes of production.<sup>35</sup> For one thing, the open source principle of releasing early and often appeared to match journalistic aims of breaking news and continuous coverage: if you are a tech journalist, James Glave wrote, Slashdot “may eventually make your job obsolete” because it “gets the scoop

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<sup>32</sup> Malda, Rob. 1999e. “Slashdot Acquired by Andover.net.” *Slashdot*, June 29. <http://news slashdot.org/story/99/06/29/137212/slashdot-acquired-by-andovernet>.

<sup>33</sup> Shankland, Stephen. 1999. “Andover.Net Scoops up Seminal Slashdot Site” *Cnet*. [http://news.cnet.com/Andover.Net-scoops-up-seminal-Slashdot-site/2100-1001\\_3-227793.html](http://news.cnet.com/Andover.Net-scoops-up-seminal-Slashdot-site/2100-1001_3-227793.html).

<sup>34</sup> Gillmor, Dan. 1999. “Slashdot Almost Addictive for Those Who Care.” *SiliconValley.com*. <http://web.archive.org/web/20000505084954/http://www.mercurycenter.com/svtech/columns/gillmor/docs/dg052599.htm>.

<sup>35</sup> Glave, 1999.

faster than you can -- along with about 600,000 news-hungry eyeballs a day” (ibid). Most important, however, were the ‘many eyeballs’ that submitted stories and comments:

[Slashdot] relies on the eyes and ears of the thousands of its readers to create what amounts to a collaborative newswire [...] The conversation that follows is part expert commentary, part peer review, and part cocktail-party banter, as credible sources and experts weigh in alongside crackpots in a rapid peer-review process.<sup>36</sup>

The similarities had not been lost on Malda or Slashdot readers. After hearing Eric Raymond deliver his paper “Homesteading the Noosphere” at the 1998 Linux Expo, Malda wrote that “[i]n a lot of ways, Slashdot is an application of the same principles that make open source work, but shifted over to the news stuff.”<sup>37</sup> Raymond’s piece elaborated on one of the central arguments in “The Cathedral and the Bazaar,” that participation in open source development was motivated by self-interest rather than altruism, and that despite the free licenses, ‘ownership’ (in an informal, non-legal sense) actually played a significant role.<sup>38</sup> Malda reasoned that Slashdot readers, similar to Linux developers, were willing to devote time and energy to improving a news discussion forum they had no financial interest in if it compensated them in other ways, most importantly credit for their work and respect from their peers.<sup>39</sup> The open source metaphor would stick, and would later form the starting point for theories of a new mode of cultural production, one that represented a radical departure from those of mass and mainstream media.<sup>40</sup>

Although open source can be a useful frame for understanding, say, incentives that may be similar for contributing code to Linux and for contributing a story to Slashdot, or for designing more finely-grained licenses for sharing copyrighted work, it also leaves large gaps in any explanation. For one thing, when openness in media production is treated as a progressive alternative to traditional methods, this ignores the fact that (if Raymond’s argument is correct)

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<sup>36</sup> ibid.

<sup>37</sup> Malda, Rob. 1998d. “Rob’s Return/LinuxExpo Wrap Up.” *Slashdot*, May 31. <http://news.slashdot.org/story/98/05/31/1650242/robs-returnlinuxexpo-wrap-up>.

When I asked Malda to clarify what he meant by this relationship between Slashdot and open source principles in 2011, he characterized this as primarily a relationship between the open-source development style (rapid-prototyping, evolutionary design, etc.) and Slashdot’s code. As I argue in the rest of this chapter, it would be a stretch to understand the development of the moderation system or other features as conscious efforts to re-imagine news production.

<sup>38</sup> Raymond, Eric. 1998a. “Homesteading the Noosphere.” *Catb.org*. <http://www.catb.org/~esr/writings/homesteading/homesteading/>.

<sup>39</sup> Malda, 1998d; Raymond 1998a.

<sup>40</sup> Benkler, 2002; Bruns, 2005; Bruns, Axel. 2008. *Blogs, Wikipedia, Second Life, and Beyond: From Production to Producership*. New York: Peter Lang.

