

Visualizing Relative Wiki Contributions

Stan Ruecker, Carlos Fiorentino, Cristina Arias, Matt Bouchard, Veselin Ganev, Ofer Arazy, and Eleni Stroulia

The past few years have seen a proliferation of collaborative writing and editing projects using wikis, which are a class of online tools designed for fast production and publication of digital text. The word “wiki” is in fact from the Hawaiian word for “fast.” The most well-known wiki is arguably Wikipedia, but wikis are also widely used in educational and corporate settings (Majchrzak et al. 2006; Giordano 2007; Arazy et al. forthcoming). In these environments, the generally anonymous nature of wikis can be at odds with the requirement for receiving recognition for work, whether in the form of grades or prestige. Members of our research team have therefore been developing and testing a system for automatically determining relative contribution of wiki authors (Arazy et al. working paper). A later phase has provided a statistical comparison of a set of manual ratings vs. these automated scores, which shows a good correlation with some interesting complexities. While wikis typically produce born-digital text, rather than being implicated in the transition from the digital to the analog, they also provide an environment where new affordances for sense-making can be made available to the author and reader, since the digital text as well as the logging records relating to the collaborative process itself become amenable to analysis and feedback in the form of interactive visualization.

In this paper, we describe the design and pilot study of a set of information glyphs that read the results from the automated analysis of relative contributions and display them in visual form. Our goal is to embed these graphics in wiki pages so that contributors can receive immediate visual feedback about the relative weight of what they have written or the edits they have done. The first glyph (Figure 1) provides a summary display that resembles a circular tagcloud, where the size of the author names or aliases is used to indicate overall score in the ranking.



Figure 1. This summary glyph, which we call Sunword, shows the relative ranking displayed as size of names with a score attached, and the aggregate score of all users in the center. The user controls the sequence of the names around the circle, which can be alphabetical, by date of most recent edit, or by score.

The second information glyph (Figure 2), entitled the CircleMagic, provides more details, and can either be accessed through the Sunword summary or else can be shown on the same page. It divides the contribution into different kinds of actions (additions, deletions, structural changes, proofreading, and work with links) which receive separate scores that contribute to the total rating.

In our pilot study, we interviewed ten university students who had experience in using a collaborative wiki authoring environment, either in the context of a course where they were receiving credit, or else in a research project where their contribution might have consequences in their reputation within the group. We showed them several versions of the glyphs and asked questions intended to see if they could interpret what they were seeing, as well as how they responded to the idea of having relative contribution available.

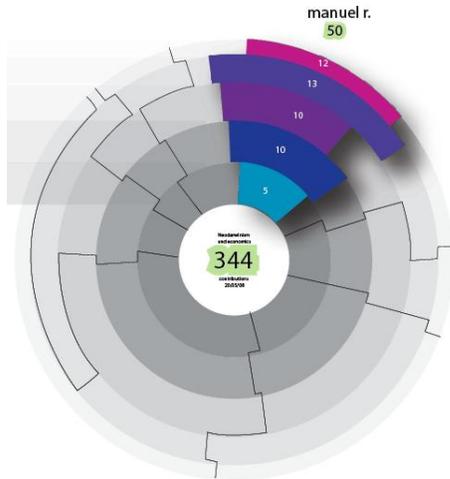


Figure 2. This detailed glyph, which we call CircleMagic, shows the relative ranking displayed as sets of wedges which contain the breakdown of contributions into different types. A third variant provided more details about the other authors in the grey areas.

The results from these interviews provided a number of insights into the design and deployment of these kinds of information glyphs. One issue that emerged involved the public nature of the glyphs, which some participants thought could lead to rivalry but also to motivation, while others wondered if it might be useful to mitigate the degree of anonymity through use of aliases or anonymized names for other users. Another issue centred on the relationship between the detailed visual display and the underlying algorithms, which could lead some users, especially in an educational setting, to begin finding ways to reverse engineer the rating scheme in order to manipulate their score. A third issue had to do with how participants reacted to the two variations of the rating system, which could either rely on the final version of the document as in some way representing the highest quality, or on an aggregate record of all changes to the document.

Each of these discussions has implications for our next iteration of the project, which in its next stage will involve embedding the revised information glyphs in a working wiki project, in order to log user interactions with the visualizations over time.

References

- Arazy O., Stroulia E., and Yau T. Wiki Attribution: A Tool for Estimating the Relative Contributions of Wiki Authors, working paper.
- Arazy O., Gellatly I., Jang S., and Patterson R. Wiki Deployment in Corporate Settings: A Case Study, IEEE Technology and Society, 2008, forthcoming.
- Giordano, R. 2007. An investigation of the use of a wiki to support knowledge exchange in public health. In *Proceedings of the 2007 international ACM Conference on Supporting Group Work*, Sanibel Island, Florida, USA, November 04 - 07, 2007.
- Majchrzak, A., Wagner, C., & Yates, D. (2006). Corporate wiki users: results of a survey. *Proceedings of the international symposium on Wikis* (pp. 99-104). Odense, Denmark: ACM.