



Experimenting with new review methods, open practices, and interactive publications in HCI

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ABSTRACT

Transparent research has been a topic of intense debate in the HCI community over the last decade, and has the potential to improve the quality of the research field as well as promote more efficient use of scientific resources. To experiment with new publishing formats such as interactive articles, open review processes, and stronger transparency requirements, the authors have recently started the independent Journal of Visualization and Interaction (JoVI), a diamond open-access journal (i.e. a purely volunteer-driven effort that charges neither author nor subscription fees) for the HCI and VIS communities.

We propose a SIG meeting at CHI '24 to present the current state of our experimental journal to the wider community, to solicit feedback from interested attendees, and to foster discussion on future publication processes and formats in human-computer interaction research.

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1 BACKGROUND

Many HCI researchers expressed concerns about the quality of research in our field, for example, a lack of methodological rigor [15, 18], questionable statistical practices [9, 13, 32], and a lack of transparency in reporting across quantitative and qualitative research [1, 25, 30]. Cockburn et al. pointed out that Computer Science research is at risk of a replication crisis [12] that affects many other research fields [2, 6, 10, 21]. Transparent research practices can

mitigate this risk by facilitating the independent evaluation and—wherever appropriate—reproduction or replication of claims and results. Furthermore, transparent practices enhance the reusability of research materials within and outside communities, thus making more efficient use of limited scientific resources [4, 11, 17]

However, establishing a consensus on research transparency in HCI is no trivial task because HCI research is an inter- or transdisciplinary field which employs a myriad of methods [23, 24] and produces diverse types of research contributions (see, e.g., the survey of HCI research methods by Wobbrock and Kientz [35]). A single, rigid ruleset on research transparency might be inappropriate—or worse—impede knowledge discovery. For example, forcing all types of research to share data publicly might be a cause for safety and privacy concerns, especially in data from qualitative research. Furthermore, ongoing conversations outside of HCI indicate that some transparency practices could be more generalizable beyond quantitative research. For example, the practice of preregistration is being considered to be beneficial for some qualitative research as well [8, 19, 30]. While the exact best practices for transparency may differ between research methodologies, we believe that the overarching principle of transparency can potentially be applied to fit the wide variety of research which exists within our field.

Despite the benefits of transparent research practices, there are several concerns. On the one hand, early-career researchers worry about an increased workload because of additional documentation requirements, while more senior members of the community—who have built their careers on a research model that did not yet focus on transparency—might fail to notice the additional effort required as well as the potential benefits. Qualitatively-oriented researchers, both within and outside HCI [8], do not see themselves represented in a discussion that often focuses on statistics, data collection, replications, and related topics. Meanwhile, quantitative researchers are reluctant of practices such as preregistration, for fear of being trapped into a fixed data-analysis path, and they are afraid of being criticized for conducting exploratory analyses to make the most of their data [3, 33]. To navigate these trade-offs toward a consensus on research transparency, it is crucial to have conversations that involve HCI researchers from a diverse range of methodologies, application domains, career stages, and institutional backgrounds. A Special Interest Group meeting at CHI has the potential to garner such a diverse audience.

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In the hope to focus the conversation in the SIG into concrete actionable terms, we plan to use experience from the Journal of Visualization and Interaction [7] that was established in 2023 to embrace open and transparent practices in research, reviewing, and publication (see also section 2). In the SIG, we plan to invite JoVI authors, reviewers, and editors to share their experience to start the conversation. We expect outcomes from the SIG to inform the direction of JoVI—which could in the future be fed back to other HCI venues.

2 EXPERIMENTING WITH NEW PUBLISHING PRACTICES AT JOVI

This fundamental principle of transparency has been one of our main motivations for founding JoVI¹, the Journal of Visualization and Interaction [7]. JoVI places a strong emphasis on the transparency of the produced research (i.e., how clearly are the methods and arguments described, how well can future research build on and reuse this work). JoVI also allows for the publication of replication studies, which verify previous results and strengthen the foundational knowledge upon which our field is built. Moreover, JoVI also encourages “registered report” submissions—where research methodologies could be reviewed prior to data collection. This format could reduce publication bias and HARKing [13].