‘open sourcing’ does not represent a moral or political project so much as a hacker or engineer’s desire for a more efficient solution to a given task. More practically, there are any number of distinctions to be drawn between software development and the ‘given tasks’ of producing, distributing and consuming news or other media; proving that Linux outperforms Windows according to standard benchmarks is one thing, evaluating news commentary is another. For this reason, it’s worth closely examining the design, implementation and evolution of key Slashdot features: to what extent does a history of Slashdot’s participation architecture support the ‘open news’ argument?

From the spring of 1998 to mid-1999, Malda would make a number of key changes to Slashdot’s interface and back-end that, together, provided the foundation of Slashdot’s formal composition and (in sparking the open source analogies) came to characterize the site as much as the topics it covered. Many of these, however, grew out of surprisingly mundane concerns. Malda created the web-based submissions box, for example, simply to separate these from his regular email, and it was only after the fact that he realized this enabled him to create separate accounts and share the work of reading and selecting stories. (In addition to Bates and Malda, editors would include a few Slashdot readers who volunteered their time until the sale to Andover, when they became employees). Another affordance was the ability to automatically format submissions in HTML tables. At first this was rudimentary - there were columns for submitter, date, section and the text itself - but even sorting by section made the process of browsing and selecting content much more efficient. The innovation was that submissions were now data objects, rather than flat text.

User registration was implemented in the summer of 1998, “largely in response to spam” and “the occasional DDoS [Distributed Denial of Service] and crapflood of our forums.”<sup>41</sup> Here, too, was a straightforward answer to a well-defined problem that in fact made new exploits possible, and it was to the credit of Malda and his collaborators that they saw potential uses far beyond the original design (even if this process was more intuitive than anything else). For many regular commenters, registration and the use of browser cookies meant they wouldn’t have to fill in their information each time, but with a few tweaks by Malda, it also meant they could set preferences for sections and topics, how comments were displayed, page size, and a few other things. Other customization features would follow, including “slash boxes,” which imported headlines from other sites using Netscape’s RDF site summary (later RSS).

Persistent identity also meant user activity could be registered and tracked (and a number of Slashdot readers opposed the feature for this reason), and this would eventually make Slashdot’s

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<sup>41</sup> Malda, 2007.

elaborate moderation system possible. Unreliable, ‘weak’ data such as IP addresses (and user names generated on the fly) had largely been replaced by unique, numbered User IDs, and tables could be drawn up with various columns for login statistics and number of comments posted, time zone and other customization preferences, and so on. In September 1998, after going over possible solutions to various abuses of the comments system - from disallowing anonymous comments to elaborate perl scripts to try to intercept or weed out spam and other abuses - Malda wrote a system for awarding points to comments, and invited 25 regular contributors to do the moderating. Moderators would receive a set number of ‘credits,’ and could spend these by either adding a point to a comment they thought was high quality, or subtracting one from a comment that was abusive (they could also choose to do neither). Comments from logged-in users would start with a score of 1 and those from anonymous posters with 0. The score would then be updated with each moderation, and readers could set a “threshold” for viewing comments - the default setting was to hide comments with a score of -1 or lower.

For no particular reason at the time, Malda also wrote code that updated each user’s entry in the user database with a total score for their comments - this would become the basis for Slashdot’s reputation system. In March 1999, after the activity of the original 25 moderators waned and the average number of comments rose, Malda used these total scores to invite another 400 users to moderate. The cumulative comments score, in other words, had become a user attribute, standing more or less in for the user’s reputation on Slashdot. In a post about the changes, Malda called this total score a user’s “alignment,” a reference to the BBS role-playing game Trade Wars 2000, and the name would later be changed to “karma.”<sup>42</sup> Over time, moderation would undergo a number of changes, each one adding to the complexity of the system’s back end, generating new user attributes and applying existing ones in new contexts. A ‘jury duty’ model was introduced to automatically select eligible users to serve as moderator for a few days at a time; part of this was deciding which pool of users to select from, and Malda came up with metrics that he thought would constitute the average Slashdot commenter (and on occasion subsequently tweak these metrics). The data included karma along with various activity measures (article views, comments, etc.).

At this point, the system had become somewhat dislodged from the original, basic aim of hiding abusive comments. In early 1999 Malda wrote a Moderation FAQ, and reformulated the goals as:

1. Promote Quality, Discourage Crap

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<sup>42</sup> Malda, Rob. 1999c. “Several Slashdot Notes.” *Slashdot*, April 6. <http://news.slashdot.org/story/99/04/06/2125239/several-slashdot-notes>.

