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Revisiting "The Rise and Decline" in a Population of Peer Production Projects

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ABSTRACT
Do patterns of growth and stabilization found in large peer production systems such as Wikipedia occur in other communities? This study assesses the generalizability of Halfaker et al.'s influential 2013 paper on "The Rise and Decline of an Open Collaboration System." We replicate its tests of several theories related to newcomer retention and norm entrenchment using a dataset of hundreds of active peer production wikis from Wikia. We reproduce the subset of the findings from Halfaker and colleagues that we are able to test, comparing both the estimated signs and magnitudes of our models. Our results support the external validity of Halfaker et al.'s claims that quality control systems may limit the growth of peer production communities by deterring new contributors and that norms tend to become entrenched over time.

ACM Classification Keywords
H.5.3. Information Interfaces and Presentat ion (e.g. HCI): Group and Organization Interfaces – Computer-supported cooperative work

Author Keywords
governance; peer production; online communities; quality control; retention; replication; Wikipedia; wikis

INTRODUCTION
"Peer production" describes a way of organizing collaborative information production in online commons [2]. Over the last decade, peer production has become a central object of HCI research. However, the vast majority of peer production research has studied a small number of the largest communities [3, 6]. An enormous portion of empirical studies of peer production in HCI are of the English-language version of Wikipedia. Unfortunately, HCI's historical focus on novelty has meant that tests of the applicability of findings shown in one setting to other contexts rarely happens [27]. As a result, we know little about the degree to which theory and design claims from studies of Wikipedia apply more broadly.

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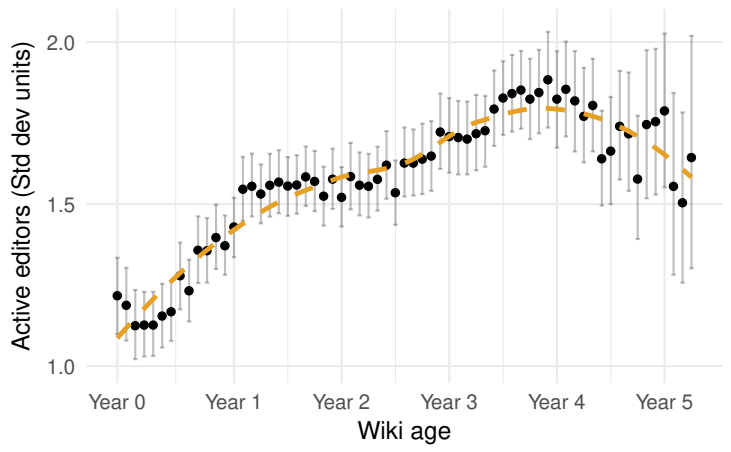

Figure 1. Mean of the number of editors with at least 5 edits per month in standard deviation units for wikis in our sample. The dashed lines represent the results of a LOESS regression. The error bars represent bootstrap 95% confidence intervals. This replicates Figure 2 in RAD.

This paper replicates analysis from Halfaker et al.'s "The Rise and Decline of an Open Collaboration System" [11] (which we abbreviate "RAD") in a sample of 740 active wikis hosted on Wikia.[1] RAD makes one of the most influential and highly cited claims about peer production dynamics, attributing English Wikipedia's decline in contributors since 2007 to entrenchment (RAD uses the term "calcification") within the community as norms and policies become difficult to change, especially for newer users. Our results reproduce most of RAD's findings. Like RAD, we find that the average community in our dataset experiences a "rise and decline," that newcomers are less likely to survive over time, that rejected newcomers are less likely to survive, that editors with longer tenure have more influence over norms, and that norms become entrenched as wikis age. In addition to providing an external validation of RAD's findings, we rule out alternative explanations of RAD's results that emphasize unique attributes of Wikipedia or the timing of the editor decline in that community.

BACKGROUND

Entrenchment in Wikipedia and Peer Production
Active peer production communities often experience a period of rapid growth followed by stabilization [20, 23]. Following

[1]Wikia is a wiki hosting platform where anyone can start a wiki. In 2016, Wikia partially rebranded as "Fandom" to emphasize support for fan communities. See: `https://www.wikia.com/` (`https://perma.cc/TL79-VB57`).

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