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ONLINE COLLABORATIVE MEDIA AND POLITICAL ECONOMY OF INFORMATION: A CASE STUDY

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I. INTRODUCTION

The development of the Internet and the emergence of a ubiquitous networked environment have introduced profound changes in the way we deal with information.[1] First, it has lowered the cost of producing information dramatically. Second, it has reduced the cost of distributing information. Third, and most importantly in the context of this essay, it has facilitated collaboration among individuals for the purposes of production, distribution and accreditation of information.[2] And this is probably just the tip of the iceberg. With today's rapid technological development and widespread access to telecommunications these transformations tend to accelerate.[3]

This essay is about how these changes in our communications environment have the potential to modify the way we produce information

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1. *See e.g.* Lawrence Lessig, *The Future of Ideas: The Fate of the Commons in a Connected World,* 19-99 (Random House 2001); Yochai Benkler, *Freedom in the Commons: A Political Economy of Information* Introduction (unpubublished manuscript, on file with the author).

2. Yochai Benkler, *Coase's Penguin, or Linux and the Nature of the Firm*, 112 Yale L.J. 369, 383-84 (2002).

3. The collapse of the "dot.com" boom, followed by a slow down in telecommunications markets, does not alter the fact that new information and communications technologies have produced profound changes in the way human beings deal with information. These deeper changes are not likely to be reversed by a cyclical crisis in telecommunications markets.

about the world in which we live, information that we conventionally call " news."[4] In a networked environment, individuals engage in the production of news, telling their own version of the facts happening in the world, attributing meaning to them and debating over their relevance. This has led to the emergence of various collaborative media communities on the Internet (e.g. Kuro5hin and Slashdot), which generate enormous user traffic, attracting individuals who are eager to take part in the production of news or just interested in receiving information produced in a collaborative mode.

In this context, it is crucial to evaluate whether, and to what extent, it is feasible to enhance the credibility of peer-produced news.[5] Indeed, the future of collaborative media depends on sophisticated mechanisms of accreditation,[6] capable of enhancing the trustworthiness of the information produced. Thus, the analysis in this essay will focus on such mechanisms introduced by collaborative media sites, their effectiveness, and their differences vis-à-vis traditional accreditation mechanisms of mass media.

Based on a case study, this essay presents three broad conclusions. First, the discussion suggests that peer-production of accreditation is feasible and represents a significant departure from the mass media accreditation model. Second, as we learn to shape technology, social norms and business models to enhance cooperation among individuals in the creation of news, collaborative media will produce an important impact on mass media, fostering changes in the current communications environment. Third, peer-production of news has some positive effects on the political economy of information: it restructures the power relations and the creation of meaning in the public sphere, enhancing individual autonomy and democracy.

This essay is divided into four parts. Part II will address the collaborative media phenomenon, its central characteristics, and the challenge

4. Throughout this essay, I will deliberately use a very broad definition of "news," encompassing both stories about the world and comments/opinions about these stories. As it will become clear later, I am mostly interested in the type of journalistic information we are used to getting from traditional mass media (e.g. newspapers and television), usually told in the form of short stories. However, the collaborative media phenomenon includes much more than this "journalistic" approach to stories.

5. Ebem Moglen was the first to identify the phenomenon of peer production. *See* Eben Moglen, *Anarchism Triumphant* <emoglen.law.columbia.edu/publications/anarchism.html> (accessed May 7, 2003). Moglen's analysis is focused on the free software movement, which congregates thousands of contributors in the enterprise of software development. The most famous example of free software is the Linux operation system. *Id.*

6. Benkler uses the term accreditation in his description of peer production of information. *See* Benkler, *supra* n. 2, at 383-84, 390-96. For the purposes of this essay, accreditation can be defined as the process through which a piece of information gains credibility in the public sphere.

of producing accreditation. As with many other phenomena emerging on the Internet, collaborative media is still in its infancy, searching for a precise definition. Any description of a phenomenon that is not itself entirely developed will be inherently imprecise, addressing only a few core points and possibly missing the blurry periphery. Yet, even a brief and incomplete description should be sufficient to identify the challenge of producing accreditation in a decentralized environment.

In order to provide a more comprehensive description of collaborative media and its challenge, Part III will develop a case study. I will concentrate my analysis on a virtual community called "Kuro5hin" (it should be pronounced as "corrosion"), which also goes by the nickname "K5." I will discuss in detail the mechanisms created by K5 to generate credibility in a peer-to-peer model of production. Then, in order to capture the dynamic evolution of the collaborative media phenomenon, I will compare K5 and Slashdot, another popular collaborative media site with an elaborate system of accreditation. I conclude this part describing some other collaborative media sites, which confirm the broader scale of the phenomenon. As the case study demonstrates, collaborative media Web sites are extremely complex and provide a feasible alternative for production of accreditation in a peer-to-peer environment.

Part IV discusses the differences between traditional mass media and collaborative media, as well as the impacts that the latter may produce on the former. I suggest that the emergence of collaborative media represents two shifts from the traditional model: first, a shift from individual production of accreditation to diffuse production of accreditation; second, a shift from accreditation of the final product to accreditation of the publishing process. Then, I evaluate the potential impacts of collaborative media on traditional mass media.

Finally, Part V provides a discussion of the potential effects of collaborative media on the political economy of information more broadly. I argue that collaborative media may produce positive effects on four different levels: (i) decentralization of control in the production of news; (ii) increasing diversity of content; (iii) fostering democratic values; and (iv) boosting individual autonomy. A brief conclusion will follow Part V.

Before going on, it is important to make one caveat. This essay does not argue that collaborative media is a panacea that will solve all maladies of traditional mass media.[7] I suggest that collaborative media has the potential to enrich our communications environment by changing the way individuals interact in the creation and distribution of news. Additionally, collaborative media has the potential to trigger changes in the

7. The literature discussing the drawbacks of traditional mass media is very extensive. A comprehensive discussion of the arguments presented in this literature is beyond the scope of this essay.

current structure of mass media, forcing the development of a publishing process that is more transparent and open to user participation.

II. COLLABORATIVE MEDIA: AN EMERGING PHENOMENON

A. COLLABORATIVE MEDIA, OPEN PUBLISHING AND PEER-TO-PEER JOURNALISM

Collaborative media is an emerging phenomenon on the Internet. Also called peer-to-peer journalism ("P2PJ"), "community weblog," or "collaborative news and discussion sites," this phenomenon comprehends Web sites devoted to peer-production of "news." They create and structure virtual communities that collaborate in the production of information about the world. Some of them are focused exclusively on the commentaries about "news" posted in other Web sites. Others produce their own "news" – initial utterances[8] – in order to begin threads of discussion. Some are devoted to specific subject areas, such as technology or politics,[9] while others cover a broad range of subjects and interests.[10]

Collaborative media sites are generating an increasing amount of Internet traffic and gathering large numbers of users. For instance, Slashdot, one of the pioneers and probably the most well know collaborative media site, draws the attention of more than 300,000 unique visitors every month.[11] Kuro5hin, the primary object of the case study in the next section, draws 100,000 unique visitors, with an average of 2.5 million page views monthly.[12] These are astonishing numbers in any account, especially if one takes into consideration that these sites are fairly new – for instance, K5 was created in December of 1999.

Essentially, collaborative media sites are developing an open and decentralized mode of news production, leading to the construction of a new paradigm of journalism. Even though the whole phenomenon is still very amorphous, and evolving in different directions, there seems to be two main concepts at the core of the new paradigm: (i) open publishing and (ii) peer-to-peer journalism.

The concept of "open publishing" means a transparent editorial process open to users.[13] The degree of transparency may vary in different

8. Benkler, *supra* n. 2, at 383.

9. *See e.g.* <www.slashdot.com> (accessed May 7, 2003) (focused on technology news); <www.quorum.org/a-national/article> (accessed May 7, 2003) (focused on politics).

10. *See e.g.* <www.kuro5hin.org> (accessed May 7, 2003) (encompassing politics, technology, media, culture, general news); <www.indymedia.org> (accessed May 7, 2003) (general news coverage); <www.metafilter.com> (accessed May 7, 2003) (covering a broad and loose range of subjects).

11. *See* <journalism.berkeley.edu/resources/personal/> (accessed May 7, 2003).

12. *Id.*

13. Matthew Arnison, a tech-volunteer of Indymedia.org, which is a collaborative media site, proposes a similar work definition of "open publishing:"

sites: sometimes users can see the whole editorial process and the changes made to a story before it is actually published,[14] sometimes users can follow only the comments posted after a story is published.[15] Sophisticated software platforms usually coordinate the whole process,[16] controlling the various degrees of transparency on each level. As a general matter, open publishing represents a big step to unlock the editorial black box that has dominated traditional media during the twentieth century. In the emerging paradigm, watching the editorial process seems as important as viewing the final product (i.e. the information ultimately published in the site).

While open publishing emphasizes the transparency of the editorial process, peer-to-peer journalism emphasizes the participation of an increasing number of users in the production of news.[17] In the new paradigm, users play a role as "amateur journalists," writing stories, suggesting changes in stories written by others, and generally contributing to the joint effort of producing news.[18]

Hierarchy and control in the editorial process are replaced by cooperation and voluntary participation. The depth and breadth of contributions from different users vary significantly, but the main point is that users take up most of the tasks in the editorial process, reducing the necessity of a full-time staff responsible for "running" the news site.