2. Make Slashdot as readable as possible for as many people as possible.
3. Do not require a huge amount of time from any single moderator.
4. Do not allow a single moderator a 'reign of terror'.<sup>43</sup>

In some descriptions, the moderation system and similar online reputation systems have been described as methods for “scaling up” conversation, but clearly this was not a transparent intermediary.<sup>44</sup> Instead it helped shape interaction, and its highest priority was to bring the best comments to the fore (and given the many enthusiastic responses in the Slashdot forums in the following weeks, this and its other goals appeared to have largely succeeded). One commenter wondered aloud whether his consciousness of looming moderators affected his contribution, and asked “Read any Foucault [sic]...?”<sup>45</sup>

The metaphor that had been used to describe the problem originally was a diminishing “signal to noise ratio”; with the system’s abstract character, the intuitive nature of its aims, and the continuous tweaks and alterations meant to test out different effects, the solution now no longer resembled moderation so much as another engineering concept, modulation.<sup>46</sup> Looking to improve the quality of the pool of moderators? Change karma to take other factors into account, for example whether users had had stories selected by the editors for publication. Are moderators spending too many points on comments that already have extreme scores? Try normalizing the scores, so that users only see a scale of -1 to 5.<sup>47</sup> Some changes were more involved, for instance the introduction of meta-moderation in September 1999, with which eligible users judged whether moderations of comments were fair or unfair - this would in turn bring along new considerations and require adjustments over time, for example to ignore a user’s metamoderation when she or he skewed too far in one direction (judging everything as unfair, for example). Others allowed for more detailed analysis: Malda introduced moderation labels (positive ones such as “informative” and “funny,” and negative ones such as “spam” and “flamebait”) so that moderators would have to explain their actions, and hopefully by doing so give more thought to what comments were truly worth rating up or down. With these, Malda was able to make the editorial decision to not count “funny” comments

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<sup>43</sup> Malda, Rob. 1999a. “Slashdot Moderation.” *Slashdot*. <http://web.archive.org/web/19991012194116/http://slashdot.org/moderation.shtml>.

<sup>44</sup> Bates, Jeff, and Mark Stone. 2006. “Communicating Many to Many.” In *Open Sources 2.0: The Continuing Evolution*, ed. Chris DiBona, Danese Cooper, and Mark Stone, 373–396. O’Reilly Media, Inc; Rheingold, Howard. 2002. *Smart Mobs: The Next Social Revolution*. Cambridge, MA: Perseus.

<sup>45</sup> EricRCH. 1999. “A Couple of Thoughts...” *Slashdot*. <http://slashdot.org/comments.pl?sid=16655&cid=1962945>.

<sup>46</sup> Malda, 1999c

<sup>47</sup> *ibid.*

toward a user's karma - the thinking being that while humor should be encouraged to an extent, in that they were displayed at higher thresholds, "interesting" and "informative" comments were more valuable, and should be rewarded accordingly.

New features, sometimes added in response to innovations elsewhere, generally folded back into the existing ones of user submission, karma and moderation. So when, for example, Slashdot followed LiveJournal and made it possible for users to post stories to their own page (where their comments were displayed, along with their 'friends' and 'foes'), these were later tied into the submission system: users could add section and topic labels, and send their posts to editors to consider for publication on the home page. Perhaps the most interesting addition in this respect came in 2006, when Slashdot implemented tags. At the time, a number of commenters pointed out that the new feature borrowed heavily from the social bookmarking site del.icio.us, created in 2003. What the commenters missed, however, was the extent to which it was integrated with the existing feature set, and how it departed drastically from most "folksonomic" classification schemes.<sup>48</sup> For one, tags were created to replace topics in the Slashdot categorization scheme, and thus take over some of the work of editors. Users would tag URLs in a shared database, and these would help editors evaluate it when sent in as a story submission. To this end, there were a range of tags that were Slashdot-specific: stories could be tagged with "dupe" (duplicate) if they'd appeared on the site before, while "nod" and "nix" were indicators of whether users thought a link deserved publication. More importantly, tags could be added by all logged in users, but not every user's tags carried equal weight. Each user who tagged was given a distance measure, based on how closely his or her tags matched or predicted those of Malda and the editors, and that translated to the weight attached to their tags. The system was an intricate construction, a kind of "pyramid scheme" in which Malda sat at the top, followed by editors and then users whose decisions most often aligned with those of the staff.<sup>49</sup> The system, in other words, was not designed to distribute decision-making so much as it was to predict the editors' choices based on user activity.

