Editing Unfit Questions in Q&A

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***Abstract*— Community editing is an effective tool for improving contributions in peer production communities like Wikipedia and question-answer (Q&A) communities. However, the mechanisms behind who edits and why is not well understood. Previous studies have focused on the effectiveness of editing and emergent hierarchies in editing communities. What is unknown is how editing is executed in a system that contains gamified motivations for contributing edits. In this paper, we examine participants editing unfit questions on Stack Overflow (SO), a large computer programming Q&A community. The combination of SO's community and reputation system with the dynamics of unfit questions allows us to examine how different actors behave. We find that early edits come from high-reputation users who do not participate as a questioner or answerer, indicating that these users work to retain certain questions. These results suggest that high-reputation user actions can be used to identify bad questions that have archival quality.**

Keywords—Q&A; editing; community standards; gamification

I. INTRODUCTION

Answers are the lifeblood of any social question-answering Q&A system [1], but in systems that allow for Wikipedia-like editing actions, they are not the only valuable contribution a user can make [8,11]. Editing content posts can improve contributions and make them more accessible and useful for the community [7,11]. One significant challenge for the power of editing is in the maintenance of the balance between community standards and content quality. In the collaborative sphere, it is the goal of the community and its contributors to elevate content for the greater good of the corpus [11]. But, in the system that encourages content production based on competition and gamification, it is unclear whether most editors edit because of competitive reasons or for more ephemeral reasons, such as concern for the community's archive quality.

One large Q&A site that is using community editing to maintain quality standards is Stack Overflow (SO); a community dedicated to answering computer programming questions and maintaining an accurate and high-quality archive of Q&A transactions. SO regards editing as an important tool, stating "*..this site is collaboratively edited, like Wikipedia. If you see something that needs improvement, click edit!*" and "*Editing is important for keeping questions and answers clear, relevant, and up-to-date.*" [21]. SO also has a highly gamified reputation system in which users can gain and lose points based on the community evaluating the quality of their contributions through voting. This system is credited for encouraging the large number of high quality answers [3,13].

Whether or not a question needs to be edited is highly contextual [11], and evaluating all questions may not give a clear answer to the distribution of edits. Therefore, in this research, we isolate a type of content post that requires editing; a question that fails to meet the criteria of the community and is therefore "unfit" [4]. Unfit questions can be down-voted by the community (costing the questioner reputation), closed by voters with over 3,000 points (this means that all activity sans editing is suspended), and deleted from the archive. While these questions can and are deleted frequently [5], there are times in which the underlying question is valuable despite its violations [5]. In these cases, these questions will receive answers that can resolve the issue and makes deletion less likely [4,5]. The community is then left with a conundrum: the Q&A exchange has archival value, but question needs to be improved through editing in order to make a question more useful to the general community.

In this paper, we consider two scenarios in which editing occurs: competitive editing, in which actors have a reputation incentive for editing, and intrinsic editing, in which editors contribute with no reputation incentive. In this paper, we seek to understand what users participate in the editing and how they edit by analyzing these unfit questions and the actions individuals took to answer and edit them.

One of the technical difficulties in this analysis is the ability to accurately identify actors and classify data adequately. While SO allows for some automated collection of data, without meticulous review, it is impossible to clearly know what kind of actor does what action. Because of this, we use a sample that has been carefully classified and reveals discrete classification of users. This allows us to achieve a highly accurate view of the editing actions and actors. We analyzed 650 questions from 2013 to 2015 that received at least 5 down votes from the community and were closed by voters. The reason for this cut-off is to separate a group of questions that are *clearly* unfit. At least 5 qualified voters had to agree to vote the question down. In addition, 5 qualified community members had to agree to close the question and mark it as being in violation of the community's question-asking policies. While it is true that the questions with fewer down votes could also be considered unfit, the cutoff creates a

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data set in which we can assume that most actors on the question understand the quality of the question.