JoVI also aims to be a platform for experimentation with new publication formats and review processes. For example, JoVI allows the publication of interactive articles which run in the browser, offering novel ways of knowledge dissemination beyond static text and images, for example by allowing readers to explore multiple possible interpretations of the results [16]. JoVI also has open reviews [27, 31] which are published along with the article and can optionally be signed by reviewers. Such open reviews not only allow to make all scientific discussions available to the community and the public at large [5, 26, 34], but also enable reviewers to document their own contribution to improving the article and therefore obtain credit for their reviewing work [5, 28]. Such benefits and their implications have already been highlighted within the HCI community [5, 20]. Open reviews might actually contribute to fostering conversations in the way peer-review was originally conceived and implemented [14]. Last but not least, JoVI seeks to publish any research that advances the field without being constrained by artificial deadlines, page limits, formatting [22], or acceptance rates [29].

3 SIG TOPICS

In the SIG, we plan to introduce JoVI to a broader audience beyond the “Transparent Research²” community, which has been instrumental in its inception. We will reflect on our experience with open publication practices in submissions to JoVI to date, including the review of interactive articles using Github and open review of “traditional” PDF articles. We also intend to reach potential new editors and authors and make them aware of alternative publication processes (e.g., registered reports) and formats (e.g., interactive paper).

¹<https://journalovi.org/>

²<https://transparentstatistics.org>

Discussion topics during the SIG may include:

- What are possible reviewing policies that benefit from accountability and transparency of open reviewing while retaining benefits from double-blind process such as avoiding biases?
- What does long-term archival of interactive papers entail? What innovations could facilitate this process in a fair and equitable manner?
- How to address challenges in transparency of software contributions — especially when the software depends on other non-open software? How could transparent practices be implemented and evaluated in relation to the research contribution?
- What is the role of clarity and understandability in transparent reporting? How can we empower authors and reviewers to achieve these qualities despite differences in language proficiency?
- What tools or technical support to lower the barrier of publishing and reading interactive articles?
- How will the planned ACM OPEN policies interact with fostering research transparency?

4 GOALS AND OUTCOMES

Overall, we hope for four main outcomes of our SIG. Firstly, we hope to raise awareness of the range of possibilities in publication and reviewing processes and formats among the SIG participants. Secondly, we hope to connect people who are interested in how HCI research itself can contribute to improve publication and reviewing processes. Thirdly, we hope that the SIG will help further discussions on actionable guidelines for transparency for HCI methodologies. Finally, we hope that lessons learned from a diverse set of HCI researchers will inform the future direction of JoVI.

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REFERENCES

- [1] Lena Fanya Aeschbach, Sebastian A.C. Perrig, Lorena Weder, Klaus Opwis, and Florian Brühlmann. 2021. Transparency in Measurement Reporting: A Systematic Literature Review of CHI PLAY. *Proc. ACM Hum.-Comput. Interact.* 5, CHI PLAY, Article 233 (oct 2021), 21 pages. <https://doi.org/10.1145/3474660>
- [2] Valentin Amrhein, David Trafimow, and Sander Greenland. 2019. Inferential statistics as descriptive statistics: There is no replication crisis if we don't expect replication. *The American Statistician* 73, sup1 (2019), 262–270. <https://doi.org/10.1080/00031305.2018.1543137>
- [3] Lonni Besançon, Anastasia Bezerianos, Pierre Dragicevic, Petra Isenberg, and Yvonne Jansen. 2021. Publishing Visualization Studies as Registered Reports: Expected Benefits and Researchers' Attitudes. In *alt.VIS 2021 workshop at IEEE VIS*. <https://doi.org/10.31219/osf.io/3z7kx>
- [4] Lonni Besançon, Nathan Peiffer-Smadja, Corentin Segalas, Haiting Jiang, Paola Masuzzo, Cooper Smout, Eric Billy, Maxime Deforet, and Clémence Leyrat. 2021. Open science saves lives: lessons from the COVID-19 pandemic. *BMC Medical*

