

# MISQ Archivist

## The Evolutionary Trajectories of Peer-Produced Artifacts: Group Composition, the Trajectories' Exploration, and the Quality of Artifacts

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### Abstract

Members of an online community peer-produce digital artifacts by negotiating different perspectives and personal knowledge bases. These negotiations are manifested in the temporal evolution of the peer-produced artifact. In this study, we conceptualize the evolution of a digital artifact as a trajectory in a feature space. Our theoretical frame suggests that through negotiations contributors' actions "pull" the trajectory and shape its movement in the feature space. We hypothesize that the type of contributors that work on a focal article influences the extent to which that article's trajectory explores alternative positions within that space, and that the trajectory's exploration is, in turn, associated with the artifact's quality. To test these hypotheses, we analyzed the trajectories of wiki articles drawn from two peer-production communities, Wikipedia and Wikia, tracking the evolution of 242 paired articles for over a decade during which the articles went through 536,745 revisions. We found that the contributors who are the most likely to increase the trajectory's exploration are those that (1) return to work on the focal artifact and (2) are unregistered members in the broader online community. Further, our results show that the trajectory's exploration has a curvilinear association with article quality, indicating that exploration contributes positively to quality, but that the effect is reversed when exploration exceeds a certain level. The insights derived from this study highlight the value of an artifact-centric approach to increasing our understanding of the dynamics underlying peer-production.

**Keywords:** Peer-production, wikis, artifact trajectory, feature space, exploration, group composition, artifact quality