WIKIPEDIA'S LABOR SQUEEZE AND ITS CONSEQUENCES

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INTRODUCTION

The Internet allows geographically dispersed individuals to voluntarily contribute their time and expertise towards socially productive tasks.[1] Wikipedia is a shining example of this phenomenon. By every measure, Wikipedia's success has been remarkable. In eight short years, powered solely by volunteer contributions, Wikipedia has developed a huge database of encyclopedic entries and become one of the most popular websites around.

However, user-generated content (UGC) sites are fragile, perhaps surprisingly so. Internet history is littered with once-successful UGC sites that ultimately fizzled out.[2] Can Wikipedia avoid the fate of those sites, or is it destined to join them?

Like many other UGC websites, Wikipedia allows everyone to contribute. Unlike many other websites, Wikipedia also allows just about everyone to edit or delete other people's contributions, an architectural feature I refer to as "free editability." By allowing entries to be improved by an unlimited labor force, free editability embraces the "wisdom of the crowds"[3] philosophy and theoretically should improve article quality.[4]

Instead, I think free editability is Wikipedia's Achilles' heel. Wikipedia attracts vandals and spammers who edit entries for unproductive purposes. Thus far, Wikipedia's volunteer editors have successfully defended against these threats, but future success is not guaranteed. First, as Wikipedia's popularity increases, so does its appeal to vandals and spammers, thus increasing the volume of malicious edits. Second, over time, Wikipedia's current editors will turn over, and I believe various obstacles—including Wikipedia's reliance on contributors who seek neither cash nor credit—will hinder the recruitment of replacements. This dynamic will create a labor squeeze because more

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1. *See, e.g.*, YOCHAI BENKLER, THE WEALTH OF NETWORKS (2008), and the many commentaries of Benkler's book.

2. Examples include countless BBSs, USENET groups, dormant or dead email lists, message boards, MUDs, online games and websites, and even popular UGC websites such GeoCities, theglobe.com and JuicyCampus. For a post-mortem case study of a once-vibrant online community, see Amy Bruckman & Carlos Jensen, *The Mystery of the Death of MediaMOO, Seven Years of Evolution of an Online Community*, *in* BUILDING VIRTUAL COMMUNITIES 21 (Ann Renninger & Wesley Shumar eds., 2002).

3. *See* JAMES SUROWIECKI, THE WISDOM OF CROWDS: WHY THE MANY ARE SMARTER THAN THE FEW AND HOW COLLECTIVE WISDOM SHAPES BUSINESS, ECONOMIES, SOCIETIES AND NATIONS (2004).

4. *See* CASS R. SUNSTEIN, INFOTOPIA 151–52 (2006) (arguing that Wikipedia succeeds because "so many minds are involved"); Daniel R. Cosley, Helping Hands: Design for Member-Maintained Online Communities 6–7 (July 2006) (unpublished Ph.D dissertation, University of Minnesota), *available at* http://www-users.cs.umn.edu/~cosley/thesis/final.pdf (discussing the benefits of community-maintained sites); *cf.* Eric S. Raymond, *The Cathedral and the Bazaar*, http://www.catb.org/~esr/writings/cathedral-bazaar/cathedral-bazaar/ ("Given enough eyeballs, all bugs are shallow.").

anti-threat work will be borne by a reduced number of committed editors.

To maintain site credibility in the face of this labor squeeze, Wikipedia will reduce free editability over time by increasing the technological and procedural hurdles required to contribute to the site. With these high barriers, Wikipedia will achieve a defensible position against spammers and vandals, but only by changing its basic architecture.

As a result, this Essay explores how credible UGC and free editability conflict with each other.[5] It concludes that Wikipedia ultimately will have to choose between them.

I.   MEASURING WIKIPEDIA'S SUCCESS

In 2005, Jimmy Wales said, "Wikipedia is first and foremost an effort to create and distribute a free encyclopedia of the highest possible quality to every single person on the planet in their own language."[6] The English-language version of Wikipedia[7] has made remarkable progress towards this goal. Wikipedia is one of the top ten most trafficked Internet destinations in the United States;[8] it has generated nearly three million English-language articles since 2001;[9] and its article quality has been compared favorably to the *Encyclopædia Britannica*,[10] the traditional gold standard of encyclopedias.

Along with its success, Wikipedia entries often show up as top Internet search results.[11] Until that changes,[12] Wikipedia's traffic will

5. *Cf.* JONATHAN L. ZITTRAIN, THE FUTURE OF THE INTERNET AND HOW TO STOP IT (2008) (discussing the tension between "generative" systems that facilitate user innovations and "appliancized" systems that provide greater security but sacrifice generativity). Zittrain treats Wikipedia as a laudatory example of a generative system that he apparently thinks can avoid becoming appliancized. *See id.* This Essay explains why I think Wikipedia will become more appliancized and less generative.

6. Posting of Jimmy (Jimbo) Wales to Wikipedia-l, http://lists.wikimedia.org/pipermail/wikipedia-l/2005-March/020469.html (Mar. 8, 2005, 19:16 UTC).

7. This Essay focuses on Wikipedia's English-language version, although its analysis generally applies to other Wikipedia versions as well.

8. *See* Alexa Top 100 Sites, http://www.alexa.com/topsites/countries/US (last visited Aug. 31, 2009) (ranking Wikipedia as the #7 site, ahead of eBay, AOL and Amazon.com); *see also* comScore Media Metrix Ranks Top 50 U.S. Web Properties for November 2008 (Dec. 16, 2008), http://ir.comscore.com/releasedetail.cfm?ReleaseID=354584 (ranking Wikimedia Foundation websites as the #9 property).

9. Wikipedia: Statistics, http://en.wikipedia.org/wiki/Special:Statistics (last visited July 26, 2009).

10. Jim Giles, *Internet Encyclopaedias Go Head to Head*, 438 NATURE 900, 900–01 (2005). *But see* Press Release, Encyclopedia Britannica Rips Nature Magazine on Accuracy Study (Mar. 24, 2006), *available at* http://corporate.britannica.com/press/releases/nature.html.

11. *See, e.g.,* Simson L. Garfinkel, *Wikipedia and the Meaning of Truth*, TECH. REV., Nov.–Dec. 2008, http://www.technologyreview.com/web/21558/ ("Wikipedia's articles are the first- or second-ranked results for most Internet searches."); Nicholson Baker, *The Charms of*

remain strong even if its credibility slips. Thus, Wikipedia's popularity is a lagging indicator of Wikipedia's credibility.

Rather than using Wikipedia's popularity as a success criterion, this Essay is more interested in Wikipedia as a vehicle to analyze the long-term viability of a freely editable website. Like many other wikis,[13] Wikipedia allows almost everyone to instantly publish entries and edit other people's entries—a configuration choice that is core to Wikipedia's identity and part of Wikipedia's motto. As the Wikipedia main page header says, "Welcome to Wikipedia, the free encyclopedia that anyone can edit."[14]

This architecture distinguishes Wikipedia from most other popular UGC websites, which often welcome contributions from everyone but restrict subsequent editing to the initial author or a group of editors designated by the site operator. Therefore, this Essay focuses on whether Wikipedia can retain its relatively unique architecture of free editability while remaining a credible publication.

Although this Essay focuses on Wikipedia's specific fate as an institution, I am considering Wikipedia as a case study of the inherent tensions between editability and credibility.[15] Wikipedia's idiosyncrasies reduce the generalizability of any insights, but it remains a useful analytical vehicle due to its popularity and its years of experience developing anti-threat systems. Further, given its prominence, Wikipedia's inability to retain free editability would be a troubling sign

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Wikipedia, 55 N.Y. REV. BOOKS 4, 6 (2008) ("[I]t's very often the first hit in a Google search."); *see also* Michaël R. Laurent & Tim J. Vickers, *Seeking Health Information Online: Does Wikipedia Matter?*, 16 J. AM. MED. INFORMATICS ASSOC. 471 (2009) (showing the high ranking of Wikipedia entries for health-related search queries).

12. For example, Google could change its algorithm to reduce Wikipedia's prominence in its search results. Indeed, there is some speculation that Google's "Caffeine" project does exactly that. *See* Posting of Nathania Johnson to SearchEngineWatch.com, Meet the New Google. Not That Much Different from the Old Google, http://blog.searchenginewatch.com/090810-232027 (Aug. 10, 2009, 23:20). Any dramatic decrease in Wikipedia's traffic could have uncertain effects on this Essay's analysis; it would abate some of the spam and vandalism incentives, but it may also reduce some contributors' interest in participating.

13. "A Wiki allows a group to edit text together. Wikis might be open, meaning that anyone can elect to write. Others require permission and a password. Still others allow some people to post and others only to edit." Beth S. Noveck, *Wikipedia and the Future of Legal Education*, 57 J. LEGAL EDUC. 3, 4 (2007); *see also* CLAY SHIRKY, HERE COMES EVERYBODY: THE POWER OF ORGANIZING WITHOUT ORGANIZATIONS 111–12 (2008).

14. Welcome to Wikipedia, http://en.wikipedia.org/wiki/Main_Page (last visited Sept. 23, 2009). *But see, e.g.*, Posting of Joseph Reagle to Open Communities, Media, Source, and Standards, Goldman on Wikipedia's Failure (i.e., "Labor Squeeze"), http://reagle.org/joseph/blog/social/wikipedia/goldman-labor-squeeze (Sept. 11, 2009) (free editability is a means to Wikipedia's end, not central to its identity).

15. *See generally* Paul Duguid, *Limits of Self-Organization: Peer Production and "Laws of Quality,"* 11 FIRST MONDAY 10 (2006), http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/1405/1323 (discussing how to measure UGC's "quality").

for the vitality of free editability as a site configuration option. After all, if Wikipedia—with its effectively unlimited labor supply embodying the wisdom of the crowds—cannot marshal the resources required to maintain free editability, who can? Thus, this Essay addresses challenges, currently facing Wikipedia, that any freely editable UGC site is likely to face.