³<https://interactions.acm.org/blog/view/toward-a-consensus-on-research-transparency-for-hci>

- Research Methodology* 21, 1 (2021), 1–18. <https://doi.org/10.1186/s12874-021-01304-y>
- [5] Lonni Besançon, Niklas Rönnerberg, Jonas Löwgren, Jonathan P Tennant, and Matthew Cooper. 2020. Open up: a survey on open and non-anonymized peer reviewing. *Research Integrity and Peer Review* 5, 1 (2020), 1–11. <https://doi.org/10.1186/s41073-020-00094-z>
 - [6] Lonni Besançon, Elisabeth Bik, James Heathers, and Gideon Meyerowitz-Katz. 2022. Correction of scientific literature: Too little, too late! *PLoS Biology* 20, 3 (03 2022), 1–4. <https://doi.org/10.1371/journal.pbio.3001572>
 - [7] Lonni Besançon, Florian Ehtler, Matthew Kay, and Chatchavan Wacharamanatham. 2023. The Journal of Visualization and Interaction: A diamond open-access journal for the InfoVis and HCI communities. *Journal of Visualization and Interaction* 1, 1 (Apr. 2023), 3. <https://doi.org/10.54337/jovi.v1i1.7782>
 - [8] Barbara Bowers. 2019. Pre-registering qualitative research: benefits, unintended consequences, and unanswered questions. *Innovation in Aging* 3, Supplement 1 (11 2019), S400–S400. <https://doi.org/10.1093/geroni/igz038.1483> arXiv:https://academic.oup.com/innovatage/article-pdf/3/Supplement_1/S400/33000776/igz038.1483.pdf
 - [9] Paul Cairns. 2007. HCI... Not as It Should Be: Inferential Statistics in HCI Research. In *Proceedings of the 21st British HCI Group Annual Conference on People and Computers: HCI...but Not as We Know It - Volume 1* (University of Lancaster, United Kingdom) (BCS-HCI '07). BCS Learning & Development Ltd., Swindon, GBR, 195–201.
 - [10] Colin F Camerer, Anna Dreber, Felix Holzmeister, Teck-Hua Ho, Jürgen Huber, Magnus Johannesson, Michael Kirchler, Gideon Nave, Brian A Nosek, Thomas Pfeiffer, et al. 2018. Evaluating the replicability of social science experiments in Nature and Science between 2010 and 2015. *Nature human behaviour* 2, 9 (2018), 637–644. <https://doi.org/10.1038/s41562-018-0399-z>
 - [11] Iain Chalmers and Paul Glasziou. 2009. Avoidable waste in the production and reporting of research evidence. *The Lancet* 374, 9683 (2009), 86–89. [https://doi.org/10.1016/S0140-6736\(09\)60329-9](https://doi.org/10.1016/S0140-6736(09)60329-9)
 - [12] Andy Cockburn, Pierre Dragicevic, Lonni Besançon, and Carl Gutwin. 2020. Threats of a Replication Crisis in Empirical Computer Science. *Commun. ACM* 63, 8 (jul 2020), 70–79. <https://doi.org/10.1145/3360311>
 - [13] Andy Cockburn, Carl Gutwin, and Alan Dix. 2018. HARK No More: On the Preregistration of CHI Experiments. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. Association for Computing Machinery, New York, NY, USA, 1–12. <https://doi.org/10.1145/3173574.3173715>
 - [14] Alex Csizsar. 2016. Peer review: Troubled from the start. *Nature News* 532, 7599 (2016), 306. <https://doi.org/10.1038/532306a>
 - [15] Peter J. Denning. 1980. ACM President's Letter: What is Experimental Computer Science? *Commun. ACM* 23, 10 (oct 1980), 543–544. <https://doi.org/10.1145/359015.359016>
 - [16] Pierre Dragicevic, Yvonne Jansen, Abhraneel Sarma, Matthew Kay, and Fanny Chevalier. 2019. Increasing the Transparency of Research Papers with Explorable Multiverse Analyses. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (Glasgow, Scotland UK) (CHI '19). Association for Computing Machinery, New York, NY, USA, 1–15. <https://doi.org/10.1145/3290605.3300295>
 - [17] Paul P Glasziou, Sharon Sanders, and Tammy Hoffmann. 2020. Waste in covid-19 research. *BMJ* 369 (2020). <https://doi.org/10.1136/bmj.m1847> arXiv:<https://www.bmj.com/content/369/bmj.m1847.full.pdf>
 - [18] Saul Greenberg and Harold W. Thimbleby. 1998. The Weak Science of Human-Computer Interaction. <https://api.semanticscholar.org/CorpusID:94578>
 - [19] Tamarinde L Haven, Timothy M Errington, Kristian Skrede Gleditsch, Leonie van Grootel, Alan M Jacobs, Florian G Kern, Rafael Piñeiro, Fernando Rosenblatt, and Lidwine B Mokkink. 2020. Preregistering qualitative research: A Delphi study. *International Journal of Qualitative Methods* 19 (2020), 1609406920976417. <https://doi.org/10.1177/1609406920976417>