In sum, collaborative media sites are significantly changing the landscape of news production, integrating literally thousands of volunteers in an open publishing environment. Creation, discussion, and

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> Open publishing means that the process of creating news is transparent to the readers. They can contribute a story and see it instantly appear in the pool of stories publicly available. Those stories are filtered as little as possible to help the readers find the stories they want. Readers can see editorial decisions being made by others. They can see how to get involved and help make editorial decisions. If they can think of a better way for the software to help shape editorial decisions, they can copy the software because it is free and change it and start their own site. If they want to redistribute the news, they can, preferably on an open publishing site.

Matthew Arnison, *A Working Definition of Publishing* <www.cat.org.au/maffew/cat/openpub.html> (accessed May 7, 2003).

14. *See e.g.* <www.kuro5hin.org> (accessed May 7, 2003).

15. *See e.g.* <www.slashdot.com> (accessed May 7, 2003).

16. Some software platforms are increasingly popular among collaborative media sites. Three prominent examples are the Scoop platform, developed and used by kuro5hin.org, the Slash platform, developed and used by Slashdot and the Wiki platform. *See* <scoop.kuro5hin.org/main> (accessed May 7, 2003); *see* <slashcode.com> (accessed May 7, 2003); *see* <c2.com/cgi/wiki> (accessed May 7, 2003).

17. Many different perspectives about the concept can be found in a discussion group about peer-to-peer journalism. The archives of the discussion are on the Web. *See* <infoanarchy.org/mailman/listinfo.cgi/p2pj> (accessed May 7, 2003).

18. The case study developed in Part III will provide concrete examples of the participation of individuals in the process.

changes in news is done in an interactive setting, where consumers – better characterized as users[19] – are also the authors and editors of the final product. But what characteristics in the networked environment facilitate the emergence of this new mode of production? What makes it feasible to coordinate astonishing numbers of volunteers contributing to collaborative media sites? And what challenges must be faced in this new mode of production of news? These are the issues discussed in the next section.

B. Peer-Production of News and the Challenges Faced by Collaborative Media

The creation of news in a networked environment through collaborative media sites is particularly susceptible to peer-production for four reasons.[20] First of all, the production of news (i.e. information about the world in which we live) is inherently modular, meaning that it can be broken down into pieces (e.g. stories, comments, op-ed materials) that may be developed autonomously. In fact, even within gigantic media corporations, many journalists work on different pieces at the same time, while editors assemble all these pieces in the final product presented to consumers.

Second, the production of news is very granular, meaning that even very small pieces of work (e.g. a short note about a preview of a movie or a link to a site with an interesting article) may raise interest. Granularity allows individuals willing to participate in collaborative media sites to limit their participation as they see fit. As a result, the sites can attract both individuals interested in intense participation – for example, writing analytic articles with extensive research – and individuals interested in more modest participation. In other words, modularity and granularity contribute to broaden the range of potential participants in collaborative media sites.

Third, with a broad pool of possible participants, collaborative media sites tend to produce very effective results. Indeed, one of the greatest advantages of peer production of news is that it relies on an unbounded set of individuals with widely variable talents and specific fields of knowledge and interest. For instance, taking K5's example, after September 11, 2001, a student of medicine wrote an article about anthrax and the threats it poses to human health,[21] while a senior pilot analyzed

19. *See* Yochai Benkler, *From Consumers to Users: Shifting the Deeper Structures of Regulation Toward Sustainable Commons and User Access*, 52 Fed. Comm. L.J. 561, 567-69 (2000).

20. The following discussion applies the theoretical framework developed by Yochai Benkler. *See generally* Benkler, *supra* n. 2, at 383-84.

21. *See* Bacillus Anthracis, aka Anthrax, *available at* <www.kuro5hin.org/story/2001/10/9/153334/278> (accessed May 7, 2003).

new proposals for airplane security.[22] These "amateur journalists" have great advantages to writing about these fields, in which they are very knowledgeable. Actually, they are probably more capable of providing a thorough analysis of those subjects than a professional journalist not familiar with the field.

Fourth, the development of sophisticated software platforms to put different pieces of work together has considerably lowered the coordination costs involved in the production of news. Software automates most of the integration process, making it simple and easy. To the extent that some parts of the process are not totally automated (e.g. choosing what articles go to the front page of a Web site), they can also be organized in a peer-to-peer mode of production, gathering together the efforts of many volunteers.

These four characteristics suggest that peer-production of news may actually be feasible and efficient. But this is not the end of the story. There are some important obstacles to the development of collaborative media that must be acknowledged and dealt with before it can be considered an alternative source of news.

The first challenge, common to many peer-to-peer endeavors, is to reach a critical mass of users in order to gain momentum. The four characteristics described above suggest that, if there are enough people collaborating, it will be possible to produce news in a decentralized manner, with relatively small contributions from each participating individual. A large pool of contributors creates redundancy in the system, allowing individuals to take turns writing stories and keeping the site running (e.g. in a large pool there will always be people posting new stories even if a regular contributor stops participating during a certain period of time). However, if only a small number of individuals join a collaborative media project, it will be unlikely to succeed.[23] The lower the number of contributors, the higher the cost of participation and the potential damage caused by defection of one or few participants. Hence, it is crucial to create a large pool of contributors, building redundancy in the process.[24]

22. *See* The "Don't Crash" Button, *available at* <www.kuro5hin.org/story/2001/10/4/191234/589> (accessed May 7, 2003).

23. *See e.g.* <Quorum.org> (accessed May 7, 2003). It is a collaborative media site devoted to political discussion. *Id.* However, Quorum has about 2500 registered users, a number that seems insufficient to get the site publishing new articles and interesting comments in a daily basis. *Id.* Actually, Quorum was recently reformulated, and the collaborative media feature received a limited space in the new site. *Id.* The number of contributors to reach the necessary critical mass may vary according to the ambition of the project and the dedication of each individual in the pool of contributors. *Ceteris paribus*, the more ambitious the project and the lower the individual dedication, the bigger should the pool to reach a critical mass.

24. *See* Benkler, *supra* n. 2, at 380, 384, 423 (discussing the importance of building redundancy in the system).

Assuming the critical mass is reached, a second challenge is to guarantee the credibility of the information displayed. And this seems to be the most important issue in the development of collaborative media.[25] In a world where production of information is growing exponentially, while human attention remains finite, it is essential to build processes to guarantee the relevance and accreditation of the information produced.

Here, collaborative media sites face a series of obstacles. First, accreditation tends to be built over a relatively long period of time. People learn to trust their sources of information in response to a consistent performance throughout the years. For instance, the New York Times or the Washington Post built up their reputations as reliable sources of news in many decades. Therefore, it is unlikely that collaborative media will be able to build accreditation overnight.

Second, it is more difficult to produce credibility as a diffuse community than it is as an individual or a single entity. Credibility usually is linked to accountability and it is very hard to hold somebody accountable when nobody is formally in charge. Indeed, regardless of the particular journalists who author the stories, a newspaper tends to reap all the benefits or take all the blame for its news coverage so that consistent positive news coverage will lead to an increase in credibility. On the other hand, a good article in a diffuse collaborative media site may be attributed to the author of the piece and will not necessarily be linked to the credibility of the Web site itself.

Finally, the central role of traditional mass media in contemporary society created a certain degree of path dependence regarding our trusted sources of news. We learned, as a society, to trust gigantic media corporations as our primary sources of information. So, collaborative media will need to affect this path dependence, if it is expected to play any significant role as a source of information to the general public.

All these obstacles require the construction of alternative methods of accreditation. And this is exactly what collaborative media sites are developing. Relying heavily on peer review, voting systems, rating systems and substantive commentaries, virtual communities are implementing innovative ways to enhance the credibility of information published. In order to give a bolder description of the issues laid down so far, the next

25. Of course, there are many virtual communities that function as an expanded chat room, where people interact with no further objective of producing credible information. *See e.g.* <Everything2.com> (accessed May 7, 2003). However, to the extent that at least some virtual communities aim at producing credible information about a certain ranges of topics, both for their registered users and for non-registered viewers, it is essential to develop accreditation mechanisms. This essay is concerned only with virtual communities that place some degree of importance on the credibility of the information produced in a collaborative way.

section will provide a detailed analysis of one virtual community that developed a very sophisticated mechanism of accreditation.

III. CASE STUDY: KURO5HIN.ORG AND PEER-PRODUCTION OF ACCREDITATION IN A COLLABORATIVE MEDIA ENVIRONMENT

A. THE K5 COMMUNITY: AN OVERVIEW

Kuro5hin.org ("K5") is a collaborative media site structured to publish stories about a broad range of subjects, including culture, technology, politics, media, news, and the Internet. Each story initiates a thread of discussions among K5's users, who post comments about stories and comments about prior comments posted by other users. The comments add a significant amount of information about the topics covered by the stories, both enlarging the debate and presenting a powerful way to check the credibility of the initial stories.

K5 defines itself as a community of people interested in substantive discussions about the world, while discouraging thoughtless debates among its users. K5's mission statement describes its virtual community[26] in the following terms:

> Kuro5hin.org is a community of people who like to think. You will not find garbage in the discussions here, because noise is not tolerated. This is a site for people who want to discuss the world they live in. It's a site for people who are on the ground in the modern world, and who sometimes look around and wonder what they have wrought.[27]

This mission statement inspires the basic social norms within the K5 community. In fact, by characterizing itself the way it does, K5 attempts to attract people who share the objective of engaging in thoughtful debates "about the world they live in." Conversely, this mission statement discourages the participation of people not interested in such discussions.

But K5 went beyond the creation of a community with shared values about the importance of substantive debates; it also developed a series of technological tools that help keep the discussion flowing smoothly. The structure of the site embeds complex filtering mechanisms, attempting

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26. Howard Rheingold defines virtual communities as "social aggregations that emerge from the Net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace." *See* Howard Rheingold, *The Virtual Community: Homesteading on the Electronic Frontier* ¶ 26 <www.rheingold.com/vc/book/intro.html> (accessed May 7, 2003). My use of the expression here is not focused on the construction of "personal relationships," but on the maintenance of a stable group of individuals participating in a public discussion, according to a given set of social norms.