II.   THREATS TO WIKIPEDIA

Wikipedia's popularity and high visibility attracts troublemakers, including vandals.[16] Wikipedia defines vandalism as "any addition, removal, or change of content made in a *deliberate* attempt to compromise the integrity of Wikipedia."[17] Wikipedia's vandalism page lists about twenty different categories of vandalism and says that "[c]ommon types of vandalism are the addition of obscenities or crude humor, page blanking, and the insertion of nonsense into articles."[18]

Vandals are motivated by a variety of factors, including attention-seeking.[19] Wikipedia's combination of heavy traffic and free editability provides an easy outlet to satisfy that goal.

Wiki-vandalism is not currently pervasive or generally successful. A 2007 study indicated that between 3-6% of edits were vandalism, and the median time for correcting those errors was fourteen minutes.[20]

However, even a low rate of vandalism may create a significant

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16. *See* Lior Strahilevitz, *Wealth Without Markets*, 116 YALE L.J. 1472, 1493–97 (2007) (discussing "The March of the Trolls"); PHOEBE AYERS ET AL., HOW WIKIPEDIA WORKS: AND HOW YOU CAN BE A PART OF IT 143–44 (2008).

17. Wikipedia: Vandalism, http://en.wikipedia.org/wiki/Wikipedia:Vandalism (last visited July 3, 2009) [hereinafter Wikipedia: Vandalism]. Like the definition of wiki-spam, vandalism has multiple definitions. *Compare* AYERS, *supra* note 16, at 209 ("*Vandalism* is, by definition, a change made to Wikipedia with the malicious intention of having a negative effect on the content.") *with* JOHN BROUGHTON, WIKIPEDIA: THE MISSING MANUAL 121 (2008) ("*Vandalism*—the destruction of content or the addition of useless or malicious content.").

18. Wikipedia: Vandalism, *supra* note 17. *See generally* Posting to Best Colleges Online, 25 Biggest Blunders in Wikipedia History, http://www.bestcollegesonline.com/blog/ 2009/02/10/25-biggest-blunders-in-wikipedia-history/ (Feb. 10, 2009, 01:39) (cataloging some prominent examples of Wikipedia vandalism).

19. Wikipedia: The Motivation of a Vandal, http://en.wikipedia.org/wiki/ Wikipedia:The_motivation_of_a_vandal (last visited Sept. 23, 2009); AYERS, *supra* note 16, at 122 ("[S]ome of the very best and most heavily trafficked articles on Wikipedia receive the most vandalism, simply because they are so visible . . . .").

20. Wikipedia: WikiProject Vandalism studies/Study1, http://en.wikipedia.org/wiki/ Wikipedia:WikiProject_Vandalism_studies/Study1 (last visited Dec. 29, 2008) [hereinafter Vandalism Study]. Another survey estimated that 42% of errors were corrected before any readers saw the erroneous information, rendering those errors inconsequential. *See* Reid Priedhorsky et al., Creating, Destroying and Restoring Value in Wikipedia (Nov. 2007) (unpublished paper), *available at* http://www-users.cs.umn.edu/~reid/papers/group282-priedhorsky.pdf.

workload for Wikipedia. The 2007 study also indicated that human Wikipedia editors, as opposed to anti-vandal robots, made 100% of the corrections,[21] which reinforces the fact that Wikipedia editors remain the principal defenders of the site's editorial integrity.[22] Given the high volume of total edits being made constantly, even a 3% vandalism rate still requires a lot of anti-vandalism labor hours.[23] This time is diverted from other productive tasks,[24] and this effort is borne by a fairly small corps of dedicated editors.[25]

In addition to vandals, Wikipedia attracts spammers seeking to reach Wikipedia's large audience for their commercial benefit.[26] Quantifying spamming activity at Wikipedia is difficult, in part because "wikispam" lacks a single well-accepted definition. Nevertheless, wikispam is unquestionably a serious concern for Wikipedia. For example, in 2006, Wikipedia's legal counsel described spamming activity as "overwhelming" and "out of hand" and encouraged users to "shoot on sight" if they see spammers.[27]

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21. Vandalism Study, *supra* note 20. However, a small sample size (only 31 incidents) may limit this finding's robustness.

22. *See* Howard T. Welser et al., Finding Social Roles in Wikipedia (2008) (unpublished paper), *available at* http://www.cs.cornell.edu/~danco/research/papers/wp-roles-welser-asa2008.pdf ("[A] large and organizationally important class of Wikipedian is the vandal fighter (counter vandalism editor).").

23. *See* Priedhorsky, *supra* note 20 (discussing the challenges posed by small rates of vandalism across a large volume of edits, and estimating the labor required to combat the problem).

24. BROUGHTON, *supra* note 17 ("For editors, fighting vandalism reduces the amount of time available to improve articles.").

25. *See* Bongwon Suh et al., *The Singularity Is Not Near: Slowing Growth of Wikipedia*, WIKISYM 2009, http://www-users.cs.umn.edu/~echi/papers/2009-WikiSym/wikipedia-slow-growth-ASC-PARC.pdf (top 1% of Wikipedia editors make 55% of edits); Felipe Ortega et al., *On The Inequality of Contributions to Wikipedia*, PROC. 41ST HAW. INT'L CONF. ON SYS. SCIS. (2008), http://www2.computer.org/portal/web/csdl/doi/10.1109/HICSS.2008.333 (discussing the steep power law of user contributions); Katie Hafner, *Growing Wikipedia Revises Its 'Anyone Can Edit' Policy*, N.Y. TIMES, June 17, 2006, at A1; Priedhorsky, *supra* note 20 (discussing the steep power law of user contributions); Posting of Aaron Swartz to Raw Thought, Who Writes Wikipedia?, http://www.aaronsw.com/weblog/whowriteswikipedia (Sept. 4, 2006, 12:17) [hereinafter Swartz, Who Writes] (quoting Jimmy Wales as saying that "[Fifty percent] of all the edits are done by just .7% of the users . . . 524 people . . . . And in fact the most active 2%, which is 1400 people, have done 73.4% of all the edits."); *cf.* Sarah Perez, *The Dirty Little Secret About the 'Wisdom of the Crowds': There is No Crowd*, READWRITEWEB, Sept. 17, 2009, http://www.readwriteweb.com/archives/the_dirty_little_secret_about_the_wisdom_of_the_crowds.php (describing how many online communities exhibit a strong power law phenomenon among contributors).

26. *Cf.* Elinor Mills, *The Big Digg Rig*, CNET NEWS, Dec. 4, 2006, http://news.cnet.com/2100-1025_3-6140293.html (discussing how websites like Digg.com attract spammers as the sites' traffic grows).

27. Posting of Brad Patrick to WikiEN-l, http://markmail.org/message/3pwmvw3w4krfin6g (Sept. 29, 2006, 09:52); *see also* AYERS, *supra* note 16, at 350 (In 2007, "outsiders were increasingly using Wikipedia for promotional ends by writing about themselves and their ventures.").

Wikipedia explicitly recognizes two types of wikispam:[28]

Advertisements masquerading as articles.[29] For example, a French periodical showed that pharmaceutical companies manipulate Wikipedia pages to neutralize adverse commentary about their drugs and to implicitly encourage unapproved uses.[30]

External link spamming. Initially, link-spamming was a product of Google's "PageRank" search results algorithm, which treats every web link as a vote but gives extra weight to votes from more popular sites.[31] Wikipedia, as a very popular site, has a high PageRank.[32] Accordingly, marketers inserted links into Wikipedia pages principally to increase the linked site's PageRank in the Google index and concomitantly increase search referrals from Google. In 2007, Wikipedia responded by adopting Google's "nofollow" tag,[33] which instructs Google not to count the links as votes.[34]

Wikipedia's adoption of the nofollow tag discourages link-spamming but does not eliminate it. First, third parties may freely republish Wikipedia entries verbatim,[35] and some prominent sites, like Answers.com,[36] do so. Unless republishers independently implement the nofollow tag on their websites, marketers can still get PageRank benefit by inserting links into Wikipedia pages when the entries appear on these third party websites. Second, because Wikipedia has so much traffic, marketers can get a high volume of commercially valuable referrals solely

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28. Wikipedia: Spam, http://en.wikipedia.org/wiki/Wikipedia:Spam (last visited June 11, 2009).

29. Marketers like masquerading because readers may assign more credibility to editorial content than advertising. *See* Eric Goldman, *Stealth Risks of Regulating Stealth Marketing*, 85 TEXAS L. REV. SEE ALSO 11 (2007) (reviewing Ellen P. Goodman, *Stealth Marketing and Editorial Integrity*, 85 TEX. L. REV. 83 (2006)).

30. *See* Mikkel Borch-Jacobsen, *L'Industrie Pharmaceutique Manipule Wikipédia*, RUE89.COM, Apr. 7, 2009, http://www.rue89.com/2009/04/07/l-industrie-pharmaceutique-manipule-wikipedia.

31. *See* Eric Goldman, *Search Engine Bias and the Demise of Search Engine Utopianism*, 8 YALE J. L. & TECH. 188, 204–05 (2006).

32. For example, on October 20, 2009, the Wikipedia English home page had a Google toolbar PageRank of 8 out of 10. Welcome to Wikipedia, http://en.wikipedia.org/wiki/Main_Page (last visited Oct. 20, 2009) (screen shot on file with author). Interior pages can also have a high PageRank. For example, on October 20, 2009, the Wikipedia page for George W. Bush had a Google toolbar PageRank of 7 out of 10. George W. Bush, http://en.wikipedia.org/wiki/George_w_bush (last visited Oct. 20, 2009) (screen shot on file with author).

33. Posting of Brion Vibber to WikiEN-l, http://lists.wikimedia.org/pipermail/wikien-l/2007-January/061137.html (Jan. 20, 2007, 09:30).