 - [20] Yvonne Jansen, Kasper Hornbaek, and Pierre Dragicevic. 2016. What Did Authors Value in the CHI'16 Reviews They Received? *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems*, 596–608 pages. <https://doi.org/10.1145/2851581.2892576>
 - [21] Kaitlin Kimmel, Meghan L Avolio, and Paul J Ferraro. 2023. Empirical evidence of widespread exaggeration bias and selective reporting in ecology. *Nature ecology & evolution* 7, 9 (2023), 1525–1536. <https://doi.org/10.1038/s41559-023-02144-3>
 - [22] Allana G. LeBlanc, Joel D. Barnes, Travis J. Saunders, Mark S. Tremblay, and Jean-Philippe Chaput. 2019. Scientific sinkhole: The pernicious price of formatting. *PLoS ONE* 14, 9 (09 2019), 1–7. <https://doi.org/10.1371/journal.pone.0223116>
 - [23] Joseph E McGrath. 1995. Methodology matters: Doing research in the behavioral and social sciences. In *Readings in Human-Computer Interaction*. Elsevier, 152–169.
 - [24] Judith S Olson and Wendy A Kellogg. 2014. *Ways of Knowing in HCI*. Vol. 2. Springer.
 - [25] Jessica Pater, Amanda Coupe, Rachel Pfafman, Chanda Phelan, Tammy Toscos, and Maia Jacobs. 2021. Standardizing Reporting of Participant Compensation in HCI: A Systematic Literature Review and Recommendations for the Field (CHI '21). Association for Computing Machinery, New York, NY, USA, Article 141, 16 pages. <https://doi.org/10.1145/3411764.3445734>
 - [26] Boas Pucker, Hanna Schilbert, and Sina Franziska Schumacher. 2018. Integrating molecular biology and bioinformatics education. *Preprints 2018* (2018). <https://doi.org/10.20944/preprints201811.0183.v1>
 - [27] Tony Ross-Hellauer. 2017. What is open peer review? A systematic review. *F1000Research* 6 (2017). <https://doi.org/10.12688/f1000research.11369.2>
 - [28] Flaminio Squazzoni, Francisco Grimaldo, and Ana Marušić. 2017. Publishing: Journals could share peer-review data. *Nature* 546 (06 2017), 352. <https://doi.org/10.1038/546352a>
 - [29] Cassidy R Sugimoto, Vincent Larivière, Chaoqun Ni, and Blaise Cronin. 2013. Journal acceptance rates: a cross-disciplinary analysis of variability and relationships with journal measures. *Journal of Informetrics* 7, 4 (2013), 897–906. <https://doi.org/10.1016/j.joi.2013.08.007>
 - [30] Poorna Talkad Sukumar, Ignacio Avellino, Christian Remy, Michael A. DeVito, Tawanna R. Dillahunt, Joanna McGrenere, and Max L. Wilson. 2020. Transparency in Qualitative Research: Increasing Fairness in the CHI Review Process. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems (CHI EA '20)*. Association for Computing Machinery, New York, NY, USA, 1–6. <https://doi.org/10.1145/3334480.3381066>
 - [31] Jonathan P Tennant. 2018. The state of the art in peer review. *FEMS Microbiology Letters* 365, 19 (2018), fny204. <https://doi.org/10.1093/femsle/fny204>
 - [32] Jan B. Vornhagen, April Tyack, and Elisa D. Mekler. 2020. Statistical Significance Testing at CHI PLAY: Challenges and Opportunities for More Transparency. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (Virtual Event, Canada) (CHI PLAY '20). Association for Computing Machinery, New York, NY, USA, 4–18. <https://doi.org/10.1145/3410404.3414229>
 - [33] Chat Wacharamanatham, Lukas Eisenring, Steve Haroz, and Florian Ehtler. 2020. Transparency of CHI Research Artifacts: Results of a Self-Reported Survey. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (Honolulu, HI, USA) (CHI '20). Association for Computing Machinery, New York, NY, USA, 1–14. <https://doi.org/10.1145/3313831.3376448>
 - [34] Richard Walker and Pascal Rocha da Silva. 2015. Emerging trends in peer review—a survey. *Frontiers in Neuroscience* 9 (2015), 169. <https://doi.org/10.3389/fnins.2015.00169>
 - [35] Jacob O. Wobbrock and Julie A. Kientz. 2016. Research contributions in human-computer interaction. *Interactions* 23, 3 (April 2016), 38–44. <https://doi.org/10.1145/2907069>