The elaborate system - the tag database, but more generally the range of interconnected Slashdot features that had accumulated over the years - had as its goal the efficient classification and distribution of news and news commentary, and this trumped the aim of creating opportunities for participation (even if these sometimes went hand in hand). The aim was for quality - as much as

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<sup>48</sup> Shirky, Clay. 2005. "Ontology Is Overrated -- Categories, Links, and Tags." [http://www.shirky.com/writings/ontology\\_overnated.html](http://www.shirky.com/writings/ontology_overnated.html).

<sup>49</sup> Malda interview, 2011.

this may have meant “what Rob likes” - to rise to the top.<sup>50</sup> In some sense this was achieved through distributing the workload among the community, but for such ‘open news’ to be at all possible, its production, distribution and consumption had to first be articulated as an information system: submissions, published stories, users and any number of actions and activities were expressed in a relational database, as data objects with defined attributes and associated metadata. A metaphor that is more appropriate than open source development for these intricate (and in the case of tagging, somewhat fantastical) programs comes from a short story Malda wrote in 1997, a few months before he created Slashdot. Called “Nerds, Unix and Virtual Parenting,” the story begins with the premise that virtual pets like the Tamagotchi require too much work, and describes in humorous detail a fictional virtual child coded by Linux nerds (“the best nerds”). This included “obvious improvements” that made it more realistic (instead of just beeping when it wanted attention, the ‘baby’ would blare obnoxious sounds while running the CPU at 100%). The story also describes a series of hacks that made the work of caring for the virtual child easier, from scripts to forward the child’s requests via email to a daemon that processes instructions from the parent, until parenting itself was a self-regulating information system:

So my child is now 58 weeks old. He is perfectly happy, he receives his allowance in clock cycles, is scolded when he is not nice 20, and his played with when he is bored- all automatically. I haven’t actually intervened since his first birthday- I added him to my systems init files last summer.<sup>51</sup>

When Malda resigned from Slashdot, after 14 years as its chief engineer and editor, he wrote that he was comfortable doing so, since all of the pieces were in place to ensure that Slashdot would continue to operate as it should, with or without his involvement.<sup>52</sup>

#### 4.4 Informed media and the computational metaphor

If the significance of Slashdot’s innovations should not be understood as the “open-sourcing” of journalism and the news, to what extent did they constitute the articulation of the web as an exceptional medium? Malda never set out to create an alternative to media production practices and tended to ignore or downplay claims that Slashdot represented such an alternative. At most, for him, this was a matter of automating or scaling up the work of traditional editors and others involved in

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<sup>50</sup> *ibid.*

<sup>51</sup> Malda, 2011b.

<sup>52</sup> Malda, Rob. 2011a. “Rob ‘CmdrTaco’ Malda Resigns From Slashdot.” *Slashdot*, August 25. <http://meta.slashdot.org/story/11/08/25/1245200/rob-cmdrtaco-malda-resigns-from-slashdot>.

news production and distribution. In this way, something like the comments recommendation system was seen less as a critical or subversive act, and more akin to, say, customizing server software to increase load capacity: the purpose was overall efficiency and a better news product. Malda himself rarely gave another impression, tending to dismiss the rupture-talk around open news as fluff: when Dan Gillmor wrote in May 1999 that Slashdot “makes us think about journalism's inevitable evolution as the Web takes hold,” Malda called it “a nice little ‘Slashdot as a weblog’ piece apparently designed to stroke my ego.”<sup>53</sup>