34. Posting of Matt Cutts & Jason Shellen to The Official Google Blog, Preventing Comment Spam, http://googleblog.blogspot.com/2005/01/preventing-comment-spam.html (Jan. 18, 2005, 16:28).

35. *See* ZITTRAIN, *supra* note 5, at 153–54, 177–78.

36. *See* Katherine Mangu-Ward, *Wikipedia and Beyond: Jimmy Wales' Sprawling Vision*, 39 REASON 19, 22 (2007).

from readers following a Wikipedia link directly. As a result, external link spamming still plagues Wikipedia.[37]

III.   WIKIPEDIA'S RESPONSE TO THE VANDAL AND SPAMMER THREATS

The previous section explored how vandals and spammers constantly attack Wikipedia. This section considers how these threats affect the Wikipedia community.

A.   Increased Technological Barriers to Participation

Over time, Wikipedia has implemented technological measures to make it harder for spammers, vandals and casual users to add or edit site content, including:

- restricting the creation of new articles only to registered users;[38]
- blocking IP addresses of repeat offenders, such as a controversial block of all IP addresses owned or operated by the Church of Scientology;[39] and
- requiring new and anonymous users to solve a CAPTCHA[40] before adding new external links.[41]

Also, Wikipedia administrators can technologically restrict editing of certain pages.[42] A page with "full protection" means that only Wikipedia administrators can edit the page, and a page with "semi-protection" can be edited only by autoconfirmed[43] Wikipedia users.[44]

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37. *See* BROUGHTON, *supra* note 17 ("[A]s Wikipedia becomes more widely read, the temptation grows to add links in the hopes that someone will click them, generating traffic for the spamming Web site."); AYERS, *supra* note 16, at 154 (discussing Wikipedia's blacklist of oft-spammed external links).

38. Wikipedia: Your First Article, http://en.wikipedia.org/wiki/Make_a_page (last visited Aug. 15, 2009).

39. Wikipedia: Requests for Arbitration/Scientology, http://en.wikipedia.org/wiki/Wikipedia:Requests_for_arbitration/Scientology#Final_decision (last visited Aug. 10, 2009); *see* Noam Cohen, *The War of Words on Wikipedia's Outskirts*, N.Y. TIMES, June 8, 2009, at B3; Cade Metz, *Wikipedia Bans Church of Scientology*, THE REGISTER, May 29, 2009, http://www.theregister.co.uk/2009/05/29/wikipedia_bans_scientology/.

40. A "CAPTCHA" is an automated challenge posed to users to "ensure that a human is making an online transaction rather than a computer." *Definition of: CAPTCHA*, PC MAG. ENCYCLOPEDIA, http://www.pcmag.com/encyclopedia_term/0,,t=captcha&i=39272,00.asp (last visited Aug. 18, 2009).

41. Wikipedia: User   Access   Levels,   http://en.wikipedia.org/wiki/Wikipedia:User_access_levels (last visited Aug. 17, 2009) [hereinafter Wikipedia: User Access].

42. *See generally* AYERS, *supra* note 16, at 143–44.

43. "The precise requirements for autoconfirmed status vary according to circumstances:

Although articles covered by full protection remain relatively rare,[45] "[s]emi-protection is now quite common for pages on subjects in the news headlines."[46]

All of these practices restrict, and therefore are inconsistent with, free editability. Overall, however, Wikipedia's current technological restrictions are fairly modest. For the most part, anyone can edit Wikipedia at any time, and the current technological hurdles modify that statement only slightly. Nevertheless, Wikipedia has been progressively adding new editing restrictions, which I think is consistent with a macro-trend to slowly "raise the drawbridge" on the existing site content and suppress future contributions.[47] If so, Wikipedia may be incrementally moving away from free editability.

Recently, the English-language Wikipedia site has been considering a more dramatic movement away from free editability: a technological measure called Flagged Revisions.[48] (Several Wikipedia sites around the world, including Germany's and Russia's, already deploy Flagged Revisions).[49] Flagged Revisions would make edits from casual contributors effectively invisible until approved by a more trusted Wikipedia editor.[50]

Flagged Revisions would change Wikipedia in two significant ways.

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for most users on en.wiki, accounts which are more than 4 days old and have made at least 10 edits are considered autoconfirmed." Wikipedia: User Access, *supra* note 41.

44. Wikipedia: Protection Policy, http://en.wikipedia.org/wiki/Wikipedia:Protection_policy (last visited Aug. 18, 2009). Wikipedia also enables "creation protection" (to prevent the repeat creation of an unwanted article) and "move protection" (to restrict article renaming). *Id*. In rare cases, Wikimedia staff may also make incontestable changes/protections to articles, such as to delete copyright-infringing works. Wikipedia: Office Actions, http://en.wikipedia.org/wiki/Wikipedia:Office_actions (last visited Aug. 18, 2009).

45. As of October 15, 2009, there were less than 30 non-redirect indefinitely fully protected articles. Wikipedia: Database Reports/Indefinitely Fully Protected Articles, http://en.wikipedia.org/wiki/Wikipedia:Database_reports/Indefinitely_fully_protected_articles (last visited Oct. 15, 2009) (screen shot on file with author).

46. AYERS, *supra* note 16, at 143.

47. *See id.* at 144 ("Semi-protection . . . compromises the purist wiki principle of *anyone can edit anything*, but protection has been necessary essentially because of Wikipedia's own prominence."); Dirk Riehle, *How and Why Wikipedia Works: An Interview with Angela Beesley, Elisabeth Bauer, and Kizu Naoko*, *in* PROC. 2006 INT'L SYMP. ON WIKIS 3, 6 (2006), http://dirkriehle.com/computer-science/research/2006/wikisym-2006-interview.pdf (Wikipedia administrators acknowledged that "[t]he biggest challenge is to maintain what made us who and what we are: the traditional wiki model of being openly editable. There are temptations to lock things down in order to placate the media who tend to focus on the inadequacies of the site.").

48. Wikipedia: Flagged Revisions, http://en.wikipedia.org/wiki/Wikipedia:Flagged_revisions (last visited Aug. 11, 2009).

49. Wikipedia: Flagged Revisions, http://meta.wikimedia.org/wiki/FlaggedRevs (last visited Oct. 27, 2009).

50. *See* Posting of Noam Cohen to NY Times Bits Blog, http://bits.blogs.nytimes.com/2009/01/23/wikipedia-may-restrict-publics-ability-to-change-entries/ (Jan. 23, 2009, 17:46 EST).

First, many contributors would no longer be able to instantly publish their contributions. Second, ultimate publication of most users' contributions would be predicated on an editor accepting the contribution.[51] Thus, Flagged Revisions would mark the effective end of Wikipedia's free editability. Everyone can still *try* to make edits, but only a fraction of those edits will be approved for publication, and the remainder will be effectively discarded.

At the time of this writing (October 20, 2009), Wikipedia is planning to try a less restrictive alternative to Flagged Revisions called "Flagged Protection and Patrolled Revisions."[52] Flagged Protection is an alternative to categorizing problematic pages as semi-protected or fully-protected, both of which prevent editors with insufficient credentials from editing the page at all. Instead, problematic pages could be subject to Flagged Protection, which would allow everyone to edit the page, but only contributions from editors with the requisite credentials would publish to unregistered readers immediately.[53] All other changes would require some level of approval before publishing to unregistered users. Although Flagged Protection is consistent with more drawbridge-raising, Flagged Protection is, in some ways, more permissive than the current semi- and fully-protected options because everyone can still edit every page (even if their edits never get approved).[54] Further, so long as any of the protection options (semi, full, or flagged) remain infrequently used, these measures do not really change the general proposition that anyone can freely edit most of Wikipedia.

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51. For example, due to Flagged Revisions at the German Wikipedia site, editors review 95%+ of new contributions, causing up to a three-week delay before articles are approved for general publication. *Id.*

52. Wikipedia: Flagged Protection and Patrolled Revisions, http://en.wikipedia.org/wiki/ Wikipedia:Flagged_protection_and_patrolled_revisions (last visited Nov. 17, 2009). In August 2009, the New York Times (and many other sources) erroneously reported that the English-language Wikipedia planned to adopt Flagged Revisions for all living people's biographies. *See* Noam Cohen, *Wikipedia to Limit Changes to Articles on People*, N.Y. TIMES, Aug. 25, 2009, at B1. Wikimedia's blog post in response did not successfully correct the error. *See* Posting of Erik Moeller to Wikimedia Blog, A Quick Update on Flagged Revisions, http://blog.wikimedia.org/2009/08/26/a-quick-update-on-flagged-revisions/ (Aug. 26, 2009, 02:55). For example, that blog post concludes "we hope to be able to deploy Flagged Revisions in production use on the English Wikipedia within 2-3 months" when the post elsewhere tried to clarify that only Flagged Protection and Patrolled Revisions were being rolled out. *Id.* Further, Wikipedia representatives may have been less than clear in its terminology elsewhere. *See* Farhad Manjoo, *Jimmy Wales Quietly Edits Wikipedia's New Edit Policy*, TIME, Sept. 30, 2009 ("In several interviews, including many with TIME, officials at the Wikimedia Foundation, the nonprofit that manages Wikipedia, explained that the user-edited online encyclopedia would soon impose restrictions on articles about living people."). However, the English-language Wikipedia currently plans only to implement Flagged Protection and Patrolled Revisions for now. *See id.*

53. Wikipedia: Flagged   Protection,   http://en.wikipedia.org/wiki/ Wikipedia:Flagged_protection (last visited July 17, 2009).

54. *See* Moeller, *supra* note 52.

Patrolled Revisions allows editors with the requisite credentials to mark some edits as not vandalism.[55] This informs other editors that they do not need to spend time making the same no-vandalism determination. Thus, Patrolled Revisions facilitates communication among editors and enhances the anti-vandalism systems already in place.