We begin this paper with a look at the background of Stack Overflow and editing. Then, we analyze the initial answers that are found on unfit questions and analyze them for quality and completeness in order to understand the workflow of answering unfit questions. The results are that answers on these questions are of very high quality and would allow the questioner to resolve their question. Then, we analyze the actions of different types of participants (Questioners, Answerers, Contributors, and Low-reputation contributors) who have varying motivations and repercussions when they contribute. For instance, while low-reputation users can earn points from editing, and questioners can save reputation points by improving their question, high-reputation users cannot earn points by editing. The results from this study show that most edits come from questioners and contributors, while answerers and low-reputation participants do not typically provide edits. This shows that editing largely depends on users with intrinsic motives rather than competitive. High-reputation contributors, editing without any clear reputation incentive, both provide the most edits and the earliest edits. This would suggest that these users play the most important role in saving unfit questions with archival value from deletion.

Our paper presents a qualitative case study to examine the actions of different users within a collaborative editing scheme in a Q&A site. The implications of this research are also presented for the development of automated systems to save content that might appear at first to be unfit, but have archival value. To this end we argue that the results of this study are important for developing structures that can identify and save contributions from closure and possible deletion.

II. Stack Overflow Background

Stack Overflow (SO) is a Question and Answer (Q&A) system that has managed to successfully leverage a reputation and community privilege with a community run moderation system. The site is the most popular Q&A computer-programming platform with over 5 million users and 8 thousand questions per day. SO uses a reputation system that heavily rewards question answerers. Answerers can receive 10 points for every up-vote that they receive, and another 15 points if their answer is accepted as the best answer by the question asker. The result of this system has been the creation of a community that excels at producing quick and effective answers [3,13,14]. Another result of this competitive system has been the creation of a steep reputation pyramid. While several million users have only a few points, approximately 1,500 users control half of all reputation points in the system.

SO takes reputation aggregation very seriously. It gives users privileges based on the amount of reputation that they earn. For the purpose of this study, the important privilege is that of *Editor*. Once a user reaches 2,000 points, they can make automatic edits on other users' posts.

TABLE I. Examples of Privileges on Stack Overflow

Privilege	Reputation Needed	% of Users with Privilege
Vote Up	15	24%
Vote Down	125	8%
Edit Posts	2,000	1%
Close Votes	3,000	1%
Delete Questions	10,000	0.1%

Much research has been focused on understanding why users answer questions on SO and its sister sites on Stack Exchange. While users have sometimes asserted that answering is largely an altruistic endeavor [13,18], researchers have found that users actually target questions in which they can earn reputation points from best answer selection and upvotes [3,18,19]. This means that while implicit motivation is present, the underlying success of the system lays in explicit motivation through the reputation system [13].

III. Collaborative Editing in Peer Production Communities

Perhaps the best known peer production community that uses collaborative editing to maintain quality is Wikipedia [10]. Wikipedia depends on a large community to both produce and edit encyclopedia articles for open use. This collaborative editing scheme has been dependent on a few number of power editors making most of the edits and making the biggest impact on article quality [15,16]. While there were arguments that the amount of editors were expanding outside the power editors [10], Halfaker [9] found that over an expanded time, Wikipedia's editing culture had hardened and had become resistant to new editors.

Editing articles in Wikipedia can be a contentious and difficult process due to the subjectivity of the content [12]. Because of this, development in limiting edits in controversial or critical articles was explored in detail [2] in order to maintain quality. Liu [12] also explored collaboration patterns in editing, finding that encouraging article authors to edit their own articles was a key way to increase article quality.

The issue of why editors edit has often been asked about Wikipedia, the answer is not easy to understand. While it would seem that altruism plays a large role in unpaid editing service, Wikipedia developed a strict hierarchy of users [9,20]. This hierarchy controls and greatly restricts the access of new and inexperienced users [9,20]. In a study of the development of successful and unsuccessful Wikipedia projects, those that had many different contributors at the start of their lifespan were much more likely to be successful, but even these projects would devolve into the few power users [17]. Editing in Wikipedia starts as a large communal project, but eventually evolves into a small committed group.

The value of community editing in social Q&A has also been recognized. In SO, it is known that the editing of questions and answers does generally improve the point

earning potential of the post [11]. In addition, editing is a signal that a question will not be deleted [4,5]. However, unlike Wikipedia, the competitive nature of the reputation system makes it unclear whether the underlying nature of the editing is competitive or intrinsic.