There were, however, a few notable exceptions to this absence of rupture-talk, which I would argue point to a subtle but important difference from ‘open news’ in how Malda interpreted Slashdot’s significance. In July, 1999, Malda published reader Matthew Priestly’s essay in which Slashdot and the conservative political message board Free Republic were analyzed in terms of how they used technology to address the general “malaise of distrust among media consumers.”<sup>54</sup> Using concepts from cryptology and graph theory, Priestly contrasted the structure of “trust decisions” in traditional news - where information flows are ultimately governed by the “descended tree” of trust, with corporate news agencies, commercial interests and powerful sources at the top - to a hypothetical “distributed trust model, [in which] each consumer inhabits a single node in a formless but highly connected graph. Central authority is weak, participants are anonymous, and all nodes perform small amounts of voluntary labor.”<sup>55</sup> As the first “community information filters,” Priestly argued that Slashdot and Free Republic could be the first steps in a larger shift toward the wholesale redistribution of information flows to fit the needs of consumers, and away from those of media conglomerates, advertisers and other dominant interests. Such redistribution would bring about what Priestly called, in the title of his essay, “Honest News in the Slashdot Decade.” Interestingly, though, the word “honest” was removed when Malda posted it. This may have been accidental (even though a simple copy-paste would), but it was clear in Malda’s short introduction to the piece that his interest was less in Priestly’s criticism of mainstream media, and more in his use of technological concepts to make sense of underlying processes in the distribution and consumption of information. Priestly’s article was excellent because it analyzed “how The internet is changing

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<sup>53</sup> Gillmor, 1999; Malda, Rob. 1999d. “Dan Gillmor on Slashdot.” May 25. <http://news.slashdot.org/story/99/05/25/1316203/dan-gillmor-on-slashdot>.

Although Malda generally remained ‘cool’ about Slashdot’s supposed displacement of existing media practices and institutions, the Slashdot community was more amenable to the idea. Many of the highest-rated comments attached to the “Dan Gillmor on Slashdot” story praised Slashdot as a .

<sup>54</sup> Priestly, Matthew. 1999. “Honest News in the Slashdot Decade.” *Slashdot*. July 16. <http://slashdot.org/story/99/07/16/1316248/featurenews-in-the-slashdot-decade>.

<sup>55</sup> *ibid.*

the way that news moves about, and discusses problems and advantages related to it.”<sup>56</sup> The *visibility* of information flows was primary, and how this related to traditional media was secondary.

One of the only examples of rupture-talk from Malda himself came when he implemented a key element of Slashdot’s comment recommendation system. After explaining with some pride his ‘hack’ for automatically selecting moderators, Malda wrote:

Where is this heading? Think of a news site like Slashdot without a guy like **me**, or a group of guys at the center. One where the best **comments** become the articles on the homepage. If we could make that work... wow.<sup>57</sup>

Where Malda privileged the visibility of information flows over media criticism in Priestly’s analysis, his comments here (given the context of his pride in automating a potentially tedious task) seem less concerned with a democratization of the news, and more with automation and technological achievement. Based on these two instances, which are especially notable given the general lack of such rupture-talk from Malda, I would argue that while notions of the displacement of prior media were important in Slashdot’s development, these had more to do with the qualities of visibility and automation than they did with an opposition to existing editorial practices or institutions.

To put the importance of this difference in perspective, I would like to suggest that Slashdot’s significance should be seen less in terms of its creation of a general infrastructure for participatory news aggregation and commentary, and more in terms of how it helped institute a perception - much more widespread and established now than in 1998 - that the web makes social and cultural phenomena quantifiable and visible, in particular the information flows that (in this view) constitute the production, distribution and consumption of media. However ad-hoc Malda’s innovations were, what they had in common was an awareness that registrational data could be harvested in a way that made previously nebulous phenomena visible, including user types, reputation within the community and the quality and character of commentary, but also eventually things like the emergent categories of news through tagging. In this way, Malda’s actions perhaps foreshadowed Tim O’Reilly and John Batelle’s insight, ten years later, that a “key competency of the Web 2.0 era is discovering implied metadata, and then building a database to capture that metadata and/or foster an ecosystem around it.”<sup>58</sup> Although the competence described by O’Reilly and Batelle appears to

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<sup>56</sup> *ibid.*

<sup>57</sup> Malda, Rob. 1999b. “Slashdot Moderation Phase 1.1.” *Slashdot*. March 23. <http://news.slashdot.org/story/99/03/23/1058204/slashdot-moderation-phase-11>. Emphasis in original.