Collectively, Flagged Protection and Patrolled Revisions are part of the drawbridge-raising progression, but they are also consistent with the current assessment that Wikipedia has avoided significant incursions on free editability. Sections IV and V suggest that more dramatic technological measures are inevitable.

B.   Increased Social Barriers to Participation

Although Wikipedia has successfully resisted significant technological barriers to editing, I think its main barriers to user participation currently are social, not technological. For example, even without Flagged Revisions, many user contributions simply do not remain published on the site because other editors quickly delete new articles[56] and revert edits.[57] In these cases, the user contributions may be

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55. Wikipedia: Patrolled   Revisions,   http://en.wikipedia.org/wiki/ Wikipedia:Patrolled_revisions (last visited Aug. 1, 2009). In a partially related development, Wikipedia is also evaluating WikiTrust, a tool that color-codes entries to reflect an automated assessment of each word's credibility. *See* Wikipedia: WikiTrust, http://en.wikipedia.org/wiki/Wikipedia:WikiTrust (last visited Nov. 1, 2009); Hadley Leggett, *Wikipedia to Color Code Untrustworthy Text*, WIRED, Aug. 30, 2009, http://www.wired.com/wiredscience/2009/08/wikitrust/.

56. AYERS, *supra* note 16, at 196 ("Many newly submitted articles are deleted every day on Wikipedia: approximately one every minute."); *id.* at 218 ("[A] great deal of content is also deleted—hundreds or thousands of articles are deleted from Wikipedia every day."); Suh et al., *supra* note 25 (a quarter of all new pages are deleted, and the deletion rate increased from 2005 to 2007); *The Battle for Wikipedia's Soul*, ECONOMIST, Mar. 6, 2008, at 3 [hereinafter *Soul Battle*]; Hafner, *supra* note 25 (one Wikipedia editor said that half of newly created pages are good candidates for deletion); *see generally* Wikipedia: New Pages Patrol, http://en.wikipedia.org/wiki/New_pages_patrol (last visited Aug. 18, 2009). An entire site, DeletionPedia, is dedicated to republishing deleted Wikipedia articles. *See* Deletionpedia Home Page, http://deletionpedia.dbatley.com/w/index.php?title=Main_Page (last visited Sept. 21, 2009).

57. *See* BROUGHTON, *supra* note 17, at 123 fig.7-1 (showing a rapid growth in the "percentage of edits that are reverted"); Jim Giles, *After the Boom, Is Wikipedia Heading for Bust?*, NEW SCIENTIST, Aug. 4, 2009, http://www.newscientist.com/article/dn17554-after-the-boom-is-wikipedia-heading-for-bust.html (citing research by Ed Chi that occasional editors have twenty-five percent of their edits reverted); Suh et al., *supra* note 25 (showing a steady growth in the reversion rate from 2005 to 2008, although the overall rate remains relatively low); Posting of Aaron Swartz to Raw Thought, Who Writes Wikipedia?–Responses, http://www.aaronsw.com/weblog/whowritescomments (Sept. 5, 2006, 12:42) [hereinafter Swartz, Responses]. Naturally, several factors could explain the rise in quick reversions, including more spam or vandalism or better anti-threat work. Wikipedia is notorious for "edit wars" where two Wikipedia users repeatedly revert each other's contributions. Wikipedia: Edit War, http://en.wikipedia.org/wiki/Edit_warring (last visited Aug. 17, 2009).

momentarily published but are quickly erased. Knowing that it is hard to make sustainable contributions, some users choose not to participate.[58] Other users whose contributions are erased never come back.[59]

Why has it become so hard for users to make contributions that actually stick? Xenophobia is a major contributing factor.[60] Due to the constant threat of spam and vandalism, some Wikipedia editors become socialized to assume that site edits are made by bad folks for improper purposes,[61] thus developing a "revert first" mentality.

The adverse presumptions especially apply to unregistered or unsophisticated users who do not comply with Wikipedia's cultural rituals, such as signing talk pages.[62] By failing to conform to the rituals, these contributors implicitly signal that they are Wikipedia outsiders, which increases the odds that Wikipedia insiders will target their contributions as a threat. As one book says, "If you're editing and aren't logged in, you're in some sense a second-class citizen on the site. Expect less tolerance of minor infractions of policy and guidelines."[63] This

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58. *See* Posting of Aaron Swartz to Raw Thought, Making More Wikipedians, http://www.aaronsw.com/weblog/morewikipedians (Sept. 11, 2006, 17:17) (discussing how Richard Stallman decided not to fix a problem he saw in a Wikipedia article because "it would take an enormous amount of his time and the word would probably just get reverted").

59. *See* Giles, *supra* note 57; Katherine Panciera et al., *Wikipedians Are Born, Not Made*, *in* ASS'N FOR COMPUTING MACHINERY, PROC. ACM 2009 INT'L CONF. ON SUPPORTING GROUP WORK 51, 59 (2009) ("60% of registered users never make another edit after their first 24 hours."). Panciera et al. offer two possible hypotheses to explain this group: (1) they only registered for a single purpose; or (2) they were scared away by their experiences. *Id.*

60. *See* Suh et al., *supra* note 25 (describing the "growing resistance to new content especially when contributed by occasional editors").

61. *See* AYERS, *supra* note 16, at 288 ("Wikipedia articles are created in a hostile environment."); Garfinkel, *supra* note 11 ("There was no way for Wikipedia, as a community, to know whether the person revising the article about Jaron Lanier was really Jaron Lanier or a vandal. So it's safer not to take people at their word . . . ."); *see also* Wikipedia: No Vested Contributors, http://en.wikipedia.org/wiki/Wikipedia:No_vested_contributors (last visited July 25, 2009) ("[S]ome long-term contributors may begin to feel a sense of entitlement and superiority over less prolific editors . . . ."). As a partial recognition of these tendencies, the Wikipedia community has an announced philosophy to "assume good faith" on the part of other contributors. Wikipedia: Assume Good Faith, http://en.wikipedia.org/wiki/ Wikipedia:Assume_good_faith (last visited Aug. 14, 2009). Obviously, this philosophy is not universally followed. *See* AYERS, *supra* note 16, at 332 ("Assume Good Faith is a good place to begin, but practicing it can be difficult."). Some reversions reflect contributors' resistance to having their own contributions revised. *See id.* at 195–98.

62. Wikipedia: Signatures, http://en.wikipedia.org/wiki/Sign_your_posts (last visited Aug. 8, 2009); AYERS, *supra* note 16, at 116 ("Always sign comments on talk pages . . . ! This is one of the golden rules of Wikipedia; not doing so is considered very bad form.").

63. *See* AYERS, *supra* note 16, at 325. *Accord* BROUGHTON, *supra* note 17, at 124 ("The red link means that no one has ever posted to the editor's user talk page, which in turn indicates that there have been few or no other edits by this IP address, which means few or no constructive edits. In this case, you don't need to do any further research before reverting. If you see a questionable edit from this kind of user account, you can be virtually certain it was vandalism."); Farhad Manjoo, *Is Wikipedia a Victim of Its Own Success?*, TIME, Sept. 28, 2009, at 50.

insider xenophobia is a more significant incursion on free editability than any technological measure because it leads to quick screening of user contributions—both illegitimate and legitimate.

Even if social barriers presumptively block free editability, anyone can overcome these barriers by becoming a Wikipedia insider. Insider status is open to everyone and does not depend on any credentials, experience, or specific domain expertise.[64] However, becoming a Wikipedia insider requires more than just showing up. To gain enough status to reduce the chances of xenophobic reversions, a contributor must incur non-trivial costs. The contributor is expected to build a user page,[65] learn Wikipedia-specific technological codes,[66] discuss proposed changes with other editors before editing an entry,[67] submit to an arcane dispute resolution process,[68] learn a "baffling culture rich with in-jokes and insider references,"[69] and survive a sometimes rough-and-tumble milieu.[70]

Thus, becoming a Wikipedia insider requires a fairly significant commitment. For many contributors, the benefits of insider status are not worth these required investments,[71] leaving these contributors—and their contributions—vulnerable to xenophobia reversion. As a result, despite Wikipedia's vast readership, only a few of those readers have the actual ability to make lasting improvements to the site.[72]

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64. The 2007 "Essjay" controversy, involving college dropout Ryan Jordan, reinforced how contributors without actual credentials could achieve significant authority in the Wikipedia community. *See* Brian Bergstein, *After Flap over Phony Professor, Wikipedia Wants Some Writers to Share Real Names*, USA TODAY, Mar. 9, 2007, http://www.usatoday.com/tech/news/2007-03-07-wikipedia-credentials_N.htm. Despite the Essjay controversy, the Wikipedia community has repeatedly rejected initiatives to verify contributors' credentials. *See* Wikipedia: There Is No Credential Policy, http://en.wikipedia.org/wiki/Wikipedia:Credentials (last visited July 29, 2009) [hereinafter Wikipedia: There is No Credential Policy].

65. *See* AYERS, *supra* note 16, at 315 ("[N]ot editing your user page will not inspire confidence in your commitment to Wikipedia.").

66. *See id.*; Baker, *supra* note 11.

67. *See* AYERS, *supra* note 16, at 116 ("Posting a preliminary comment on the talk page before making a change acts as a kind of insurance policy . . . . If you discuss first and then edit, you should not come under suspicion of high-handed behavior.").

68. AYERS, *supra* note 16, at 383–404; David A. Hoffman & Salil Mehra, *Wikitruth Through Wikiorder*, 59 EMORY L.J. (forthcoming 2010); Brian Butler et al., *Don't Look Now, But We've Created a Bureaucracy: The Nature and Roles of Policies and Rules in Wikipedia*, PROC. TWENTY-SIXTH ANN. SIGCHI CONF. ON HUMAN FACTORS COMPUTING SYS. (2008), http://portal.acm.org/citation.cfm?id=1357227; Baker, *supra* note 11.