IV. Unfit Questions

Stack Overflow (SO) has a set of rules for asking a question. SO was created with the idea that a large amount of questions, or especially poor questions, would lead to an unsustainable eco-system [6]. Therefore, all potential users on SO have to agree to a set of rules. While these rules evolve, for 2013 and 2014, these rules were as follows: 1) Search and research their answer on the site, internet, and other resources before asking, 2) Ask questions relevant to the site, 3) Be specific instead of vague, and 4) Make sure the question is relevant to others and not localized.

A. Reasons for Closing a Questions

Questions that violate SO's specific rule set can be "closed" by users with over 3,000 points or a moderator. While questions can be reopened if they receive enough support through editing, this is rare [4]. Users who decide to vote to close a question have several options to do so. In 2013, the following categories were prescribed by SO: Not a real question; Not constructive; Off topic; Primarily opinion-based; Too broad; Too localized; Duplicate; and Unclear what you're asking. Prior to 2012, SO had only four tags (Off-topic, Too subjective, Not a real question, and Too localized). The "Too subjective" tag was essentially replaced by the new tags, which give voters more specific reasons for closing a question. SO does go through an iterative process for determining why a question can be closed. In spring of 2014, the tags were narrowed to: Off topic, Unclear what you're asking, Too broad, and Primarily opinion-based. In general, the most popular reasons for closing a question were Not a real question and Duplicate (each at around 30%) [4].

B. Unfit Questions that are Closed VS. Deleted Questions

If a question is deemed to have no archival value, it can be deleted from the corpus. This happens often to questions that have no answer to them or have nothing to do with the domain [5]. On the other hand, a question could possibly be reopened if it is edited to fix its flaws and the community recognizes the improvements. Questions that remain perpetually closed but not deleted account for around 3% of the SO Q&A corpus [4]. Questions that are deleted are much lower in quality to their closed counterparts in content. Correa [5], found that deleted questions had less code and were questions that attracted very little interest from the community, receiving fewer views and votes than closed questions. While closed questions are low in quality and unfit for the system, there is tangible difference in their construction that signals archival value for the community.

V. When Unfit Questions have Answers

When unfit questions receive an answer, are they good? In the case of good questions, measuring votes or best answer selection is a good method for determining if a question received a good answer [3]. However with unfit questions, simply measuring votes or best answer selection is not a good metric, since activity freezes on closed questions. In order to answer this, two coders, the first author and a coder with over twenty years of computer programming and development experience at a professional level, analyzed the first answers left on a random sample of 384 question and answer exchanges. In order to understand original intent, the coders looked at the first iteration of the question and the first iteration of the first answer. They did not include edits unless those came after the first answer.

The coders rated the first answer on how completely it answered the question based on a five-point scale, with 0 being no answer at all, 2 being an adequate answer, and 4 being a complete answer. The coders rated all 384 answers and had an ICC2 score of 0.9 indicating high agreement. Completeness of answers is very high (M=3.41, SD=0.733), indicating that answerers do put significant effort into answering. The quality of the answers also means that value for the community is present, and lends understanding of why these questions are not deleted.

This finding is also very important for two reasons: First, it allows us to assume that the first answer is likely to be high quality, meaning that it can be used as a benchmark for comparing the order of editing and answering. Edits before the first answer may be trying to improve the question to encourage answers, while edits after the first answer are done to improve the reputation potential of the question or improve the long-term archival value. The other reason is that it allows us to assume that answerers are contributing high-levels of effort. These answers are not "joke" answers, but rather serious contributions. This informs the assumptions behind the motivation of the answerers.

VI. Editing

A. Editing on Stack Overflow

Editing a post on SO is a privilege with access that differs depending on the reputation of the editor. The author of the post can edit their contribution regardless of their reputation (an exception could be made if the author has made a series of bad edits) [22]. For users with less than 2,000 points, editing other users' posts does not take immediate affect. These edits need to be accepted by users with higher reputation. However, +2 points can be earned for each accepted edit with a cap of 1,000 points from edits [22]. Users who have reached 2,000 reputation points are given the privilege of editing questions immediately with no review. As such, these users cannot earn reputation from their edits. All edits are kept in the history next to the original post, so the evolution of the question can be viewed and reverted if necessary [21].