27. *See* Mission Statement <www.kuro5hin.org/?op=special;page=mission> (accessed May 7, 2003).

to reduce noise in the system. These mechanisms stimulate peer review before and after all stories are posted. Before the story is posted, there is a moderation queue where users vote for the stories they want to see posted on the site and suggest editorial changes in the stories (*ex-ante* peer review). After the story is posted, extensive commentary and an elaborate rating system contribute to further check the story's credibility and reduce the noise in the discussion (*ex-post* peer review).[28]

K5 relies on some advertising revenues to sustain its operations. K5's founder and administrator, Rusty Foster, has used advertising as exchange currency for bandwidth and hardware.[29] Additionally, for a certain period of time K5, had an agreement with the Open Source Development Network ("OSDN") that guaranteed a constant stream of revenues. More recently, the site started selling small text advertisements for US $3.00 per thousand impressions, stimulating its own users to post advertisements. The main idea is "to provide something that's worth a few bucks to a large number of people,"[30] while maintaining only small, non-annoying, informative, and non-intrusive advertisements.[31] Relying on a diffuse group of advertisers reduces the power of any single commercial entity to influence the structure of the site or the information it publishes.

However, this innovative business model has not been sufficient to make K5 a profitable enterprise. After persistent financial problems, K5 recently became a non-profit organization, relying on donations of its users.[32] So far, the donations have been sufficient to keep the site running – K5's annual operating budget is US $70,000.[33] But it is difficult to predict whether the site will be sustainable in the long run.

In spite of the financial difficulties, K5 receives an impressive amount of traffic, which builds a very lively community.[34] Although the

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28. I will examine these mechanisms in the following sections.

29. Rusty Foster, *Interview to Dotcomscoop* ¶ 18 <www.dotcomscoop.com/article.php?sid=163> (accessed May 7, 2003) [hereinafter Foster's Interview] ("the bandwidth comes, currently, from the excellent people at Voxel.net, who trade hosting for advertising. We're also getting some new hardware from Promicro, for the same terms").

30. *Id.* at ¶ 19.

31. *See* <www.kuro5hin.org/submitad> (accessed May 7, 2003). This strategy is also being used by other popular Web sites to generate revenues without giving too much power and influence to a narrow set of advertisers. Probably, the most prominent example is Google, which created a complex system of small text ads in which the advertiser pays per click of users in their ads. *See* <adwords.google.com/select/main?cmd=login> (accessed May 7, 2003).

32. *See* <www.kuro5hin.org/story/2002/6/18/608/54762> (accessed May 7, 2003).

33. *Id.* at ¶ 2.

34. The site provides the following statistics for the first year of operation (Dec 21, 1999-Dec 21, 2000): (i) Stories submitted: 1953; (ii) Stories posted: 1304; (iii) Stories posted to Front Page: 892; (iv) Users: 10075; (v) Diary entries: 2203 (vi) Comments: 58942 (vii) Pages served (very roughly, since Feb) 7006310; *see* <www.kuro5hin.org/?op=special;page=

number of new stories published per day does not get even close to the number of stories in a newspaper or in the evening news of a TV network, there is always something fresh to look at. As the community grows, so will the number of stories and the intensity of the debate.

Following this overview of the K5 community, I turn to a more detailed description of the mechanisms of accreditation developed in the site. First, I discuss the *ex-ante* peer review mechanisms embodied in the moderation queue. Second, I examine the *ex-post* peer review mechanisms, with particular attention to the rating structure and the "mojo system." Then, I compare these accreditation mechanisms and those developed by Slashdot, one of the most popular and successful collaborative media Web sites. Finally, I will briefly turn to other emerging collaborative media Web sites in order to demonstrate the growing importance of the phenomenon described in this essay. I conclude this section by highlighting the feasibility of a peer-produced accreditation model in a collaborative media environment.

B. *Ex-ante* Peer Review: The Moderation Queue

K5 has developed a very interesting editorial process, based on *ex-ante* peer review of the stories that get posted in the site. Basically, registered users vote on which stories they want to see posted and which stories they think should not be posted. The voting process also determines which stories get posted to the front page of the site. Additionally, the *ex-ante* mechanism of peer review allows for some collaborative editorial changes suggested by users before a story gets published.

The process starts when a registered user submits a story. The story immediately gets posted in the "moderation queue," where other registered users can see it – unregistered users visiting the site do not have access to the moderation queue.[35] The user presenting the story can either ask for editorial comments to improve her story or directly submit the story to the vote of other users. In the former alternative, reviewing users can make suggestions of changes in the structure or the content of the story before it goes through the voting process.

When the story gets to the voting process, registered users have four voting alternatives: (i) "post it – front page;" (ii) "post it – section page;"

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random#long> (accessed May 8, 2003). More recent data estimates that K5 has around 20.000 registered users and receives about 100.000 unique visitors per month; *see* JD Lassica, *Independents Day*, Online Journalism Rev. <www.ojr.org/ojr/workplace/1017771181.php> (April 2, 2002).

35. The registration process in K5 is very simple: the only requirement is an active e-mail account to register and start participating in the community. Anyway, limiting access to the moderation queue only to registered users provides some sense of community in the editorial process. The idea is that only "insiders," consistently participating in the community, should be able to see and contribute to the process of choosing the stories posted in K5.

(iii) "don't care;" and (iv) "dump it." Alternatives (i) and (ii) add one point to the total voting score of the story, while alternative (iii) adds 0, and alternative (iv) subtracts one point. The total voting score is calculated through the sum of all votes.

K5 provides a "post threshold" and a "dump threshold," both established at a very small percentage of the total number of registered users. Currently, the post threshold is set at +95 and the dump threshold is set at –20. When the total voting score reaches either threshold, the story will get posted or dumped automatically. Given that the thresholds refer to the total score of votes, controversial stories may receive a significant number of votes for and against it, while still not reaching either threshold. In fact, if a story gets an equal amount of votes for and against its publication, the total score will be zero no matter the number of users voting. If the story does not reach either threshold in thirty-six hours, it will get posted or dumped according to the number of votes it received and the average rating of comments posted in the moderation queue.[36]

In order to prevent users from being influenced by prior votes, the current score of a story is not showed before they vote. After voting, users can see the current score, as well as the names and votes of other users who have already voted for or against that particular story. Obviously, each user can vote only once.

To be posted in the Front Page of K5, a story must reach the post threshold (i.e. 95 points) *and* 50% of the positive votes received must be of the category "post it-front page." This feature permits users to attribute different degrees of relevance to a story. In other words, to get to the front page, where presumably it will get more attention from registered and unregistered users, a story must be considered sufficiently relevant by a significant number of registered users.[37]

In sum, the *ex-ante* peer review mechanism provides a completely open editorial process, according to which users define what stories get posted where in K5. Moreover, the moderation queue system permits editorial comments and discussions before a story gets posted, stimulating changes and improvements. Even when a story is dumped in the voting

36. Of course, this auto-post system may be gamed by users. *See e.g. Abusing the Comment Rating System to Help Stories You Like* <www.kuro5hin.org/story/2002/5/10/94657/7850> (accessed May 8, 2003) (pointing out how individual users can influence which stories get posted by rating the comments in the moderation queue). However, this seems to be the pathology in some exceptional cases and not the regular procedure. In this point, social norms in the community play an important role.

37. Benkler suggests that relevance and accreditation are "complementary and not entirely separable functions." *See* Benkler, *supra* n. 2, at 383. K5's peer review mechanism seems to have provided an interesting way to distinguish relevance and accreditation in the voting process of a story: the decision to post or not to post a story is one mainly focused on accreditation; while the decision to post a story in the front page or in the regular section pages is one mainly focused on the relevance of the story to the K5 community.

process, the user submitting it can get a good idea of the criticism of other users through the comments made in the moderation queue.

C. *Ex-Post* Peer Review: Comments, Rating and the Mojo System

After a story is posted, the peer review process continues. The primary mechanism of *ex-post* peer review of stories is carried out through comments of other users reading the story. The comments add new information about the topic, point out mistakes in the initial story, suggest alternative views of the problem, and provide general feedback from the K5 community.

Comments are an interesting way of verifying the trustworthiness of a story posted in K5. The comments process is roughly equivalent to having hundreds (sometimes thousands) of "fact-checkers." If the author of the original story included something wrong or inaccurate in the text, this is likely to be pointed out by the comments. If the author was biased, or did not provide a balanced story, it is also likely to be criticized. In short, the discussion following the publication of a story serves as an accreditation mechanism.[38]

Any registered user can post comments to any story published in the site. The comments vary in length and breadth. They may be classified as editorial or topical by their authors. Editorial comments are supposed to be opinions about stories, while topical comments address substantive aspects of the story. In practice, however, many comments have both editorial and topical aspects.