69. AYERS, *supra* note 16, at 332.

70. Baker, *supra* note 11 ("There are some people on Wikipedia now who are just bullies, who take pleasure in wrecking and mocking peoples' work . . . .").

71. *See* Lawrence W. Sanger, *The Fate of Expertise After Wikipedia*, 6.1 EPISTEME 52, 65 (2009) ("*Wikipedia* might be best described as having a rule of the most persistent."); Suh et al., *supra* note 25; Swartz, Responses, *supra* note 57.

72. *See* Baker, *supra* note 11 ("[R]elatively few users know how to frame their contribution in a form that lasts."); Sanger, *supra* note 71, at 52, 71 n.29; Bobbie Johnson,

IV.   WIKIPEDIA'S LOOMING LABOR SUPPLY PROBLEMS

Over time, Wikipedia will face a growing labor supply problem because its dedicated editors—the people responsible for suppressing threats from vandals and spammers—will leave faster than new dedicated editors can replace them. This section explains why a labor deficit will develop.

A.   Editor Turnover

As all online user communities do, Wikipedia will experience editor turnover.[73] I have not seen any studies rigorously exploring these turnover rates,[74] but undoubtedly Wikipedia needs a constant influx of lots of new editors to replace departing ones.[75]

Why do editors leave? Some turnover is due to typical life cycle changes that displace the time an editor has available to contribute to Wikipedia: students graduate from school and begin working full-time; employees change to a new and more demanding job; people get married or have children; and people develop new hobbies that consume their free time.[76]

Other editors leave because they get burned out.[77] Every successful UGC community will have its share of political battles that push out some community members, either due to frustration with site politics or because the member's political positions were rejected. Wikipedia is no

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Wikipedia Approaches Its Limits, THE GUARDIAN, Aug. 13, 2009, at 1.

73. In 2009, I did a small and unscientific study of user turnover at Epinions, an early Web 2.0 company now part of the eBay empire, *see* Frequently Asked Questions about the eBay Announcement, http://www1.epinions.com/help/faq/show_~faq_announcement (last visited Aug. 27, 2009). My study revealed that two-thirds of Epinions' top twenty most popular authors in 1999 had turned over in nine years, and twenty-five percent of Epinions' top twenty most popular authors in 2003 had turned over in five years. *See* Posting of Eric Goldman to Technology & Marketing Law Blog, Decay Rates of Committed Online Community Members—an Epinions Case Study, http://blog.ericgoldman.org/archives/2009/01/decay_rates_of_1.htm (Jan. 26, 2009, 06:09).

74. Research by Panciera et al. may be the closest study on this question. They discuss the lifecycle of Wikipedia editors, including how editors of all levels decrease their participation over time. Panciera et al., *supra* note 59; *accord* Rodrigo B. Almeida et al., *On the Evolution of Wikipedia*, INT'L CONF. ON WEBLOGS & SOC. MEDIA 1, 5 (2007), http://oak.cs.ucla.edu/~cho/papers/almeida-icwsm07.pdf ("[W]hen looking at the whole group of our users together, we can conclude that their average productivity is decreasing overall . . . .").

75. *See* Panciera et al., *supra* note 59.

76. Wikipedia is particularly vulnerable to life changes among its contributors because they are overwhelmingly young, unmarried and childless. *See* Noam Cohen, *Wikipedia Looks Hard at Its Culture*, N.Y. TIMES. Aug. 31, 2009, at B3 (Wikipedia contributors are 65%+ single, 85%+ childless, and 70% under 30 years old).

77. *See* Stephan Baker, *Will Work for Praise: The Web's Free-Labor Economy*, BUS. WK., Dec. 28, 2008, http://www.businessweek.com/technology/content/dec2008/tc20081228_809309.htm.

stranger to political battles,[78] and frequent sparring over edits and editorial policies prompts some community members to check out.[79]

Yet other editors tire of the anti-threat work. Spammers and vandals create repetitive and uninteresting work simply to keep the site intact, and some editors opt-out of this seemingly Sisyphean effort. Their departure increases the anti-threat work borne by the remaining Wikipedia editors, which increases the remaining editors' fatigue and could accelerate their departure rate if the editors feel that the bad guys are winning.[80]

The Open Directory Project (ODP),[81] a partial predecessor to Wikipedia, illustrates how relentless spam can eventually overwhelm volunteer UGC editors. The ODP describes itself as "the largest, most comprehensive human-edited directory of the Web. It is constructed and maintained by a vast, global community of volunteer editors."[82] At its zenith, several major search engines incorporated the ODP directory into their search indexes,[83] and the broad distribution of the ODP directory provided potentially significant traffic for any link that ODP editors incorporated into the directory. The commercial value of these links caused marketers to submit lots of links to ODP.[84] The number of links eventually overwhelmed the ODP editors, causing the project to fall far behind in its ability to provide a reasonably up-to-date directory of websites.[85] Eventually, ODP editors started leaving (or just stopped doing their tasks), rendering ODP effectively irrelevant.[86]

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78. One example is the battle between "inclusionists" and "deletionists." *See Soul Battle*, *supra* note 56; *see also* Baker, *supra* note 11; Johnson, *supra* note 72 ("[T]he numbers suggest that the deletionists may have won.").

79. *See Soul Battle*, *supra* note 56.

80. People's motivation to contribute declines when they feel like they are not making a positive contribution. *See* Susan L. Bryant et al., *Becoming Wikipedian: Transformation of Participation in a Collaborative Online Encyclopedia*, PROC. 2005 INT'L ACM SIGGROUP CONF. ON SUPPORTING GROUP WORK (2005), http://www.cc.gatech.edu/~asb/papers/bryant-forte-bruckman-group05.pdf; Panciera et al., *supra* note 59, at 55; Cosley, *supra* note 4, at 67.

81. The Open Directory Project is also called DMOZ. DMOZ Open Directory Project, http://www.dmoz.org (last visited Sept. 25, 2009).

82. About the Open Directory Project, http://www.dmoz.org/about.html (last visited Sept. 25, 2009).

83. Mark Durham, *Google: We're Down with ODP*, SALON, Mar. 24, 2000, http://archive.salon.com/tech/feature/2000/03/24/google_odp/index.html.

84. Posting of countrystarr to SEOmozBlog, Want to Get Listed in DMOZ? Become an Editor, http://www.seomoz.org/blog/want-to-get-listed-in-dmoz-become-an-editor (Apr. 29, 2009, 11:40); Jim Hedger, *Trouble at the ODP*, SEARCH ENGINE GUIDE, May 26, 2005, http://www.searchengineguide.com/jim-hedger/trouble-at-the-odp.php (discussing allegations of pay-to-play among DMOZ editors).

85. Posting of Barry Schwartz to Search Engine Land, Don't Forget About Us, The Web Directories, http://searchengineland.com/dont-forget-about-us-the-web-directories-18601 (May 5, 2009, 08:33 EST); Hedger, *supra* note 84.

86. DMOZ Had 9 Lives. Used Up Yet?, http://www.skrenta.com/2006/12/

B.   *Wikipedia's Limited Toolkit to Attract New Editors*

The ODP experience provides a useful cautionary tale to Wikipedia. To remain credible in the face of growing spam and vandal attacks, Wikipedia needs a constant new supply of engaged and motivated editors. However, Wikipedia's design creates some challenges to attracting those editors.

First, as discussed above,[87] the existing community's xenophobia hinders the recruitment and integration of new dedicated editors.[88] For example, new editors can be driven away by reversion of their contributions,[89] a problem compounded by the fact that their contributions are especially vulnerable.[90] The ever-increasing technological hurdles also discourage some editors from joining the Wikipedia community.[91]

Second, and perhaps more importantly, Wikipedia has a limited toolkit of incentives to attract new editors. Broadly speaking, users provide labor to websites for one of three categories of motivations: cash (financial payoffs, either directly or indirectly), credit (recognition and notoriety), and intrinsic motivations. Unlike many other UGC communities, Wikipedia relies almost exclusively on intrinsic motivations because it does not satisfy contributors' cash or credit motivations very well.

Wikipedia does not have much to offer contributors motivated by cash. Like many UGC sites, Wikipedia does not pay editors directly for their contributions.[92] However, Wikipedia goes much further than most UGC sites at suppressing contributions from people being paid for their work. For example, UGC websites usually ban fake contributions from companies trying to manipulate consumers,[93] but Wikipedia presumes a

dmoz_had_9_lives_used_up_yet.html (Dec. 16, 2006, 12:09).

87. *See supra* text accompanying notes 58–60.

88. *See* Swartz, Who Writes, *supra* note 25 (noting that Wikipedia insiders never hear the perspectives of occasional contributors and therefore do not prioritize projects that would help their recruitment); *cf.* Bryant, *supra* note 80.

89. AYERS, *supra* note 16, at 195 ("If you spend any serious amount of time writing for Wikipedia, you'll feel you've wasted it if your edits or articles are not incorporated on the site in some fashion.").

90. Wikipedia: Please Do Not Bite the Newcomers, http://en.wikipedia.org/wiki/ Wikipedia:Please_do_not_bite_the_newcomers (last visited Sept. 18, 2009) ("It is difficult for a newcomer to be completely familiar with all of the policies, guidelines, and community standards of Wikipedia before they start editing.") [hereinafter Wikipedia: Please Do Not Bite the Newcomers].

91. *See* Ken S. Myers, *WikImmunity: Fitting the Communications Decency Act to Wikipedia*, 20 HARV. J.L. & TECH. 163, 203 (2006).

92. In fact, Wikimedia Foundation (which operates Wikipedia and other wikis) has less than 30 employees. *See* Staff from Wikimedia Foundation, http://wikimediafoundation.org/ wiki/Staff (last visited Sept. 17, 2009).