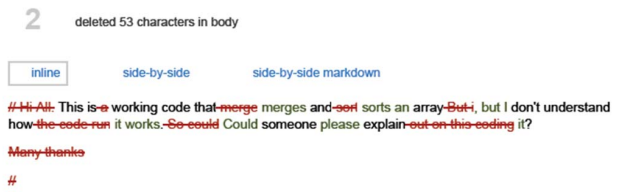

Fig. 1. Example of an Edit on Stack Overflow

SO encourages users to create edits whenever it will improve a post. In particular, their editing guide includes a number of reasons edits are particularly made [21]:

- *To fix grammar and spelling mistakes*
- *To clarify the meaning of the post (without changing that meaning)*
- *To include additional information only found in comments, so all of the information relevant to the post is contained in one place*
- *To correct minor mistakes or add updates as the post ages*
- *To add related resources or hyperlinks*

An example in Fig. 1 shows an edit to an unfit question on SO. In this case, the editor has corrected numerous grammatical errors in order to make the question easier to read. There are six types of edits that can be performed on a question post:

- **Edit Body** – The editor makes changes to the body of the question. This includes making grammatical changes or changes to the presented code.
- **Edit Title** – The editor makes a change in the title of the question.
- **Edit Tags** – The editor changes the tags for the question. Tags provide metadata for the archive.
- **Rollback Body; Rollback Title; Rollback Tags** – In these cases, the editor is undoing a previous edit.

Li [11] found that, in general, Edit Body actions have the greatest impact on post quality, while Edit Tags have the least impact. Edit Body actions are also the most common type or action found across all types of posts and we would expect this to be the same in unfit questions.

B. Types of Editors

Why would a user choose to edit an unfit question? One reason might be for *competitive* motives. Competition in Q&A is well documented. Anderson [3] found that users will target reputation point aggregation, and that the better the user, the better the ability to find areas where points can be earned. Tausczik [18] found that users claimed that reputation points did not matter as a motivation for participation, but that, in reality, these users targeted reputation earning.

This does not discount possibility of *intrinsic* motivations like altruism, a sense of duty to the efficacy to the archive, or a bond to the community. In this paper, we consider that intrinsic motivation is defined when a user makes a socially desirable action with no reputation benefit. The rule of intrinsic motivations in Q&A is difficult to define, but Mamykina [13] did find that intrinsic motivations like altruism were important in motivating community action in SO. We also consider that attachment to the community is a primary motivator towards expending effort on improving other users' content.

We identified four types of editors with different motivations:

- **Questioner** – These users asked the unfit question. They have been down voted. Editing the question is a potential way to recoup reputation points, and seems likely based on Correa's work [5]. In addition, editing the question may be a way for a user to encourage better answers. We consider the motive for editing to be **competitive.**
- **Answerer** – These users answered the unfit question. In this case, it is beneficial for the question not to be deleted, since all gained reputation points are lost if the question is deleted. In addition, making the question a better fit for the community likely makes question more popular in the community, increasing the number of votes the answer will receive. We consider the motive for editing to be **competitive**.
- **Contributor** – These users have more than 2,000 points and have edited the question without posting an answer. They earn no reputation from editing. We consider the motive for editing to be **intrinsic**.
- **Low-reputation Contributor** – These users have fewer than 2,000 points and can earn reputation points by making successful edits. Since this strategy can be a viable one for earning reputation [8], we consider the motive for editing to be **competitive**.

VII. Edits on Unfit Questions

We took a random sample of 650 closed questions from a repository of 15,000 eligible questions (99% Confidence, 5% Margin of Error). We chose questions that received at least 5 down votes and had at least one answer and one edit. Using a self-created data query from the public data repository at data.stackexchange.com, we were able to isolate edit actions on target questions. In total there were 1531 edits on the 650 questions. We analyzed user type and actions with these edits.