<sup>58</sup> O’Reilly, Tim, and John Battelle. 2009. “Web Squared: Web 2.0 Five Years On.” *Web 2.0 Summit*. <http://www.web2summit.com/web2009/public/schedule/detail/10194>.

capture the essence of Slashdot's innovations in web publishing, what this genealogy has shown is that their phrasing - "discovering implied metadata" - does not do justice to the complexity and creativity involved. On the one hand, it is true that formalizing straightforward relationships was an important piece of the puzzle: for example, when Malda realized that author names should be included in article metadata, it allowed users a further means to customize Slashdot according to their preferences (what some users called the Jon Katz filter, after the Slashdot columnist whose exuberant writing style and lack of tech-savvy was often ridiculed by commenters). However, things quickly become more complicated when one considers the kinds of reputation measures that Malda employed for moderation and tagging. Constructs such as "karma" and the "average user" comprised a range of variables, incorporating attributes from duration of membership and page views to accepted story submissions and moderator activity.<sup>59</sup> The exact mixes, though, would often be adjusted based on results, new inputs and other factors: this was not a matter of discovering implied relationships, then, but continually tweaking and modulating a data model until a desired overall effect had been reached. With the tagging system, Malda similarly hoped the collaborative effort and weighted measurements would lead to the automatic grouping of related stories, whether this meant categories like political leaning or collections of different stories related to the same news event.<sup>60</sup>

Whether conceived of as a process of discovery or ad-hoc construction, the larger goal of Malda's work might best be described as "informating" media. This term was introduced by Shoshana Zuboff to describe the effect of information technology on work: in addition to automating tasks previously carried out by humans, information technologies also register actions, producing data that can then be used elsewhere. In an example she gives, the bar-code scanner automates the checkout at the grocery store, but it also produces data useful for a variety of logistical and marketing tasks.<sup>61</sup> Many of the the key Slashdot features were similarly made possible through the automation or improvement of other tasks: for example, user accounts were introduced to help combat spam, but these unique identifiers could also be repurposed for other analytical work. Zuboff notes that another profound effect of informed work is that it affords an expansive, over-arching vision of the events and processes that it consists of. Informating the

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<sup>59</sup> For an overview of these variables, see Chromatic, Brian Aker, and Dave Krieger. 2002. *Running Weblogs With Slash*. Sebastopol, CA, O'Reilly: 90-92.

<sup>60</sup> Malda, 2011c; Malda interview, 2011.

<sup>61</sup> Zuboff, 1988: 9.

workplace meant creating an “electronic text” that made the totality of an organization’s activity visible in ways that were previously not possible:

In the mills, the data interface provided a view, not only of one piece of equipment but also of the processes in an entire production module; not only of one module but also of the production process across the mill; and not only of the production process across the mill; and not only of the production process but also of management information, expert models with which to calculate optimization parameters, and other data related to personnel, markets, sales, and much more. Thus, access to the electronic text meant access to far more than discrete memos or reports could ever provide: the organization’s work is made visible in a new way.<sup>62</sup>

At Slashdot, one similarly had both a finely-grained view of individual user actions and site-wide patterns, much like the transparent audience Andrew Anker and Louis Rossetto had hoped would become a reality at HotWired (see chapter 3). When I asked Malda in 2011 how running Slashdot affected his ability to design information systems, his response echoed the sense of textualized, over-arching vision described by Zuboff:

[M]y position at Slashdot uniquely qualifies me for understanding how information moves through the internet. There's lots of things that people just don't understand, or don't really quantify, that I just sort of experienced. How reputation works, how individuals are motivated, how people rank and trust different bits of information, different sources of information. There's tons of really interesting and subtle stuff. But also things like how media replicates. If somebody says something in one place and six months later it reappears somewhere else [...] all of those things go through the same sort of lifespan. Like the wacky stories. Wacky stories tend to appear in August. Just general news media sorts of things. August is a great time for crap news because everybody goes on vacation, so there's nothing happening, and reporters are bored. And there you go, suddenly you've got the story about the world's biggest tomato or something, and it's front page news of the New York Times.<sup>63</sup>

By informing media at Slashdot, it would appear that one not only gained a detailed view of the events and activities that comprised tech news and its audience, but even glimpsed the larger set of information flows that constitute the media environment in a broader and more abstract sense.<sup>64</sup>

Malda’s “vision” resonates strongly with a number of commercial and academic projects today that seek to use web data to extract the hidden patterns, structures and relationships of social and cultural life. These include efforts to measure attention through search data, as well to quantify

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<sup>62</sup> Zuboff, 1988: 179.

<sup>63</sup> Malda interview, 2011.