93. These contributions may even be illegal. *See* Press Release, New York State Attorney

conflict of interest when an editor makes any financially incentivized edits.[94] Thus, Wikipedia's policies discourage employees from editing entries for their employers[95] and editors from seeking direct payment to write entries.[96] The norms are so strong against these types of contributions that a third party service, WikiScanner, automatically identifies and publicizes edits from putatively self-interested sources.[97]

Further, unlike most other UGC websites, Wikipedia effectively prevents editors from developing commercially valuable reputations that could indirectly translate into cash. The next section explains this in more detail.

For these reasons, it is practically impossible for any Wikipedia editor to make money, directly or indirectly, from participation in Wikipedia. Thus, Wikipedia effectively excludes individuals who would supply their labor for cash motivations.

For people motivated by credit, Wikipedia offers numerous recognition opportunities,[98] including election to administrative

General, Attorney General Cuomo Secures Settlement with Plastic Surgery Franchise that Flooded Internet with False Positive Reviews (July 14, 2009), *available at* http://www.oag.state.ny.us/media_center/2009/july/july14b_09.html.

94. Wikipedia: Conflict of Interest, http://en.wikipedia.org/wiki/Your_company (last visited Sept. 18, 2009) [hereinafter Wikipedia: Conflict of Interest]; Wikipedia: Paid Editing (policy), http://en.wikipedia.org/wiki/Wikipedia:Paid_editing_(policy) (last visited Oct. 27, 2009) ("Paid editing is a type of conflict of interest (COI).") [hereinafter Wikipedia: Paid Editing Policy].

95. Wikipedia: Paid Editing Policy, *supra* note 94 ("Do not edit Wikipedia to promote your own interests, or those of other individuals or of organizations, including employers, unless you are certain that the interests of Wikipedia remain paramount."); AYERS, *supra* note 16, at 17 ("NPOV is also a prime reason why editors are strongly discouraged from working on articles about themselves or their organizations."); *id.* at 165 ("If you're considering an article about yourself or your company—please don't. Even with the best of intentions, this can be seen as self-promotion and often leads to the article being deleted."). Wikipedia policies do not bar company employees from editing entries that have nothing to do with advancing the company's interests, but it is not clear how many companies would allocate their employees' time that way.

96. *See* Brian Bergstein, *Idea of Paid Entries Roils Wikipedia*, FOX NEWS, Jan. 24, 2007, http://www.foxnews.com/printer_friendly_wires/2007Jan24/0,4675,WikipediaPaidEntries,00. html; Cade Metz, *Jimbo Wales: No One Can Make Money from Wikipedia*, THE REGISTER, June 12, 2009, http://www.theregister.co.uk/2009/06/12/wikipedia_cash_for_spam/; Wikipedia: Conflict of Interest, *supra* note 94; *see also* ZITTRAIN, *supra* note 5, at 140–41 (discussing Wikipedia's repeated banning of MyWikiBiz, a service that offered to write Wikipedia entries for a fee). *See generally* Wikipedia: Requests for Comment/Paid editing, http://en.wikipedia.org/wiki/Wikipedia:Requests_for_comment/Paid_editing (last visited Oct. 27, 2009) ("The majority of those that offered their own opinion statements felt that paid editing was a conflict of interest which should be discouraged or controlled in some way.").

97. *See* John Borland, *See Who's Editing Wikipedia - Diebold, the CIA, a Campaign*, WIRED, Aug. 14, 2007, http://www.wired.com/politics/onlinerights/news/2007/08/ wiki_tracker.

98. *See* Mangu-Ward, *supra* note 36, at 18; Benjamin K. Johnson, *Incentives to Contribute in Online Collaboration: Wikipedia as Collective Action*, INT'L COMMC'N ASS'N 58TH ANN. CONF. 1, 18 (2008), http://asurams.edu/coah/EngLangMass/faculty/bjohnson/

positions,[99] appearance on various ranking charts,[100] acknowledgement of laudatory articles[101] and individual awards called "barnstars."[102]

These recognition systems may prompt existing editors to work harder, but they are weakly calibrated to recruit new editors.[103] First, as discussed above, insider xenophobia drives away prospective new editors before these editors buy into Wikipedia's reputation systems. Second, the recognition systems are not easily understood by outsiders, so their recruiting power is limited.

Further, Wikipedia blocks attribution for authoring a Wikipedia article,[104] which also dissuades contributors looking for external recognition for their work.

Because Wikipedia is not designed to promote external recognition for editors, it differs from other popular UGC sites that have brought successful users to the public's attention.[105] Without these "stars," Wikipedia does not have any public examples that might draw new editors to the site with the hope of emulating their notoriety.[106]

In light of the absence of cash motivations and the weak recruiting power of its reputational systems, Wikipedia is remarkable for how little it depends on contributions from people who seek cash or credit.

Incentives_to_Contribute.pdf.

99. Wikipedia: Requests for Adminship, http://en.wikipedia.org/wiki/Wikipedia:Requests_for_adminship (last visited Sept. 18, 2009).

100. *See*, *e.g.*, Wikipedia: List of Wikipedians by number of edits, http://en.wikipedia.org/wiki/Wikipedia:List_of_Wikipedians_by_number_of_edits (last visited Sept. 18, 2009). Many Wikipedia editors prominently display the number of their edits on their personal user pages.

101. *See*, *e.g.*, Wikipedia: Featured articles, http://en.wikipedia.org/wiki/Wikipedia:Featured_articles (last visited Sept. 18, 2009).

102. Wikipedia: Barnstars, http://en.wikipedia.org/wiki/Wikipedia:Barnstars (last visited Sept. 18, 2009). There are additional informal forms of recognition. *See* AYERS, *supra* note 16, at 333–34.

103. This is consistent with Aaron Swartz's theory that Wikipedia focuses most of its development resources on the needs of insiders, not newcomers. *See* Swartz, Who Writes, *supra* note 25.

104. Wikipedia: FAQ, http://en.wikipedia.org/wiki/Wikipedia_FAQ#Who_wrote_article _X_on_Wikipedia.3F (last visited Sept. 18, 2009); AYERS, *supra* note 16, at 103; SUNSTEIN, *supra* note 4, at 153. While every edit is attributed in the article's history, this is more obscure and less definitive than more traditional forms of article attribution like a byline. In fact, many registered Wikipedia editors choose to use an alias/pseudonym. *See* AYERS, *supra* note 16, at 305; *see also* Sanger, *supra* note 71, at 52, 66 (describing why Wikipedia cannot allow people to use their real names).

105. For example, the mainstream media has repeatedly profiled Harriet Klausner, Amazon's long-time top reviewer. *See*, *e.g.*, Joanne Kaufman, *A Novel Heroine*, WALL ST. J., Mar. 29, 2005, http://www.opinionjournal.com/la/?id=110006483; *see also* Mark Frauenfelder, *Revenge of the Know-It-Alls*, WIRED, July 2000, at 144.

106. A star system could work like a workplace "tournament," which encourages employees to work hard by offering the chance to be promoted to lucrative future jobs. *See* MARC GALANTER & THOMAS PALAY, TOURNAMENT OF LAWYERS: THE TRANSFORMATION OF THE BIG LAW FIRM (1991); Iman Anabtawi, *Explaining Pay Without Performance: The Tournament Alternative*, 54 EMORY L.J. 1557, 1584–90 (2005).

C.   *Wikipedia Compared with the Free and Open Source Software Community*

Wikipedia and the free and open source software (FOSS) community share numerous intellectual and philosophical underpinnings,[107] but they diverge in the motivations for participation. Unlike Wikipedia, the FOSS community relies heavily on both cash and credit to fuel its labor economy.

Significant FOSS contributions come from company employees whose employers officially sanction their FOSS work.[108] In effect, employers fund these employees' FOSS participation, in many cases because the resulting FOSS project commercially benefits the employer.[109] In other cases, a company may decide to put mature proprietary software into a FOSS project to reinvigorate customer interest or obtain cheaper ongoing development or support.[110] In these cases, the employing company funds the labor supply for the FOSS project.

Individual software authors also participate in FOSS communities. Often, these contributors seek economic payoffs such as increased expertise in commercially valuable skills, future employment from employers impressed by the work, or an installed base of software adopters who will pay for support from the program's expert.[111]

In contrast, Wikipedia discourages contributions from company employees advancing the company interest, and individual Wikipedia contributors cannot build commercially valuable reputations. As a result, Wikipedia's labor market differs markedly from the FOSS community's labor market.

Beyond their differences in contributor motivations, Wikipedia and FOSS have other important differences. First, producing encyclopedic information may be a qualitatively different process than producing software. A contributor to a FOSS project, by definition, automatically possesses a minimum degree of expertise and sophistication in the relevant subject matter, while Wikipedia accepts contributions from

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107. *See* AYERS, *supra* note 16, at 38–41.

108. *See*, *e.g.*, Heather Meeker, Remarks at the Law & Computers Session, AALS Annual Meeting (Jan. 9, 2009), http://www.aalsweb.org/fri/LawandComputers.mp3 (20% of FOSS participants were corporate in 1999; now it is closer to 80%); *see also* John Quiggin & Dan Hunter, *Money Ruins Everything*, 30 HASTINGS COMM. & ENT. L.J. 203, 218–19 (2008); SUNSTEIN, *supra* note 4, at 173.

109. *See*, *e.g.*, RON GOLDMAN & RICHARD P. GABRIEL, INNOVATION HAPPENS ELSEWHERE 76–99 (2005); Quiggin & Hunter, *supra* note 108, at 219.

110. *See*, *e.g.*, GOLDMAN & GABRIEL, *supra* note 109; Meeker, *supra* note 108.