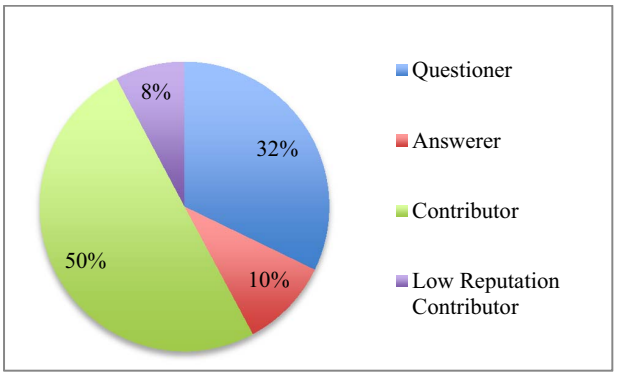

Fig. 2. Total Edits by User Type

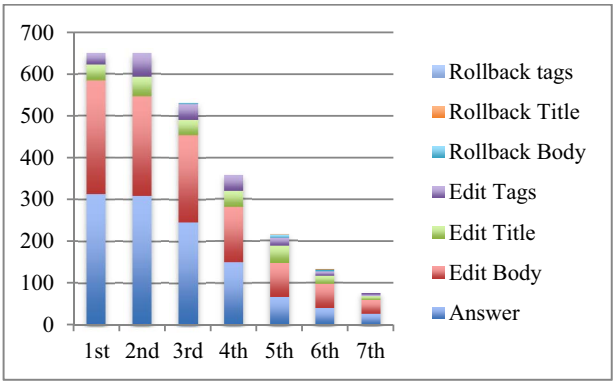

Fig. 3. Order of Actions on an Unfit Question

Who contributes edits? A quick view of the edit counts shows that contributors give half of the edits, as Fig. 2 shows. In the data set, 767 edits came from contributors, while 765 came from the other three combined. The next biggest group was the questioners, which accounted for 32% of the edits. Surprisingly, answerers and low reputation contributors contributed small amount of edits.

Who edits when and how? An answer or an edit can happen at any point once a question is posted. As Fig. 3 shows, there is an even split between answers coming first and edits coming first. At each stage, the balance between answers and edits is evenly split until the very late stages where editing dominates. Within the editing section, we see that Edit Body actions are the most common at each stage. This result is similar to Li's [11] distribution findings where Edit Body actions are the most common type of edit. This result indicates that these contributors are attempting to make the most impact on the quality of the question. It should be noted that there is no significant difference between editor class and edit type.

The only group that contributes more than half of their edits before the first edit is the contributor group as shown in Fig. 4. A contingency table gives a chi-squared value of 85.4 ($p<0.01$), with post-hoc Bonferroni corrected comparison validating that only contributors are skewed towards contribution before the first answer. This shows that the contributor group identifies value in an unfit question faster than other groups. On the other hand, questioners and answerers tend to make edits after the first answer has been posted. This would seem to concur with Correa's work [4,5] that asserts that questioners are trying to edit the question in order to save reputation points. Answerers are possibly trying to assure that reputation points are not lost due to deletion.

A. Conclusion

It is interesting to see how dominant contributor class users are in the editing of these questions. Despite having reputation incentives to act, these users attempt to make the question better, potentially improving both the outcome for the community and the actors who are benefiting from the question. This would mean that, like on Wikipedia [9], there is a core of elite users that edit and maintain the system.

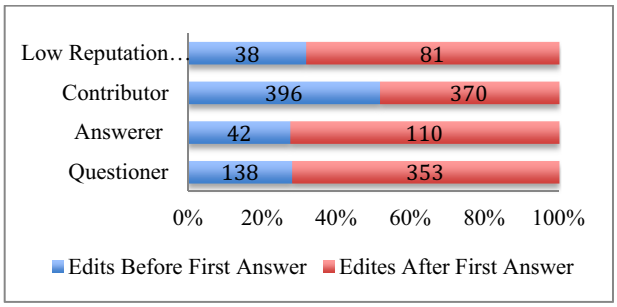

Fig. 4. Edits Before and After the First Answer

The other notable thing is that answerers contribute so few edits. While there were 1198 answers on the 650 questions, only 60 answerers contributed edits. This is surprising given the quality of the answers they give, and potential risk that the question might be deleted. Low reputation contributors also gave few contributions to the questions, but this may be a function of the difficulty of obtaining acceptance on an edit.