<sup>64</sup> Malda’s statement is a little ambiguous, in that he’s speaking about knowledge (or visibility) gained through quantification and things he “just experienced.” What’s important to note, however, is that in the intuitive process through which he developed the comments moderation system and other features, these two kinds of knowledge are not distinct but rather mutually constitutive.

“influence” through users’ activity across social media.<sup>65</sup> Within the humanities and social sciences, such informed visibility is at the center of calls to innovate method and theory. For example, the Digital Methods Initiative at the University of Amsterdam (which I am a member of) asks how claims about society and culture might be ‘grounded online’ as the web is taken more seriously as a source of data.<sup>66</sup> The University of California at San Diego’s Software Studies Initiative, meanwhile, asks how to “take advantage of unprecedented amounts of cultural data available on the web to begin analyzing culture in new ways,” and author “new cultural theory for the 21st century.”<sup>67</sup> Perhaps the most famous example of the informed web and its promise, though, comes from the web developers who advocate a unified social graph, which at its most spectacular is described as “the global mapping of everybody and how they’re related.”<sup>68</sup> According to Brad Fitzpatrick, a developer and proponent of the idea, such a complete map of social relations would be a matter of convenience for social network sites and their users, given that a shared graph (including shared standards for creating it) would ease the process of porting one’s data from one site to another.<sup>69</sup> Facebook’s recent limited release of search functionality on top of their own “graph” has revealed both some of the fascinating potential uses of such technology as well as the significant financial interest underlying it.<sup>70</sup>

In addition to these more recent examples of informed media, the case of Slashdot may also be situated in reference to previous articulations of the web and new media as exceptional. The sense that social and cultural phenomena are interpenetrated by discoverable information patterns, and that web data may reveal these - a sense marked by O’Reilly and Battelle’s notion of “implied metadata” - may be seen as a conjugated form of cyberculture, in that utopian claims attached to it are grounded in the computational metaphor. Where the computational metaphor previously formed the basis for the belief that cyberspace would allow for social interaction and cultural forms detached from the materiality, history and politics of the real world, it now grounds the most

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<sup>65</sup> See for example Google Trends (<http://www.google.com/trends/>) and Klout (<http://www.klout.com/>).

<sup>66</sup> Rogers, Richard. 2009. *The End of the Virtual: Digital Methods*. University of Amsterdam.

<sup>67</sup> Manovich, Lev. “About.” 2007. *Software Studies Initiative*. <http://lab.softwarestudies.com/2007/05/about-software-studies-ucsd.html>.

<sup>68</sup> CBS/AP, 2010.

<sup>69</sup> Fitzpatrick, 2007. The notion of a standardized, universal social graph has been quite extensively debunked by another developer, Maciej Ceglowski. See Ceglowski, 2011

<sup>70</sup> At the time of writing, Facebook’s graph search is only available on a limited basis. Within days of its limited release, however, an independent developer posted screenshots of “actual Facebook graph searches” that included such queries as “current employers of people who like racism.” See <http://actualfacebookgraphsearches.tumblr.com/>. See also CBS/AP, 2010.

ambitious claims about the ability of the web to fully capture and represent the information patterns and flows that compose culture and society. As Wendy Chun has argued more generally, software is often attributed the capacity to render supposedly hidden or mystical structures and phenomena as visible and logical - databases, algorithms and programs are posited as “knowing” while users interact and explore.<sup>71</sup> I would add that in the current context of Web 2.0 and social media, a central location of such “knowing” is the kind of informed media built and imagined at Slashdot.

#### 4.5 Conclusion: web exceptionalism as sociotechnical system

Where Slashdot has been portrayed as having unsettled the traditional role of gatekeeping, I’ve argued that its history and a close reading of its “participatory” features resists this interpretation. Slashdot’s emergence as a popular forum for technology and geek culture should be seen in light of three intersecting histories - BBS culture, the advocacy of open-source software during the dot.com bubble, and advances in web publishing technology that made powerful database applications feasible for small-scale, independent web publishers. From the perspective of editor/engineer Rob Malda, creating Slashdot was a way to extend the kinds of discussions he’d had on Usenet and other forums, although both the level of attention these received and Malda’s incentives changed as open-source gained traction and Slashdot itself was transformed into a business. The most important features that supported community involvement - the submissions box and comments moderation - must also be seen within the context of these (pre-)histories, both in terms of their extension of the kinds of community involvement in BBS culture and the need to innovate as the site gained in popularity. Although I have argued against seeing Slashdot as open-source news, the site certainly resembled open-source development’s “permanently beta” production, where one releases “early and often,” tending not to err on the side of caution (in the early years Malda would occasionally update the site “live,” implementing changes before testing them offline).<sup>72</sup> This kind of responsive design is also reflected in the fact many features were fortuitous inventions, based on affordances of solving other problems such as spam.