111. *See*, *e.g.*, Josh Lerner & Jean Tirole, *Some Simple Economics of Open Source*, 50 J. INDUS. ECON. 197, 213 (2002).

novices and experts equally.[112] Further, it may be easier for users to assess the quality of a FOSS contribution (does it compile? does it run?) than the accuracy of factual contributions to Wikipedia.[113]

Second, FOSS projects often have more hierarchical workflow management than Wikipedia. Many successful FOSS projects have a single individual or small group of individuals with express authority to oversee the project and decide whether new contributions become part of the project's canon or are vetoed.[114] This represents significantly more organization and structure than Wikipedia's process of letting individuals self-appoint themselves as page guardians.

Given the many differences, we should not assume that FOSS's success is inherently extensible to Wikipedia.[115] More likely, if Wikipedia wants to replicate FOSS's success, it may need to emulate the FOSS community more closely.

D.   Can Wikipedia Thrive on Intrinsic Motivations?

Because of its weak systems to motivate editors using cash and credit, Wikipedia relies principally on editors' intrinsic motivations for participation, including pride in building something important, the satisfaction of publishing in a highly visible venue, the sense of participating in a community, and pure altruism.[116]

These are all substantial and important motivations, and unquestionably people provide valuable labor based solely on intrinsic motivations.[117] My concern is that Wikipedia's heavy reliance on this labor supply reduces its pool of potential contributors to replace departing editors. The number of people willing to contribute to Wikipedia without any cash or credit is a relatively small fraction of people willing to contribute to UGC communities generally.[118] Further, Wikipedia must constantly and successfully compete for these people's

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112. *See* Duguid, *supra* note 15.

113. *See id.*

114. *See*, *e.g.*, SUNSTEIN, *supra* note 4, at 174–75; Duguid, *supra* note 15.

115. Duguid, *supra* note 15 ("[S]ocial processes of Open Source software production may transfer to other fields of peer production, but, with regard to quality, software production remains a special case.").

116. *See* SUNSTEIN, *supra* note 4, at 157; Johnson, *supra* note 98, at 25.

117. *See* BENKLER, *supra* note 1, at 94.

118. In response to a draft of this Essay, Timothy B. Lee argued that Wikipedia's labor supply should not be a problem given United States residents' surplus of leisure time, which should enable Wikipedia to thrive so long as even a small fraction of that leisure time is allocated towards Wikipedia. *See* Posting of Timothy B. Lee to Bottom-Up, Hobbies Don't Need "Incentives for Participation," http://timothyblee.com/?p=849 (Sept. 9, 2009). But it is not enough to know that Wikipedia has a potential labor supply; instead, we have to explain *why* people will allocate their time to Wikipedia rather than the many other professional and leisure activities competing for their available time.

attention against other activities and hobbies, including those activities that offer them cash or credit.[119]

Therefore, Wikipedia is particularly vulnerable to a labor squeeze over time. Its labor needs increase as its popularity (and attractiveness to spammers and vandals) increases, but Wikipedia can replenish its departing editors only from the portion of the overall UGC labor force that does not seek cash or credit.

E.   Doesn't Wikipedia's Success to Date Disprove My Argument?[120]

This discussion raises an obvious anomaly: many of the foregoing labor supply issues should have prevented Wikipedia's community from forming in the first place, so Wikipedia's current success provides strong empirical proof against my argument.[121] Nevertheless, for several reasons, Wikipedia's past does not ensure its future success.[122]

First, many early Wikipedia editors joined to build something from scratch, i.e., the opportunity to write new articles that did not exist and to develop the site's community and policies. With much of that initial development work completed, the site now emphasizes incremental enhancements and site maintenance.[123] Site maintenance requires different skill sets and personalities from those required to build the site, and people who enjoy building sites may not enjoy maintenance as much.[124] This may be analogous to how some successful entrepreneurial

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119. *See* Strahilevitz, *supra* note 16.

120. There is an extensive academic literature on community formation, maintenance and dissolution in the offline world, including research on immigration/citizenship, alternative living arrangements like kibbutzim and nineteenth century utopian colonies, and participation in non-profit organizations. Although beyond this Essay's scope, it would be fruitful to explore that literature and analogize it to Wikipedia. Even so, Wikipedia differs from offline communities in important ways. Most obviously, unlike almost all other offline communities, Wikipedia draws from a global labor supply that can join or exit at effectively zero out-of-pocket costs.

121. Jonathan Zittrain has made the analogy that bumblebees should not be able to fly in theory, yet they seem to do fine in practice. ZITTRAIN, *supra* note 5, at 148; *see also* SHIRKY, *supra* note 13, at 117.

122. *See generally* Suh et al., *supra* note 25 (showing how various metrics of Wikipedia activity have reversed their upward trends since 2007).

123. *See* Noam Cohen, *Wikipedia: Exploring Fact City*, N.Y. TIMES, Mar. 29, 2009, at WK3; Jimmy Wales, Wikipedia Founder, Opening Plenary at Wikimania 2006 (Aug. 4, 2006), http://wikimania2006.wikimedia.org/wiki/Opening_Plenary_(transcript) ("But with more than 1 million articles in English, I think we should continue to turn our attention away from growth, and towards quality."). One hypothesis is that the John Seigenthaler incident in September 2005 helped accelerate the refocus from site building to site maintenance: "The Seigenthaler incident prompted an intense effort to write more accurately sourced articles, to institute a zero-tolerance environment for nonsense, and to recognize that people who have no desire to work on the site themselves may be affected by Wikipedia articles." AYERS, *supra* note 16, at 52.

124. *See* Cosley, *supra* note 4, at 104; Manjoo, *supra* note 52; Suh et al., *supra* note 25 (hypothesizing that conflict increases on Wikipedia as the site exhausts opportunities to make

companies struggle as they evolve from start-up mode into more bureaucratic enterprises.[125]

Second, Wikipedia initially operated in relative obscurity, so fending off spammer and vandalism attacks required less effort.[126] Wikipedia's editors are now forced to spend more time on potentially less enjoyable anti-threat work.

Third, Wikipedia's xenophobia may be increasing over time,[127] which would cause Wikipedia to be less welcoming to newcomers now than in the past. As barriers to contribution increase, Wikipedia loses two sources of labor that it had in the past: occasional contributions from non-insiders and ongoing contributions of potential dedicated editors who would have joined the community but instead are driven away.

Finally, it is hard to ignore that Wikipedia is effectively one-of-a-kind. No other mass-market or topically broad wikis have had meaningful success to date. Even Wikimedia's other wiki projects are not nearly as active as Wikipedia.[128] If successful wikis are rare, Wikipedia might be a one-in-a-million lightning strike—some unique combination of factors succeeded in this case, but those circumstances are unlikely to replicate. If so, Wikipedia's rarity might also highlight its fragility.

V.   POSSIBLE CHANGES

The previous section described Wikipedia's impending labor supply challenges. This section explores some ways Wikipedia might try to overcome those challenges.

A.   *Raise Technological Barriers/Eliminate Free Editability*

As discussed in Section III, Wikipedia is already "raising the drawbridge" by enhancing its technological defenses against spammers

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novel contributions).

125. *Cf.* Aniket Kittur et al., *Power of the Few vs. Wisdom of the Crowd: Wikipedia and the Rise of the Bourgeoisie*, PROC. 25TH ANN. ACM CONF. ON HUMAN FACTORS IN COMPUTING SYSTEMS 1, 8 (2007), http://www-users.cs.umn.edu/~echi/papers/2007-CHI/2007-05-altCHI-Power-Wikipedia.pdf (discussing how increased Wikipedia bureaucracy over time was possibly contributing to changes in contributors' editing practices).

126. *See* Priedhorsky, *supra* note 20 (discussing the exponential growth of threats from 2003–06).

127. *See* Giles, *supra* note 57 (citing research by Ed Chi that the rate of reversion for occasional editors has increased substantially since 2003). Increasing xenophobia, or other efforts to discourage newcomers, may be common in UGC communities. *Cf.* Posting of Michael Forster to Net-Happenings, http://oii.org/lists/lifecycle.html (Mar. 31, 1995, 07:57 EST).

128. *See* AYERS, *supra* note 16, at 419–42 (providing usage statistics for other Wikimedia projects); *see also* Monthly Wikimedia Page Hits Comparison, http://wikistics.falsikon.de/latest (last visited Sep. 15, 2009) (showing the comparatively small traffic volume of non-Wikipedia projects).

and vandals. In a labor squeeze, Wikipedia can leverage its remaining editor corps by increasing its technological defenses even higher. Not only do higher technological barriers thwart the threats, but they also may curb editor burnout by reducing the amount of time editors spend doing unsatisfying maintenance work.

But how high do technological barriers need to be to defeat the spammers and vandals? Minor anti-threat changes, such as requiring a CAPTCHA to make certain edits, do not meaningfully affect free editability but have low payoffs.[129] More significant measures, such as semi-protection or banning new articles from anonymous contributors, do more to reduce editor workload[130] but at greater cost to free editability. Even more dramatic measures, such as Flagged Revisions, would further cut down spam and vandalism but at the cost of free editability.

B.   Recruit Replacement Labor

From my perspective, the labor squeeze and desire to retain credibility makes the latter outcome inevitable. However, Wikipedia can retain free editability if it can maintain a strong labor supply to replace departing editors. To do this, Wikipedia could tap into several potential labor sources, including:

Readers. Wikipedia could convert more readers into editors. However, despite the ease of editing Wikipedia and the multiple prominent encouragements to "edit" in every article, Wikipedia's technological and social barriers hinder reader-to-editor conversion. To overcome some of the social barriers, Wikipedia has implemented several newcomer programs, including a "welcoming committee"[131] and a mentorship program.[132] It is not clear how well these programs work. Wikipedia remains fairly intimidating and unwelcoming to newcomers overall,[133]and it chastises existing editors not to "bite" newcomers.[134]

Cash–Motivated Individuals. As discussed above, Wikipedia effectively precludes contributions from cash-motivated individuals.