Comments are subjected to a rating system, which serves as a base to the filter mechanism implemented by K5. Every registered user can rate comments posted to stories. The regular rating scale varies from one to five, in a system where good comments are rated higher than bad comments (i.e. very good comments should be rated five on this scale). The overall rating of a comment is calculated through the simple average of all ratings received. For instance, if a certain comment receives four

38. A good example of the use of comments as an accreditation mechanism is provided by the story entitled "Israel's Nuclear Arsenal," published in K5's front page on April 17th, 2002. *See* <www.kuro5hin.org/story/2002/4/17/13711/7924> (accessed May 8, 2003). The author wrote a story about the evolution of the nuclear arsenal of Israel, presenting a number of reports and materials as sources, most of them available on the Net. *Id.* The story was dense and seemed to be based on sound research. *Id.* Among the data presented, the author mentioned that Israel's arsenal is currently somewhere between 200 and 500 nuclear warheads. *Id.* In one of the comments following the story, entitled "Know Your Source," another user cites a former military engineer and a number of other sources also available on the Net suggesting that Israel could have a maximum of 84 warheads in its control. *Id.* The discussion is amazingly rich, going well beyond what a good newspaper article would provide. *Id.* The reader can actually look at the sources of both users and decide for herself which ones are more reliable. *Id.*

ratings- two threes and two fours- the overall rating of the comment will be 3.5 (3+3+4+4/4 = 3.5). According to this formula, the power of a user to affect the overall rating of a comment diminishes as the number of users rating that comment increases. Indeed, the larger the pool of users rating a specific comment, the lower the noise (i.e. impact of misguided judgments) in the overall rating will be. This seems to be the basic principle of K5's rating system: averaging reduces noise as the traffic increases.[39]

Based on the overall ratings, users can organize the order in which they want to see the comments through K5's filter. Users can choose to see comments in the following sequences: (i) highest rated comments first, (ii) non-rated comments first, followed by highest rated comments, (iii) lowest rated comments first, or (iv) all comments ignoring the ratings. This way, users who believe the rating system works well can focus their attention on the highest rated comments. Users can also filter comments according to their classification as editorial or topical.

The rating system also identifies certain "trusted users" who can rate comments down to zero. Only comments considered *pure noise* ("spam") should be rated down to zero. Regular users cannot see comments with average rating below one, which are virtually excluded from the general discussion. Nevertheless, the so-called "trusted users" can see these comments and rate them up, so that their average reaches one and they get to be viewed (and rated) by regular users again. Allowing trusted users to control the noise in the site, the rating system seeks to eliminate spam from discussions.

The comment rating system builds a second layer of ratings designed to identify "trusted users." This second layer is called the "mojo system."[40] Each registered user has a "mojo," which is a number between zero and five, calculated as the "average of [the user's] previous ratings, from the past X weeks (with a max Y comments looked at), with newer comments counting more heavily than older ones."[41] More precisely, the mojo is a weighted average of the ratings given to past comments of a given user, where the ratings of more recent comments

39. Of course, the system presupposes a big pool of ratings. Comments that get few ratings to compose their average will possibly be affected by inaccurate rates given by some users. *See* <www.geocrawler.com/lists/3/SourceForge/3222/25/4121891/> (accessed May 8, 2003) (discussing the role of averages in the K5 rating system).

40. *Id.* (providing a detailed discussion of the conception of the mojo system); *see also* <www.usemod.com/cgi-bin/mb.pl?KuroshinMojo> (accessed May 8, 2003) (discussing the mojo system's strengths and weaknesses); *compare with* <www.kuro5hin.org/story/2001/8/7/163734/1679> (accessed May 8, 2003) (criticizing K5's rating system as a whole).

41. Definition provided in K5's Frequent Asked Questions (FAQ). *See* <www.kuro5hin.org/?op=special;page=comments#mojo> (accessed May 8, 2003) [hereinafter K5 FAQ].

receive the greatest weight.[42] This system provides for continuous rating of all users actively participating in the site (i.e. posting comments), serving as an incentive for posting comments positively valued by the rest of the community. Given that recent comments count more heavily than older comments, users' reputations can rapidly decline if they post some low rated comments, providing a disincentive for low quality contributions even when users have built a good reputation.

A user's mojo is used as the initial rating of her comments.[43] Hence, the higher the mojo, the higher the initial rating of the user's comments. A high mojo represents a louder voice in the discussion, considering that other users will rely on the filter mechanism to focus their attention on highest rated comments. But the initial rating is only one component in the average of each comment. If the comment receives subsequent bad ratings by other users, the average rating of that specific comment will decline, reducing its loudness. In other words, even users with high mojo may have specific comments rapidly rated down. If the user gets many comments rated down, his mojo will decline as well, and his comments will start with lower initial ratings. Therefore, the system calibrates the relative power of each user according to her past behavior in the community, always attributing more weight to the most recent performance.

Additionally, the mojo system permits the identification of trusted users – currently defined as users with mojo above 3.5 – who acquire the

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42. An even more detailed explanation was provided by K5's founder when the mojo system was conceived:

> Each user who has posted a comment that has been rated has a "mojo." Mojo is just a weighted average of the ratings your comments have earned over the past ninety days. Recent comments count for more than old comment, so your current behavior will count more than your past behavior, thus allowing people to atone for previous mistakes. On the flip side, previously respected posters can quickly burn up their mojo with a few bad ratings. The system will be reactive to the current state of affairs. The formula for calculating mojo is simply this:
>
> (sum (comment_rating * (90 - interval))) / sum (comments * multipliers)
>
> where interval is the number of days ago the comment was posted. Let me give an example for the confused:
>
> Bob posted three comments in the last month. One was rated 4, and was posted 30 days ago. One was rated 2 and was posted 15 days ago. One was rated 5 and was posted today. Bob's mojo is:
>
> (4*60)+(2*75)+(5*90) / (60 + 75 + 90) = (240 + 150 + 450) / 225 = 3.73

See <www.geocrawler.com/lists/3/SourceForge/3222/25/4121891/> (accessed May 8, 2003).

43. Although K5's FAQ points out that the mojo system establishes all initial ratings, some non-rated comments appear with Rate 0. I could not find out why these comments did not have an initial rating or why they could be seen by untrusted users (according to all explanations about the system only trusted users are supposed to see comments rated 0). K5 FAQ, *supra* n. 42. Anyway, in spite of these inconsistencies, the description in this essay will be based on the FAQ and other mentioned sources discussing K5's system. *Id.*

privilege to rate comments down to zero.[44] As mentioned above, regular users (i.e. users with mojo below 3.5) cannot see comments with an average below one. Again, the power attributed to trusted users is relatively small and diffuse. Since the average rating is what counts for the filtering system, the power of one trusted user is limited by the power of all other trusted users. For instance, suppose that a comment is rated zero by two trusted users. As long as two other trusted users attribute a rating of at least two to the same comment, it will reach an average of one and will be seen by regular users, who will then get the chance to rate that comment.

In conclusion, K5 has developed a very sophisticated *ex-post* peer review process. Relying on comments of all users, a rating system for the comments, and a rating system for users (i.e. mojo system), the virtual community establishes a balanced power structure based on reputation. Together with other elements of the K5 community (e.g. the peer review *ex-ante*, the culture of engaging in substantive discussions, the reduced advertising pressures), peer review *ex-post* significantly contributes to the overall credibility of the information published on the site.

D. The Dynamics of Collaborative Media: Comparing K5 and Slashdot

Slashdot is the pioneer and probably the most well-known collaborative media site on the Net. Its success as a source of information, together with the sophistication of its peer review process, led to the observation that Slashdot is "perhaps the most elaborate multilayer mechanism for peer production of relevance and accreditation."[45] As such, it can be useful to take Slashdot as a benchmark[46] for evaluation of the K5's accreditation mechanism described above.

This section develops a comparative analysis, suggesting that K5's peer review mechanism is more elaborate than the one implemented by Slashdot. However, the main point is not to define which site is "better." Rather, the purpose is to demonstrate how peer-production of relevance and accreditation is rapidly evolving, leading to systems that are both more complex and more reliable. In other words, I am more interested in the evaluation of the dynamic evolution of collaborative media phenomenon than in a static comparison between K5 and Slashdot.

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44. The Frequently Asked Questions mentions that "[i]f [the mojo] goes high enough (rumor has it that it is 3.5), you will be able to rate other comments below 1 to 0." *Id.* This suggests that the level of mojo required to be considered a trusted user may vary. *Id.*

45. Benkler, *supra* n. 2, at 393.

46. Benkler provides a detailed description of the peer review mechanism of Slashdot. *Id.* at 393-396. I will draw from his description of the site in this comparative analysis. Another source is Michael Froomkim, *Habermas@discourse.net: Towards a Critical Theory of Cyberspace*, 116 Harv. L. Rev. 749, 863-867 (2003).

Looking at Slashdot and K5, the first significant difference any observer would probably notice is the range of subjects and interests covered. While Slashdot covers a limited range of subjects, clustered around technology-related topics, K5 is a more diverse community, interested in technology as well as culture, politics, media, and general news. In this sense, K5 can be considered less an enclave[47] of people with very focused interests and more a general interest Web site where individuals with different backgrounds and interests gather for discussions about a wide range of topics.

A second core difference between the two sites concerns the editorial process. As described above, K5 has developed a completely open editorial process, where users participate in the selection of the stories to be published. Slashdot has adopted a different approach, maintaining an editorial process completely closed to user participation. Stories are submitted to a paid staff, equivalent to editors of traditional media, who decide which pieces are published.[48]

Also in the editorial process, a third crucial difference between the two sites refers to the process of attributing relevance to different stories. Just as in the editorial process of traditional media, a clear way of attributing relevance to a story is to publish it in the front page, where all readers will probably have a chance to look at it. In K5, the front page is composed using a peer-production model, where users vote for the stories they consider relevant enough to make to the front page. In contrast, the process is closed to users in Slashdot, where the staff decides what stories are published on the front page.