Finally, questioners were the second most likely to edit the question. Questioners mostly edit once they have received an answer. This indicates that the editing is done not to induce answers, but more likely to save reputation [4,5]. The fact that questioners edit a lot is encouraging according to Liu [12] since this could help improve the authors' future posts.

The most interesting conclusion is that the contributors by far provide the most edits before the question becomes answered. These users are able to identify value within a question before an answer occurs. This also explains why Correa [5] found more instances of editing in retained closed questions compared to deleted questions. It is not only answers that signal archival value, but that high reputation users often identify this value prior to an answer.

VIII. Discussion and Future Work

The results show that intrinsically motivated editing plays an important role in the editing of unfit questions. Even when there are numerous users who have intrinsic incentives to improve the question, half of the edits come from users with no direct incentive. Editing cannot be completely powered by a competitive system. Competitive editing often happens once the question has received an answer. This would signal that intrinsic editing is also more likely to create value for the question asker and the community. We suggest that system designers facilitate community editing instead of relying solely on users with competitive reasons to edit.

This could be interpreted as a disappointing result. If competitive editing could completely facilitate editing, this would mean that system designers could afford to not worry about the implications of an editing class largely influencing the editing of material. For one, it limits the creation of closed exchanges between direct contributors. This is unfortunate when considering there might be situations in which designers

would prefer to keep the exchanges limited. In addition, there is also the problem of community atrophy, as shown in Wikipedia [9]. An interesting avenue for future research would be to investigate the skill of editing by low reputation users in comparison to higher reputation users. While there might be a demonstrable difference in quality, there also might be more of an influence of ingrained community standards.

The results show that high reputation users choose "good" unfit questions before answers are posted. This finding is useful when considering expediting the deletion of truly unfit questions that have no archival value. These results suggest that capable users quickly recognize and attempt to fix questions with merits; while previous research indicates that they ignore those without merit [5]. This research also means that it is possible to automate the deletion of truly unwanted questions based on the actions and non-actions of trusted users. Finally, we found that the community gives high quality answers to unfit questions. This means that edits from high reputation users could be used to automatically allow unfit questions to stay open and prompt answers.

There are some important limitations to this study. First, this looks at one type of site in a specific setting, specialized Q&A. In addition, we only looked at a subset of questions. In future work, we plan to expand this study to other domains and question types, in order to broaden the understanding of the relationship between motivations and community editing.

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REFERENCES

[1] L. A. Adamic, J. Zhang, E. Bakshy, and M. S. Ackerman. 2008. Knowledge Sharing and Yahoo Answers: Everyone Knows Something. Proc. 17th International Conference on World Wide Web, ACM, 665–674.

[2] B. T. Adler and L. de Alfaro. 2007. A Content-driven Reputation System for the Wikipedia. Proc. 16th International Conference on World Wide Web, ACM, 261–270.

[3] A. Anderson, D. Huttenlocher, J. Kleinberg, and J. Leskovec. 2012. Discovering Value from Community Activity on Focused Question Answering Sites: A Case Study of Stack Overflow. Proc. 18th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, ACM, 850–858.

[4] D. Correa and A. Sureka. 2013. Fit or Unfit : Analysis and Prediction of "Closed Questions" on Stack Overflow. arXiv:1307.7291 [cs]. http://arxiv.org/abs/1307.7291

[5] D. Correa and A. Sureka. 2014. Chaff from the Wheat: Characterization and Modeling of Deleted Questions on Stack Overflow. Proc. 23rd International Conference on World Wide Web, ACM, 631–642.