Instead of the application of open-source principles to news production, I have argued that Slashdot’s history reveals a different conceptualization of the web as an exceptional medium. The promise of the web expressed by Slashdot was not that of participatory news, but an efficient, largely automated and customizable media product based on registrational data. What was unusual and unprecedented was the extent to which the web might automate processes of media production,

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<sup>71</sup> Chun, 2011b: 71.

<sup>72</sup> Raymond, 2005.

distribution and consumption, as well as how this automation made these processes visible - transparent audiences, reputation drivers, underlying news genres and so on - an articulation of exceptionalism that I have called “informed media.” Because this view derives from and helps to sustain notions of social and cultural phenomena as essentially (quantifiable) information patterns, it also recalls the fundamental idea underlying cybercultural utopianism.

In addition to situating Slashdot in relation to past and present notions of the web as an exceptional medium, it is also worth noting that the case benefits an understanding of such instances of web exceptionalism as historical actors. In the previous chapter, I wrote that the articulation of the web as an exceptional medium may be understood as an actor-network: the vision of a clean break from history implied by the “new publishing paradigm” was not simply rhetorical gloss, but comprised a range of heterogeneous actors from multiple historical trajectories and cultural milieus, and in this sense could be seen as the ‘source’ of novel publishing practices at HotWired and Suck.com. Now I would like to point out that among such heterogeneity, an important category highlighted by Slashdot’s case is the “sociotechnical system.” Although the term has a longer history, it has been used in connection with web culture to describe the mix of social and technological protocols that enable large-scale collaboration on Wikipedia and other Web 2.0 platforms.<sup>73</sup> In Slashdot’s case, at least, I would go further than highlighting the necessity and functionality of such socio-technical arrangements, and argue that they may be intimately tied to perceptions of the web’s exceptional character. The vision of an informed media environment was not something projected afterwards onto Slashdot’s sophisticated infrastructure; rather, as I have demonstrated in this chapter, it was an important element in its invention.

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<sup>73</sup> Niederer, Sabine, and José van Dijck. 2010. “Wisdom of the Crowd or Technicity of Content? Wikipedia as a Sociotechnical System.” *New Media & Society* 12 (8): 1368–1387.

Although Niederer and van Dijck align their use of “sociotechnical system” with Actor-Network Theory and a focus on the role of hybrid, human-and-nonhuman agency, it is worth noting the term originally comes from systems theory approaches to organizational development (Trist, 1981). The term refers to the goal of achieving joint optimization of social and technical systems of work - that is, to balance between psychosocial needs and the requirements of an organization’s tasks, procedures and technologies, thus providing a warmer, friendlier work environment than cold rationalization. With my use of this term and Zuboff’s notion of “informed” work to describe Slashdot’s innovations, I would like to suggest that a closer examination of the links between notions of participatory culture and the use of information technology in institutional contexts is overdue. The promise of democratized, participatory media must be reconciled with the ways that its articulations (as web 2.0 platforms) act a source of continuity, bridging the ostensibly centralized, bureaucratic institutions that they presumably represent a break from to the new media environment. A thorough investigation of this would be in line with what Daniel Kreiss, Megan Finn and Fred Turner call a “need to consider peer production not only as a challenge to bureaucratic forms, but as a complement and, at times, even an extension of their missions” (2011: 255). Unfortunately, although this chapter suggests how such explorations will benefit from closer examinations of the production of peer production infrastructure, a thorough discussion of this topic falls outside of the scope of this dissertation.

See Trist, Eric. 1981. “The Evolution of Sociotechnical Systems as a Conceptual Framework and as an Action Research Program.” In *Perspectives on Organization Design and Behavior*, ed. Andrew H. Van de Ven and William F. Joyce. New York, Wiley: 19-75; Kreiss, Daniel, Megan Finn, and Fred Turner. 2011. “The Limits of Peer Production: Some Reminders from Max Weber for the Network Society.” *New Media & Society* 13 (2) (March 1): 243–259.