After a story is posted, both sites use a peer review mechanism based on comments and ratings systems. However, there are very important differences between K5 and Slashdot platforms. First, there is a significant difference in the conception of the rating systems. K5's rating

47. I am using the term "enclave" here just to describe the narrower interest focus of Slashdot. I do not take the full meaning attributed to the expression by Cass Sunstein, who defines "enclave deliberations as that form of deliberation that occurs within more or less insulated groups, in which like-minded people speak mostly to one another." Cass Sunstein, *Republic.Com* 77-78 (Princeton Univ. Press 2001). In fact, even though Slashdot is a narrowly focused Web site, it does not seem to gather only like-minded people. *Id.* On the contrary, Slashdot gathers people with very different views but who share the interest on technology-related topics. *Id.* Perhaps, this empirical observation might suggest that fragmentation of specific interests does not necessarily lead to group polarization in the form of "like-minded people" speaking to each other, as Sunstein proposes in his work. *Id.* In this sense, Slashdot may be considered an empirical example contrary Sunstein's thesis. *Id.*

48. Froomkim points out the potential negative impact of the closed editorial process for the development of discourse. *See* Froomkim, *supra* n. 47, at 866 (noting that "[b]ecause the editors choose which topics make the Slashdot front page, they have an agenda-setting role that permits them to skew the discourse").

system is based on the average of ratings attributed to each comment, while Slashdot developed a cumulative rating system in which the rating of a comment increases one point or decreases one point according to the value attributed by each moderator.

Second, there is a significant difference in terms of who participates in the rating process. In K5, all users can rate all comments, making the rating power very diffuse. Slashdot selects some trusted users as "moderators," giving them "influence points" to rate a small number of comments. Thus, while K5's rating system is based on the assumption that, given high enough traffic, averages will reduce the noise in the rating system; Slashdot's system is based on the assumption that a narrow pool of moderators, each one with limited amount of power, will reduce the potential effect of poor ratings by some moderators.

Third, K5 and Slashdot rate their users with different systems.[49] On Slashdot, the user's rating system is called "karma," and it is calculated in a cumulative basis according to the past rates users received in their comments. The users' karma gets higher as their comments receive positive rates from moderators. In K5, the mojo system is a time-weighted average of rates received in comments, where the rates of recent comments weigh more heavily than old ones. Thus, K5's system is more sensitive to changes in the user's behavior. Slashdot's rating system will take longer to capture a decrease in the quality of participation of a user who built up a good reputation over time, since it will take many low ratings to reduce the user's high karma.

Table 1 summarizes the comparison between the two collaborative media sites.

As the comparison above demonstrates, both K5 and Slashdot have designed very complex systems for peer production of relevance and accreditation, representing the state of the art in collaborative media. However, K5's system seems to be more sophisticated than Slashdot's, providing an open editorial process and a more fine-tuned rating system for comments and users. Even more interestingly, designed after Slashdot, K5 specifically addressed some of the problems in the Slash platform (e.g. the time lag between a decrease in quality of comments and reduced user rating), clearly building on the prior experience of the older site.[50]

However, it is not clear why Slashdot does not use K5's innovations to improve its own platform. One possible answer to this question may

49. For a comparison of the mojo system with Karma see Rusty Foster's discussion in Geocrawler, *supra* n. 43.

50. The inspiration of K5 in Slash's platform is obvious and expressly asserted in some opportunities. For instance, in K5's FAQs there are many references and comparisons with Slashdot. K5 FAQ, *supra* n. 42.

TABLE 1 – KURO5HIN v. SLASHDOT

Relevance & Accreditation Process	Web site Category	Kuro5hin.org	Slashdot.com
	Range of subjects/ interests	Broad range of subjects (politics, culture, media, technology, Internet, etc.)	Narrow range of subjects (focused on news about technology related issues)
Ex-Ante Peer Review	Initial Editorial Process (selection of stories)	Users participate in the editorial process, selecting the stories that get posted and posting editorial comments	Stories are selected by the staff (users do not get involved in this stage of the process)
	Judging Relevance (stories that get to the front page)	Users judge the relevance of the story, voting for those stories they consider important enough to be on the front page of the site	Users do not participate in this process. Staff chooses which stories should be on the front page
Ex-Post Peer Review	Rating System applied to comments	Average of all ratings	Cumulative ratings
	Power to rate comments	All users can rate all comments in the site (wide pool of rates - average reduces noise)	Only few users (moderators) can rate a limited number comments (narrow pool of rates - limited power to rate reduces noise)
	Rating system applied to users	Mojo: time-weighted average that places more relevance in the rates of recent comments	Karma: cumulative rating system that does not take into account the moment of the actions

be that Slashdot has gathered an impressive number of collaborators who are used to dealing with its original platform. Thus, there might be some switching costs involved in any modification of the platform (e.g. the costs of learning the new features introduced by such modifications). Moreover, collaborative media sites create strong communities, with a certain ethos and a shared perception of the rules that govern that community. Any change in the platform might be perceived as – and to a certain extent it really is – a change in the rules of that community and, as such, it might be opposed by its own users. In other words, collaborative media may be subject to some technological path dependence and to some cultural resistance. But these limitations on change are internal to each site, allowing new collaborative media communities to innovate based on the past experience of other communities.

In conclusion, K5 and Slashdot indicate the potential of collaborative media. These sites, however, should be seen as snapshots of a rapidly evolving phenomenon. As a whole, collaborative media seems to be affecting the traditional mode of production of news. As software platforms evolve,[51] and virtual communities grow, the role of collaborative media in the information environment will probably expand.

E. Looking at Some Other Collaborative Media Projects

K5 and Slashdot are probably the most sophisticated collaborative media sites. However, collaborative media is a much larger phenomenon that encompasses hundreds, perhaps thousands, of Web sites. This section provides a brief look at some of these sites, just to register the more general nature of the phenomenon.

Indymedia.org is a very popular collaborative media Web site. It was created in 1999 "for the purpose of providing grassroots coverage of the World Trade Organization ("WTO") protests in Seattle."[52] Today it has more than fifty affiliated sites all over the world, which also provide grassroots coverage of news. The site serves as a "newswire" where any user can publish stories. Different from K5 and Slashdot, there is no mechanism for peer review. Indymedia relies almost exclusively on its reputation as an independent media outlet and the shared values of its community, which believes in the "creation of radical, accurate, and passionate tellings of truth."[53] As a site emerging within the "anti-globalization movement," Indymedia users tend to tell stories from an activist perspective.

One interesting feature of Indymedia is the use of advanced tools for news coverage. Indeed, video and audio materials are attached to many articles published on the newswire. An interview with a source may be broadcasted over the Web or a local video of the facts in the story may be streamed. In a culture where seeing is believing, the inclusion of video or audio may well enhance the perceived credibility of the story, even without any formal peer review mechanism.

Quorum.org is a collaborative media site focused on politics. Quorum is a relatively small community, with around 2,500 users, where any registered user can submit stories. The stories are rated in a system

51. Some of the collaborative media software platforms are provided in an open source format. For instance, K5 runs on a software platform called Scoop, released under a General Public License and available for improvements by anyone. *See* <scoop.kuro5hin.org> (accessed May 8, 2003) (providing detailed information about K5).

52. *See* <www.indymedia.org/about.php3> (accessed May 8, 2003). According to its mission statement, "Indymedia is a collective of independent media organizations and hundreds of journalists offering grassroots, non-corporate coverage." *See* <process.indymedia.org/faq.php3#what> (accessed May 8, 2003).

53. *Id.*

with only two types of rates: positive ("encourage") and negative ("discourage"). The highest rated stories appear on the top of the front page. The community uses a collaborative filter system in which a user can choose other individual users as a parameter to define relevant stories. In other words, user A can choose users B and C as parameters to indicate which stories are worth reading. The system then points user A to the stories on which users B and C voted positively. Given its small size, Quorum has a relatively low rate of new stories per week.

Yet another example of collaborative media is Metafilter.org. The site defines itself as a "community 'blog.'" And it really looks like a weblog, in the sense that it is a very loose community, where all kinds of stories are posted. Usually, Metalfilter's stories are short and limited to pointing out interesting articles on other Web sites. Each story is the source for a thread of related comments. There is no rating system or other formal peer review mechanism. Yet it is a community structured to talk about what is new and exchange ideas.

On a much smaller scale, an American journalist has developed a collaborative media site (Eurotrash)[54] to cover the introduction of the Euro in Europe. The idea was to cover the experience of switching currency simultaneously in different countries.[55] Ten volunteer correspondents from various countries participated in the experiment. The site served more than 26,000 pages during the fourteen weeks of coverage.

In sum, as the examples above illustrate, collaborative media is a phenomenon that goes well beyond the fortuitous success of K5 and Slashdot. In different formats, with different objectives, and using various accreditation mechanisms, significant numbers of people are gradually joining collaborative media outlets where they participate in the production of information about the world they live in.

F. Conclusion: Feasibility of Collaborative Accreditation Models

This section provided a detailed analysis of one of the most sophisticated collaborative media Web sites on the Net. K5 exemplifies how complex mechanisms of peer review can contribute to build relevance and accreditation on the Net. *Ex-ante* peer review opens the editorial process of media outlets, reaping the benefits of using an unbounded set of agents, with various talents and different backgrounds, to choose and modify stories submitted by an equally unbounded set of diverse agents. *Ex-post* peer review expands the stories published, adding new informa-

54. *See* <lightningfield.com/eurotrash/> (accessed May 8, 2003).

55. An explanation of the project was sent to the discussion list about peer-to-peer journalism. *See* <lists.infoanarchy.org/pipermail/p2pj/2002-January/000518.html> (accessed May 8, 2003).

tion, checking facts and unveiling biased perspectives. Finally, a well-developed reputation system contributes to reduce the noise in the discussion.

Besides peer review, the emerging collaborative media sites rely on social norms (e.g. the "passionate tellings of the truth" in Indymedia) and innovative business models (e.g. K5's small text advertisements) to enhance credibility. As a whole, the phenomenon of collaborative media is evolving, experimenting with new mechanisms of accreditation and building on previous experiences of successful communities.