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129. Spammers can easily defeat CAPTCHAs. *See*, *e.g.*, Posting of Dancho Danchev to ZDNet's Zero Day, http://blogs.zdnet.com/security/?p=1418 (July 3, 2008, 05:46).

130. *See* AYERS, *supra* note 16, at 52 (discussing how banning new articles from anonymous submitters helped reduce the workload of eliminating new "nonsense pages"); *id.* at 143 ("[S]emi-protection filters out a high proportion of vandalism.").

131. Wikipedia: Welcoming Committee, http://en.wikipedia.org/wiki/ Wikipedia:Welcoming_committee (last visited Dec. 31, 2008). Even automated greetings can improve participation. *See* Cosley, *supra* note 4, at 114.

132. Wikipedia: Adopt-a-User, http://en.wikipedia.org/wiki/Adopt-a-User (last visited July 3, 2009).

133. Johnson, *supra* note 98, at 17.

134. Wikipedia: Please Do Not Bite the Newcomers, *supra* note 90.

However, attracting those individuals would not be easy. Obviously, Wikipedia could not directly pay editors for contributions. Putting aside the out-of-pocket costs, commoditizing labor that was previously provided for free can counterproductively suppress people's desire to perform the work,[135] so paying for Wikipedia contributions would likely accelerate the departure of existing editors.[136] Furthermore, people who want cash for writing encyclopedic-style content already have numerous options,[137] and those sites are not exactly beating Wikipedia today.[138]

Even if Wikipedia cannot pay for contributions directly, Wikipedia could find ways to create indirect economic payoffs for Wikipedia participation. For example, Wikipedia could try to create a secondary market for Wikipedia-honed skills. Thus, if future employers valued the editing or writing skills an editor developed by participating in Wikipedia, cash-motivated editors would be willing to provide valuable free services to Wikipedia with the hope of being rewarded by future employers. Interestingly, it is not yet clear that employers value the skills developed on Wikipedia, although perhaps this would become clearer if it were a more explicit goal on Wikipedia. Even so, a secondary market could increase competition for editors' time, so this would partially exacerbate the problem it is trying to solve.[139]

Companies. Just like many FOSS projects rely on companies providing employees' time, Wikipedia could benefit from companies requiring or encouraging employees to contribute to Wikipedia on company time. However, this would require the Wikipedia community

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135. *See* DAN ARIELY, PREDICTABLY IRRATIONAL: THE HIDDEN FORCES THAT SHAPE OUR DECISIONS (2008); BENKLER, *supra* note 1, at 94; Baker, *supra* note 77.

136. Although not directly analogous, WikiMoney was a user-created system from 2003 to 2004 that used a scarce fungible currency to motivate other users to undertake valuable tasks, but it never caught on. *See* Wikipedia: WikiMoney, http://en.wikipedia.org/wiki/Wikipedia:WikiMoney (last visited July 3, 2009). The concept persists in the Wikipedia Reward Board, http://en.wikipedia.org/wiki/Wikipedia:Reward_board, where users generally offer barnstars to each other to do desired tasks, and the Wikipedia Bounty Board, http://en.wikipedia.org/wiki/Wikipedia:Bounty_board, where donations to the Wikimedia Foundation are made for the completion of desired tasks.

137. Options include Google Knol (http://knol.google.com), Squidoo (http://www.squidoo.com), Mahalo (http://www.mahalo.com), and Amazon's Mechanical Turk (https://www.mturk.com/mturk/welcome).

138. *See* Rafe Needleman, *Mahalo 2.0 Is Wikipedia Plus Money*, CNET NEWS, June 2, 2009, http://news.cnet.com/8301-17939_109-10255071-2.html ("Most people I talk to, though, don't see Mahalo results pop up in their daily search engine use and can't remember the last time they used the site."); Posting of Eric Krangel to Silicon Alley Insider, http://www.alleyinsider.com/2009/1/why-has-knol-survived-googles-orphan-project-killing-spree-goog (Jan. 25, 2009, 3:30 PM).

139. *See* Posting of Eric Goldman to Technology & Marketing Law Blog, Zittrain on the Dark Sides of Crowdsourcing, http://blog.ericgoldman.org/archives/2009/10/zittrain_on_the.htm (Oct. 27, 2009, 12:06).

to relax its attitudes towards conflicts of interest.[140]

Academics. Many academics currently have little extrinsic incentive to contribute to Wikipedia. Most academics are measured by their "reputation," but as discussed above, Wikipedia does not help its contributors build external reputations. As a result, participating in Wikipedia is not credited by academics' peers or employers.

Wikipedia could change its policies to be more academic-friendly, such as by attributing articles to individual authors so that academics could get credit for their contributions as "publications."[141] However, participation by academics potentially conflicts with several Wikipedia norms. Academics do not get any deference for their expertise (actual or self-perceived),[142] which can create conflicts when academics are debating technical matters with people who lack any domain expertise. Further, it would be difficult to give credit to academics for article contributions given the strong norms that articles are not externally credited to any one contributor.[143] Finally, academics have to be careful of violating the no-conflict-of-interest policy when talking about the subjects they know best—their research.[144] All told, Wikipedia could become a more academic-friendly environment, but doing so would not be easy.

Students. Instead of (or in addition to) recruiting academics to contribute themselves, Wikipedia could recruit teachers and professors to require their students to contribute to Wikipedia as part of their courses.[145] Wikipedia already is trying this approach.[146] Student labor would provide Wikipedia with an influx of new contributors whose

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140. *See supra* notes 90–93 and accompanying text.

141. In part to attract academics, Wikipedia's competitor/offshoot Citizendium publicly recognizes contributors. *See* CZ:Why Citizendium?, http://en.citizendium.org/wiki/CZ:Why_Citizendium%3F#Real_names_are_better (last visited Sept. 22, 2009).

142. *See* AYERS, *supra* note 16, at 55; *See* Wikipedia: There is No Credential Policy, *supra* note 64. *See generally* Wikipedia: Ownership of Articles, http://en.wikipedia.org/wiki/Wikipedia:Ownership_of_articles (last visited July 5, 2009) (discussing how contributors must allow others to edit their contributions) [hereinafter Wikipedia: Ownership of Articles]. Also, Wikipedia has egalitarian norms, *see* AYERS, *supra* note 16, at 54, which can conflict with hierarchical norms common in many academic communities.

143. *See* Wikipedia: Ownership of Articles, *supra* note 142.

144. In the analogous situation of autobiographies, "drawing on your own knowledge to edit the Wikipedia entry about yourself violates all three of the site's cornerstone policies." Garfinkel, *supra* note 11.

145. *See*, *e.g.*, Robert E. Cummings, *Are We Ready to Use Wikipedia to Teach Writing?*, INSIDE HIGHER ED, Mar. 12, 2009, http://www.insidehighered.com/views/2009/03/12/cummings; Noveck, *supra* note 13, at 7–8 (encouraging law professors to require law students to edit law-related pages on Wikipedia). *See generally* Postings to Air-L, *starting at* http://listserv.aoir.org/pipermail/air-l-aoir.org/2008-November/thread.html#17511 (Nov. 2008) (discussing assigning Wikipedia tasks to students).

146. Wikipedia: School and University Projects, http://en.wikipedia.org/wiki/Wikipedia:School_and_university_projects (last visited July 18, 2009). Citizendium has launched an analogous program. *See* CZ:Eduzendium, http://en.citizendium.org/wiki/CZ:Eduzendium (last visited Sept. 25, 2009).

incentives do not inherently pose conflicts of interest, and some students would convert into long-term dedicated editors. However, this would also unleash a group of new contributors who, by definition, are building their domain expertise and, at the same time, are not acculturated to Wikipedia's norms and practices. As a result, insider xenophobia poses a serious risk of mooting student contributions.[147]

CONCLUSION

An oft-repeated cliché about UGC sites is "if you build it, they will come."[148] Usually, this phrase is used pejoratively to describe websites that launch UGC features without providing the necessary support to build and foster a robust community of invested contributors. In these cases, the website operator hopes that it can throw open some UGC tools to the world and quality contributions will magically materialize. The web is littered with failed efforts where those hopes went unrealized.

This is part of what makes Wikipedia so remarkable. Wikipedia is the epitome of an "if you build it, they will come" website and, yet, people did come, and they built it beyond everyone's wildest expectations.

Wikipedia's comparatively unique architecture has played a key role in this surprising success, including two key choices that continue to shape Wikipedia today: free editability and the reliance on contributors who are principally seeking to satisfy intrinsic motivations. However, these architectural features are at odds with each other. Wikipedia now is grappling with the challenges of maintaining itself, and free editability invites spammers and vandals while its labor supply cannot easily grow to combat these threats. This Essay predicts that Wikipedia necessarily will respond with more restrictive editing policies, eventually eliminating free editability. This is the only sustainable outcome given its increasing labor squeeze.

Eliminating free editability would hardly overshadow the many amazing accomplishments of Wikipedia and its community. Nevertheless, Wikipedia's success to date makes it tempting to assume that Wikipedia is indestructible. It isn't.[149] History reminds us that UGC sites are brittle. In Wikipedia's case, it will flourish only if lots of people

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147. Regarding the xenophobia risk, see User: Jbmurray/Advice, http://en.wikipedia.org/wiki/User:Jbmurray/Advice (last visited July 18, 2009); Wiki-Lessons, http://justtv.wordpress.com/2007/03/16/wiki-lessons (Mar. 16, 2007).

148. This is a variation of the memorable line "if you build it, he will come" from the movie FIELD OF DREAMS (Gordon Company 1989).

149. *See* SUNSTEIN, *supra* note 4, at 195 (describing the conditions that could lead to Wikipedia's failure); Giles, *supra* note 57 (quoting researcher Ed Chi as saying "It's easy to say that Wikipedia will always be here . . . . This research shows that is not a given.").

make the ongoing decision to invest their scarce time and energy in the site. We should not take that for granted.