[6] H. Ford. 2012. Online reputation: it's contextual. Ethnography Matters. Retrieved October 25, 2015 from http://ethnographymatters.net/blog/2012/02/24/online-reputation-its-contextual/

[7] P. Fugelstad, P. Dwyer, J.F. Moses, J. Kim, C. A. Mannino, L. Torveen, and M. Synder. 2012. What Makes Users Rate (Share, Tag, Edit...)?: Predicting Patterns of Participation in Online Communities. Proc. ACM 2012 Conference on Computer Supported Cooperative Work, ACM, 969–978.

[8] A. Furtado, N. Andrade, N. Oliveira, and F. Brasileiro. 2013. Contributor Profiles, Their Dynamics, and Their Importance in Five Q&a Sites. Proc. 2013 Conference on Computer Supported Cooperative Work, ACM, 1237–1252.

[9] A. Halfaker, R. S. Geiger, J. T. Morgan, and J. Riedl. 2013. The Rise and Decline of an Open Collaboration System How Wikipedia's Reaction to Popularity Is Causing Its Decline. American Behavioral Scientist 57, 5: 664–688.

[10] A. Kittur and R. E. Kraut. 2008. Harnessing the Wisdom of Crowds in Wikipedia: Quality Through Coordination. Proc. 2008 ACM Conference on Computer Supported Cooperative Work, ACM, 37–46.

[11] G. Li, H. Zhu, T. Lu, X. Ding, and Ning Gu. 2015. Is It Good to Be Like Wikipedia?: Exploring the Trade-offs of Introducing Collaborative Editing Model to Q&A Sites. Proc. 18th ACM Conference on Computer Supported Cooperative Work & Social Computing, ACM, 1080–1091.

[12] J. Liu and S. Ram. 2011. Who Does What: Collaboration Patterns in the Wikipedia and Their Impact on Article Quality. ACM Trans. Manage. Inf. Syst. 2, 2: 11:1–11:23.

[13] L. Mamykina, B. Manoim, M. Mittal, G. Hripcsak, and B. Hartmann. 2011. Design Lessons from the Fastest Q&a Site in the West. Proc. SIGCHI Conference on Human Factors in Computing Systems, ACM, 2857–2866.

[14] D. Movshovitz-Attias, Y. Movshovitz-Attias, Peter Steenkiste, and Christos Faloutsos. 2013. Analysis of the Reputation System and User Contributions on a Question Answering Website: StackOverflow. Proc. 2013 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining, ACM, 886–893.

[15] F. Ortega, J. M. Gonzalez-Barahona, and G. Robles. 2008. On the Inequality of Contributions to Wikipedia. Proceedings of the Proc. 41st Annual Hawaii International Conference on System Sciences, IEEE Computer Society, 304–.

[16] K. Panciera, A. Halfaker, and L. Terveen. 2009. Wikipedians Are Born, Not Made: A Study of Power Editors on Wikipedia. Proc. ACM 2009 International Conference on Supporting Group Work, ACM, 51–60.

[17] J. Solomon and R. Wash. 2014. Critical Mass of What? Exploring Community Growth in WikiProjects. Proc. Eighth International AAAI Conference on Weblogs and Social Media.

[18] Y. R. Tausczik and J. W. Pennebaker. 2012. Participation in an Online Mathematics Community: Differentiating Motivations to Add. Proc. ACM 2012 Conference on Computer Supported Cooperative Work, ACM, 207–216.

[19] C. Treude, O. Barzilay, and M. Storey. 2011. How Do Programmers Ask and Answer Questions on the Web? Proc. 33rd International Conference on Software Engineering, ACM, 804–807.

[20] H. Zhu, A. Zhang, J. He, R. E. Kraut, and A. Kittur. 2013. Effects of Peer Feedback on Contribution: A Field Experiment in Wikipedia. Proc. SIGCHI Conference on Human Factors in Computing Systems, ACM, 2253–2262.

[21] Why can people edit my posts? How does editing work? - Help Center - Stack Overflow. Retrieved February 11, 2016 from http://stackoverflow.com/help/editing

[22] How does editing work? - Meta Stack Exchange. Retrieved February 11, 2016 from http://meta.stackexchange.com/questions/21788/how-does-editing-work