The overall analysis provided up to this point shows that peer-production of accreditation in a collaborative media environment is not only possible in theory, but it is actually happening in practice. The idea of more and more people getting together to produce news is spreading very rapidly. Perhaps even more importantly, the amount of attention people devote to information produced in a collaborative model is increasing considerably. The escalation in the number of pages served by some of the sites mentioned above, as well as the emergence of new collaborative media sites, serve as a good proxy to demonstrate the increase in the amount of attention captured by this phenomenon.

But what does this growing trend mean? What is the potential impact of collaborative media on our communications environment? Why does it matter whether relevance and accreditation can be produced in a collaborative model? The rest of this essay deals with these issues.

IV. COLLABORATIVE MEDIA v. TRADITIONAL MASS MEDIA

This Section addresses the relationship between collaborative media and traditional mass media on two dimensions. First, I examine the ways in which collaborative media represents a departure from the accreditation model developed by traditional mass media during the twentieth century. Second, as a significant innovation in the way society produces news, collaborative media may have different impacts on the established mode of production implemented by mass media. Thus, I examine the possible impacts and consider how likely they are.

A. Collaborative Media as a Departure from the Accreditation Model of Traditional Mass Media

Collaborative media represents two major shifts in the traditional process of accreditation developed by mass media. First, it is a shift from an accreditation model centered on single organization responsibility to an accreditation based on diffuse responsibility. Second, it is a shift from an accreditation model centered in the final product to an accreditation model centered in the process of creating information. I will elaborate on both ideas.

Traditional mass media, in the format developed throughout the twentieth century, is highly focused on responsibility of a single organization. The media outlet publishing or broadcasting the information is responsible for its credibility. If the information published or broadcasted turns out to be mistaken or biased for any reason, it will negatively affect the reputation of the media outlet. In other words, there is always "someone" to blame when the information is inaccurate. If the outlet makes a series of mistakes, it will probably go out of business, since consumers will not trust it as a source of information. This model relies on passive consumers only to decide which media outlets are trustworthy and which are not. In this sense, reputation is built according to individual outlets' performance over time.

In contrast, collaborative media is based on a diffuse accreditation model. It does not make sense to blame one individual user for the inaccuracy of the information produced collectively. The outlet itself serves just as a platform for collective cooperation. In this sense, it is not responsible for inaccurate information published by its users, at least not in the same way traditional mass media outlets were responsible for the information they published. Taking K5 as an example, it is misguided to say that K5 is responsible for the inaccuracy of a story published on its front page. The story is written, chosen and edited by users, and the site owner does not interfere with the process. In this sense, the accreditation model is diffuse and is guaranteed by the cooperation of an unbounded set of agents that cannot be precisely identified.

This first shift is related to a second one. The accreditation model of traditional mass media is focused on the final product, meaning the information ultimately published or broadcasted. The process leading to publication was generally unknown and, in any event, considered irrelevant to the credibility of the publication. Whether the story was a product of an international agency contracted by the media outlet (e.g. Reuters), a product of a large team of journalists, or a product a single person had little relevance in determining the credibility of the information. Accreditation was guaranteed by the reputation of the outlet, and evaluated *ex-post* vis-à-vis information received from other sources.

Collaborative media shifts the focus of the accreditation model from the final product to the process of production of information. Actually, it is hard to identify the final product of a collaborative media site. As described above, in many collaborative sites (e.g. K5 and Slashdot), the publication of a story is not the final product. It is the beginning of a process of peer review that aggregates more information, checks the accuracy and unveils potential biases of the original story. In this sense, there is no single moment to be evaluated by the users. It is the whole *process* that produces relevance and accreditation of the information published through the outlet.

The focus on the process is a natural consequence of an accreditation model that is based on diffuse responsibility of an undefined set of individuals. If no one can be individually responsible for the final product, the only alternative is to develop a reliable process in which all participants can trust. The characteristics of the process (e.g. transparency), the nature of the sponsor (e.g. non-commercial entity), and the values shared by individual participants (e.g. the high value attributed to substantive discussions on K5), influence the credibility of the information produced.

Indeed, the trustworthiness of the process developed by a collaborative media site is not based on a single element, but on a combination of three different elements:[56] (i) architecture (the software platform that runs the collaborative media site); (ii) business model of the outlet (in particular, the type of influence allowed by the business model); and (iii) social norms (the values adopted by the community). As for architecture, K5 and Slashdot illustrate the importance of a reliable platform, with peer review processes and detailed systems of reputation. As for the business model, the more insulated from external pressures (e.g. from government or advertisers), the more reliable the Web site will tend to be. For instance, a non-profit and non-governmental collaborative Web site might be perceived as more reliable than a commercial or governmental Web site, since the latter might be considered influenced by government and corporate interests. Finally, the values of the community running the site play a crucial role in the information produced. A community sharing the ideal of "accurate and reliable news coverage" will produce a different type of information than a community sharing the objective of amusement.

The interplay among these elements is often complex and may take different forms. At the present stage of collaborative media, different Web sites seem to be experimenting with different possible combinations. In the future, one format may prevail over others, or different formats may evolve in different phenomena. In any event, the emerging accreditation model represents a clear departure from the traditional mass media model, promoting fundamental changes in the way we think about credibility of information in a networked environment.

B. Potential Impacts of Collaborative Media on Traditional Mass Media

The last section analyzed how the accreditation model of collaborative media departs from the traditional model of accreditation in the

56. The typology suggested here is influenced by the one developed by Lawrence Lessig in a different context. *See* Lawrence Lessig, *Code and Other Laws of Cyberspace* 85-99 (Basic Books 1999).

mass media. I turn now to the question of how this innovative way of producing news may impact traditional mass media.

One possible response is that traditional mass media will be completely indifferent to collaborative media. In fact, one might think that collaborative media and traditional media are different phenomena altogether and one does not interfere with the other. From this perspective, collaborative media would be just one more outlet in our complex information environment, coexisting with mass media without any significant effect on it.

However, this view seems rather implausible. As collaborative media develops, attracting a greater number of individuals, who devote more of their attention to the new outlets, traditional mass media is likely to be affected by the new phenomenon. The matter is quite simple: collaborative media is getting too big and attracting too much attention to be missed by traditional mass media.[57] Furthermore, collaborative media is evolving towards one of the core activities of traditional mass media: journalism. In other words, new collaborative sites (e.g. K5 and Slashdot) are playing in the backyard of traditional mass media. In this context, it is reasonable to imagine that collaborative media will produce at least some impact on traditional media outlets. This impact may take three different forms: (i) complementation (ii) substitution and (iii) pressure towards internal change.

First, collaborative media may become a complement to traditional mass media. Many individuals will maintain mass media as their primary source of general news. At the same time, they might look for collaborative media sites to get more detailed information about certain topics and express their views about specific issues. In this scenario, collaborative media would primarily build discussions on top of information provided by traditional mass media. Some clear examples of this type of relationship can be found today. For instance, the conservative site Freerepublic.com basically consists of discussions about stories published elsewhere on the Net, particularly in traditional mass media sites.[58]

Second, as collaborative media evolves towards a more journalistic

57. The numbers mentioned throughout this essay are impressive. Collaborative media is not attracting only hundreds or thousands of people, but hundreds of thousands of people.

58. *See* <www.freerepublic.com/> (accessed May 8, 2003). In the case of Free Republic, it is noteworthy that traditional media had a powerful reaction to the growing attention received by the site. *Id.* The Los Angeles Times and the Washington Post filed a suit to prevent Free Republic's users to post full articles of these newspapers on the web site. *Id.* The U.S. District Court of the Central District of California granted summary judgment for the plaintiffs. *Id.*

focus,[59] it is likely to become at least a partial substitute for some news coverage traditionally provided by mass media. People will simply turn to collaborative media sites to get information and engage in discussions about that information. For instance, it is possible that people interested in receiving information about technology will no longer subscribe to specialized magazines, once sites like Slashdot evolve into more reliable and dynamic sources of information. This partial substitution would produce a negative impact on traditional mass media businesses. After all, human attention is a limited resource. Every minute users spend in collaborative media sites is a minute of attention not captured by traditional mass media. Less attention means fewer revenues from advertisers and subscribers.

Third, if collaborative media stays on a successful track, reaching a significant size in terms of audience, traditional mass media will probably feel compelled to adapt its current mode of production to the new communications environment. Indeed, traditional mass media depends entirely on people's attention. So, if it turns out that individuals are willing to devote more and more of their limited attention to collaborative outlets – where they can actively participate in the editorial process, engage in discussions, and collaborate to the production of meaning about the world they live in – traditional mass media will probably absorb some features of the collaborative model.[60] For instance, newspapers might make their editorial process more transparent, building mechanisms to receive input from their readers before the stories get published the next day. Mass media Web sites might also develop new platforms for discussion about the news they publish. These would be rational business strategies to capture the attention of consumers increasingly interested in participating in their communications environment.

Besides the pressure to maintain attention, traditional mass media has another incentive to adapt itself to a collaborative model: productive efficiency. Indeed, collaborative media has the great advantage of relying on an unbounded set of agents, with different talents and back-

59. There is a significant amount of discussion about the use of collaborative media for journalistic purposes. For instance, there is a very intense discussion group involving many of the mentors of collaborative media sites at <lists.infoanarchy.org/pipermail/p2pj/> (accessed May 8, 2003). More specifically, one e-mail from Rusty Foster makes some suggestions of how to adapt K5's platform towards a more journalistic approach. *See* <lists.infoanarchy.org/pipermail/p2pj/2002-February/000535.html> (accessed May 8, 2003) (suggesting the introduction of ex-ante peer review specifically for fact-checking). For an overview of the different forms of online journalism *see* Mark Deuze, *Online Journalism: Modeling the First Generation of Online News Media on the World Wide Web*, First Monday <www.firstmonday.org/issues/issue6_10/deuze/> (Sept. 21, 2001).

60. To a limited extent, this is already happening, as the New York Times and other traditional media outlets provide discussion boards in their Web sites.

grounds, located in different places. It is extremely hard to assemble such a broad range of human resources under the umbrella of one single corporation.[61] For instance, it is too costly to hire a specialist in nuclear weapons in a media corporation just to cover a few stories per year. So, it is more likely that a journalist with little background in this field will have to cover few important stories. Conversely, it is easy for a specialist to join in a collaborative site and write one interesting article per year, when a very important issue comes up.

To be sure, some traditional media outlets are attempting to build extremely specialized teams, covering a significant part of the planet. CNN is probably the clearest example in this direction so far. However, this is both very expensive and inefficient. A collaborative network such as Indymedia, which is run by volunteers in more than fifty countries, may engage more people and achieve broader coverage, sometimes with equivalent quality, at an operating cost close to zero (i.e. people collaborate without being paid for their contributions). Therefore, taking into account possible efficiency gains, traditional mass media is likely to consider changes in its production model in order to incorporate some collaborative features.

However, it is unclear whether traditional media outlets would have the ability to develop attractive collaborative sites on a commercial basis. Individuals might be reluctant to contribute to sites that will make a profit out of their volunteer work.[62] But this will depend on mass media's creativity in rethinking their business structure in order to reap the benefits of more efficient models of production. And the market seems to work well in this case: if traditional mass media is not able to adapt itself to the new environment, it may simply lose ground.

In conclusion, collaborative media is likely to produce three different effects on traditional mass media: complementation, substitution, and pressure to internal change. Possibly, all three effects will happen in different degrees and, perhaps, at different stages in the evolution of collaborative media. This is an empirical issue. In any event, traditional mass media is likely to be affected by the emergence of this new phenomenon.

V. COLLABORATIVE MEDIA AND THE POLITICAL ECONOMY OF INFORMATION

This final section will be devoted to a discussion of the potential impact of collaborative media from the perspective of a political economy of information. Building on the prior discussion, I will examine the poten-

61. *See* Benkler, *supra* n. 2, at 414-15.

62. *Id.* at 444-45 (noting that "[f]irms that adopt this model, however, will not be able to count on appropriating the end product directly, because the threat of appropriation will largely dissipate motivations for participation").

tial positive effects of collaborative media in four dimensions: (i) decentralization of control in the production of news; (ii) diversity of content; (iii) democracy; and (iv) individual autonomy.

A. Decentralization of Control in the Production of News

The first positive effect of collaborative media on the political economy of information is the decentralization of control in the production and dissemination of news. This effect represents an extremely relevant change in the pattern of mass media evolution.

Indeed, the twentieth century saw an increasing concentration of ownership in the media industry,[63] with the emergence of truly giant media corporations. These corporations took a strategic position as gatekeepers in the communications environment, centralizing the control over the production and transmission of information to large audiences. Centralized control had a particularly negative impact on the production of news: only a few corporations were empowered to decide what facts were relevant enough to be broadcasted (i.e. what facts deserve to be on the "news") and to define what those facts should mean (i.e. why they were important).[64] Individuals learned to rely on these corporate intermediaries to tell them what was going on in the world and why they should care.

The predominant position of television in the communications environment during the second half of the century contributed to the development of an "entertaining" version of news, generally impoverishing the public sphere.[65] This entertainment trend was fueled by the increasing influence of advertisers on the agenda of the media, shaping issues in the public debate according to their commercial interests.[66] Overall, the consolidation of the one-way broadcasting model of transmitting news concentrated a tremendous amount of economic and political power in the hands of media corporations.

The emergence of a ubiquitous networked environment, with a dramatic decline in production and distribution costs of information, has the potential to open the gates kept closed by media corporations during the last century. In the new scenario, collaborative media may emerge as a decentralized way to produce news, diluting the importance of mass media corporations. The power to choose what is relevant, and to define

63. *See* Ben Bagdikian, *The Media Monopoly* 3-5 (5th ed., Beacon Press 1997); Robert McChesney, *Rich Media Poor Democracy* 16-29 (Univ. IL Press 1999).

64. *See also* Benkler, *supra* n. 1, at 12 (noting that "[i]n mass media environment meaning is made centrally").

65. *See generally* Neil Postman, *Amusing Ourselves to Death: Public Discourse in the Age of Show Business* (Penguin Books 1985).

66. *See* Bagdikian, *supra* n. 63, at 8.

why it is relevant, becomes increasingly diffuse, shifting to end-users (e.g. K5's moderation queue). Meaning is produced collectively, through the exchange of ideas and opinions about what is happening in the world. The influence of commercial advertising may decrease in this context, freeing individuals to shape the public debate as they see fit.

From this perspective, the potential of collaborative media is impressive. It represents a leap in the evolution of media comparable to the invention of the printing press or the television. Just as these landmark events produced deep impacts on the media of their time,[67] collaborative media opens a whole new set of alternatives regarding the production and dissemination of knowledge (including news). Most importantly, collaborative media has the potential to rearrange the power structure in the communications environment in a more diffuse manner. Disperse power means more opportunity for individuals to speak and to be heard, enhancing diversity of content, democracy, and autonomy.

B. Diversity of Content

Diversity of content is essential in any liberal pluralistic society. In fact, by and large, pluralism in mass communications is related to diversity of content produced and distributed in a given society. A narrow range of perspectives in the media is likely to generate a negative impact on individual autonomy and democracy, to the extent that individuals do not perceive all alternatives they may have in their lives and the polity does not explore all possible ramifications of the political debate.

Collaborative media has the potential of generating considerably more diverse content than traditional mass media. In fact, collaborative media represents not only an explosion in the number of stories about the world, but also an exponential growth in the number of storytellers.[68] Each user, with unique talents and backgrounds, contributes with his or her view of the world. Different stories, told by different people, contribute to the collective creation of meaning about what is happening in the world. For instance, in sites like K5 or Slashdot, each story initiates a thread of discussion, adding different perspectives to the initial story. This whole system creates a kaleidoscope that shows multiple perspectives of each issue. In addition, certain points of view usually ignored by traditional mass media may flourish. In fact, while traditional mass media struggle to get attention of average users, in order to reach

67. Innis describes the impact of the invention of the printing press to the evolution of media. Harold Adams Innis, *The Bias of Communication* 53-60 (Univ. Torronto Press 1964). *See generally* Postman, *supra* n. 65.

68. Benkler emphasizes the number of storytellers as a source of diversity. *See* Yochai Benkler, *Siren Songs and Amish Children: Autonomy, Information, and Law*, 76 N.Y.U. L. Rev. 23, 88-92 (2001) [hereinafter Benkler, *Siren Songs*].

the largest audience possible, collaborative media allows everyone (including minorities) to participate in the debate, adding their views about the world. The integration of these historically neglected perspectives also represents a significant increase in diversity of content.

Hence, collaborative media increases diversity on two related dimensions. First, through the expansion of the number of storytellers, collaborative media allows different individuals to add their own perspectives in the production of news. This "multiple-perspectives effect"[69] would take place even if all storytellers were from a tightly united community with shared values and experiences.[70] In fact, no individual is the same, and differences in perspectives are inherent to human nature. Thus, whenever a wide range of people has the opportunity to tell stories, there will be diversity in the content of such stories. Second, collaborative media also permits the participation of storytellers from different communities, with very different backgrounds (e.g. experiences and values), to join in the collective production of news.[71] This "multiple-backgrounds effect" brings not only different perspectives, but also different values and experiences to collaborative media.[72] Both effects work together, increasing diversity of content.

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69. Benkler captures the "multiple-perspectives effect" with an interesting illustration. *Id.* Concerned about the interplay between diversity and individual autonomy, Benkler creates a hypothetical describing the institutional organization of three different communities – Reds, Blues and Greens. While Reds and Blues have strict institutional organizations that limit the number of people allowed to tell stories, Greens have a set of institutions that allows everyone to tell stories to everyone else. *Id.* In the Greens' society, the wide opportunity for telling stories leads to greater diversity of content. *Id.* at 89-92.

70. Once again, Free Republic is a good example. *See* <freerepublic.com> (accessed May 8, 2003). The site congregates conservative users in intense discussions. *Id.*

71. Once again, this view of people with different backgrounds exchanging information is contrary to Sunstein's notions of fragmentation and enclave deliberations. *See generally* Sunstein, *supra* n. 47.

72. Benkler's hypothetical described in footnote 69 does not differentiate the "multiple-perspectives effect" from the "multiple-backgrounds effect." Benkler, *Siren Songs, supra* n. 69-70, at 88-92. His assumptions greatly simplified the Red, Blue and Green societies, in order to examine some specific aspects of the relationship between individual autonomy and diversity. *Id.* However, if we expand the hypothetical, considering the Greens a complex society, composed of multiple communities with different sets of shared values and experiences, the "multiple-backgrounds effect" would certainly be present. People from each of these different communities would be allowed to tell stories to people in other communities. For instance, a Green from community A would not only be allowed to listen to stories of any other Green from community A, but would also be allowed to listen to stories told by any Green from community B. From this perspective, given a set of institutions that allow a wide distribution of the storytelling function, a complex society (i.e. encompassing communities with different values) tends to generate more diverse content than a non-complex society (i.e. one tightly united community of people with shared values and experiences). In spite of the simplification in the hypothetical proposed in his work, the two effects suggested in this essay are captured elsewhere in Benkler's article, under the labels of "quantitative" and "qualitative" dimensions of diversity. *Id.* The quantitative dimension

As a result, collaborative media can significantly enrich the communications environment of liberal pluralistic societies. As the next two sessions demonstrate, decentralization of control and diversity of content contribute to foster democracy and individual autonomy.

C. Democracy

The potential effects of collaborative media on democracy can be evaluated in two different levels: the practical-political level and the semiotic level.[73] In the former, the main potential effect is the enhancement of participation in the public debate. In the latter, the most important potential effect is the shift from the imposition of meaning in the traditional mass media model to a collective creation of meaning.

On the practical-political level, collaborative media enhances the possibility of direct participation in the political debate. Web sites like K5 serve as a gateway to the public debate, where people can expose their views and opinions about what is happening in the world around them. From this angle, collaborative media contributes to broaden the public sphere, including new participants and innovative points of view. In turn, a richer public debate leads to an expansion in the variety of alternative paths available for a given polity, as well as to a more thoughtful deliberation about which path to take.

In other words, increasing the opportunity to participate in the public debate tends to reinvigorate and expand the fundamental tool of legitimacy in democratic societies: self-governance. As such, collaborative media can be one of the building blocks of a "strong democracy," defined by Benjamin Barber as "a democracy that reflects the careful and prudent judgment of citizens who participate in deliberative, self-governing communities."[74]

On the semiotic level, collaborative media contributes to decentralization in the creation of meaning. Within an enlarged public sphere, the storytelling function of a society is distributed among many different individuals. All individuals contribute to the creation of a shared story of the world in which they live, generating a common understanding. This represents a significant change in the existing structure of creation of meaning through mass media corporations. From this perspective, collaborative media has the potential to empower individuals to take control of their own culture, directly contributing to its evolution.

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is equivalent to what I am calling "multiple-perspectives effect" and the "qualitative dimension" is equivalent to what I have denominated "multiple-backgrounds effect." *Id.* at 52-54.

73. *See* Benkler, *supra* n. 1, at 10-12 (discussing the general impact of commons-based non-market peer-production on democracy).

74. *See* Benjamin R. Barber, *Three Scenarios for the Future of Technology and Strong Democracy,* 113 Political Science Quarterly 573, 585 (1999).

In conclusion, collaborative media can be seen as a democratic tool that brings public debate to the grassroots level, empowering individuals to contribute to the future of their polity and the future of their culture.

D. Individual Autonomy

Last but not least, collaborative media can have a positive impact on individual autonomy, conceived as the degree to which a person can be considered the author of her own life.[75] Collaborative media enhances autonomy in at least two levels: (i) it broadens the range of alternative ways in which individuals can live their lives, and (ii) it contributes for a better performance of the edification function of the media, providing individuals with more appropriate tools to make their own choices.

The increase in diversity of content allowed by collaborative media presents a much broader set of options about how individuals may choose to live their own lives than traditional mass media. Understanding how other individuals live, and perceiving that many different paths are available, permits each individual to choose more knowledgeably which path he or she wants to take. In this sense, their decision will be more autonomous as the information they have about their other available choices increases.[76]

The production and distribution of news, constituting a direct source of stories about the world beyond individuals' immediate circles of relationships (i.e. family, friends, school and work), has a very powerful influence over the different paths they might take. This is especially true regarding paths that are not usually chosen by those within the immediate circles of such relationships. To the extent that collaborative media congregates individuals with very different backgrounds, it has the potential to facilitate an exchange of views that different groups of people would consider unconventional. In this sense, it represents a qualitative, as well as a quantitative, increase in the paths available.

In addition to expanding the sets of choices available by presenting a more diverse set of perspectives about the world, collaborative media has the potential to perform a better edification role than traditional mass media. From this angle, the concern is not about expanding the choices available, but providing individuals with better tools to make their own choices once they comprehend the alternatives they have.

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75. A detailed discussion of the different concepts of autonomy would be beyond the scope of this essay. However the broad concept proposed here is enough to encompass different definitions of autonomy. For a detailed discussion *see* Benkler, *Siren Songs*, *supra* n. 68, at 31-57.

76. Even if the broader range of choices does not change the way individuals live their lives, it still enhances autonomy to the extent that they will know they might have chosen different paths by they did not. *Id.* at 53-54.

Besides looking for information and entertainment, individuals seek media products to form their own preferences about the world. C. Edwin Baker calls this peculiar characteristic of media products "edification."[77] The media offers edification through "education, exposure to wisely selected information, or wise opinion and good argument."[78] In other words, the media contributes to the way individuals establish their preferences about products, about politics, about the media products themselves, about their lives more broadly, and even about their own preferences. Edification is a process through which individuals create or change their own preferences based on the information they receive about other preferences they might consider "better" or "wiser" in some sense.

Collaborative media enhances the edification function of the media in two dimensions: (i) by allowing users to exchange views about their preferences and (ii) by developing a platform that exposes preferences in an environment that is not inherently dominated by a commercial bias. In the first dimension, the argument is similar to that advanced above about diversity in general: a large pool of people, with different backgrounds, have different sets of preferences about the world. Thus, collaborative media exposes people to a larger set of preferences than traditional mass media, allowing individuals to choose by themselves, which set of preferences they find more suitable.

In the second dimension, collaborative media exposes different sets of preferences in a non-commercial environment, allowing these sets of preferences to compete for users' attention on equal footing. In contrast, the commercial character of traditional mass media leads to the exposure of specific sets of preferences capable of generating the best returns to the investment of media owners and their advertisers.[79] As a general matter, traditional mass media outlets are not interested in showing different sets of preferences to individuals; they are interested in creating the set of preferences particularly profitable to their businesses. Consequently, collaborative media may enhance individual autonomy through the reduction of the commercial bias in the creation of preferences.

77. C. Edwin Baker, *Giving the Audience What it Wants*, 58 Ohio St. L.J. 311, at 320.

78. *Id.* at 320-21.

79. Baker provides a detailed analysis of the distortions created by preferences generated in the commercial mass media environment. *Id.* He points out four important distortions caused by commercial bias: (i) commercial outlets have the incentive to promote more "cheaply cultivated desires" than desires that are costly to be created; (ii) the outlets will always concentrate their efforts to create a set of desires that can encompass the largest number of individuals, encouraging the creation of the lowest common denominator possible; (iii) companies will always stimulate only the sets of preferences they can capture with their products and (iv) the mass media tends to foster the values and preferences (including political preferences) of those that control the creation of content. *Id.* at 406-09.

Once again, collaborative media has the potential to have a significant impact on the current information context. It fosters autonomy through the exposure of a greater variety of paths in which people may choose to live their lives, as well as by broadening the sets of preferences individuals can develop in order to choose which path they want to follow.

VI. CONCLUSION

This essay described collaborative media as an emerging phenomenon on the Internet. I attempted to demonstrate that, in a ubiquitously networked environment, the creation of news and the establishment of relevance and accreditation can be undertaken by an unbounded set of users, producing positive impacts in the information environment.

Through a detailed description of one collaborative media site, Kuro5hin.org, I illustrated how collaborative media is becoming extremely sophisticated. Focusing on the production of relevance and accreditation, which seems to be the main challenge of collaborative media, I analyzed how the *ex-ante* and *ex-post* peer review processes, developed by K5, contribute to generate credibility. I also provided a comparison between K5 and Slashdot, considered a benchmark in collaborative media, in order to show how this phenomenon is advancing through cumulative layers, building on prior successful experiences – in this case, K5 evolved from Slashdot's experience. I concluded my empirical analysis with a brief overview of some other collaborative sites, showing how the phenomenon is becoming widespread. This way, I hope to have provided a bold illustration of collaborative media and its potential as a new way to produce news about the world in which we live.

Following the analysis of the phenomenon itself, I compared collaborative media and traditional mass media. The analysis showed that the accreditation model of collaborative media represents a significant departure from the traditional accreditation model used in mass media. In addition, I discussed how this new model of producing news might impact traditional mass media. I argued that three different impacts are likely to take place: substitution of collaborative media for mass media; complementation of mass media, with collaborative media, and increasing pressure for an internal change in the structure of mass media.

In the final part of the essay, I focused on the positive impact of collaborative media on core issues of the political economy of information. The new phenomenon contributes to decentralization of control in the production of news, distributing the storyteller function of society among many individuals. Decentralization leads to increased content diversity both in a quantitative dimension, as the number of perspectives

about the world dramatically increases, and in a qualitative dimension, as these perspectives come from different backgrounds.

Additionally, collaborative media has the potential to foster democratic values, allowing more people to participate in the public debate. This represents an expansion of the public sphere to the grassroots level, where individuals can actually contribute to the discussion about the future of their polity. I also argued that collaborative media contributes to semiotic democracy, allowing the collective creation of meaning and empowering individuals to influence the evolution of their own culture.

Finally, I addressed the positive impact of collaborative media on individual autonomy. I argued that a collective effort to produce news enhances autonomy in two dimensions. First, it exposes individuals to a broad set of alternatives about how they may choose to live their own lives. Second, it enhances the edification role of the media, presenting broader and non-biased sets of preferences from which individuals can choose to build their own preferences.

Overall, this essay described a phenomenon in its infancy. It is quite difficult to make predictions about how collaborative media will evolve and what it will become. However, putting specific predictions aside, it is important to acknowledge that collaborative media has a tremendous potential to contribute to a deep transformation of our communications environment. This transformation tends to generate very positive effects on the political economy of information, redirecting the power to tell stories about the world to those who actually participate in such stories.