A SUPPLEMENTARY MATERIAL

A.1 Community

Our target group is members of the CHI community who are interested in the future of reviewing and publishing, with a focus on transparent research. A number of people on JoVI organizing committee, advisory board, and editors are already in the CHI community (see JoVI people page). Beyond the CHI community, we also organized a Meetup at IEEE VIS 2023 about JoVI, which was well-attended and received positive responses.

A.2 Attendee background

We do not assume any particular background from attendees, except general familiarity with the academic publishing process. However, to ensure a common understanding for all attendees, we will provide a short introduction to the publishing system in the first part of the SIG.

A.3 Approach & Schedule

The main part of the SIG will be discussion in breakout groups, which is grounded by a short plenary presentation.

We plan to organize the SIG in four parts:

- Part 1 Introduction (15 min). Organizers will give a brief presentation about transparent research in general, including an introduction to the motivation behind JoVI, its organizing structure, and its mission. We will briefly introduce how the article types unique to JoVI fit within the human-computer interaction community (e.g., registered reports and interactive articles). We will also invite recent authors and editors to share their experiences and lessons learned so far.
- Part 2 Breakout discussion (30 min). We will split into breakout groups around shared topics of interest as mentioned in section 3. Journal organizers will be present in each group and answer more detailed questions; e.g. if a group is interested in the experimental track for creating interactive articles, a journal organizer will join that group and introduce folks to the process (similarly for other topics of potential interest; e.g. registered reports). Participants will brainstorm research challenges and future directions for the journal.
- Part 3 Report back (15 min). Each group will report back about their discussion.
- Part 4 Summary & Closing remarks (15 min). We will summarize the main results from the breakout groups, and briefly discuss future directions in the plenary.

Parts 1 and 4 will be synchronous hybrid: presenters will be on-site as well as online. The breakout discussion (part 2) will be organized as on-site groups and online groups separately to facilitate equity in the communication medium. We will strive to have part 3 be a synchronous hybrid, but we also have a fallback plan of separating online and on-site. Nevertheless, there will be

JoVI organizers present in both. We will provide Miro boards for all groups, to facilitate later collection and merging of results.

A.4 Advertising

We will directly contact people who already have organizing roles in JoVI, or have submitted articles, and advertise our SIG on related mailing lists as well as on social media channels (particularly Twitter/X and Mastodon).

A.5 Primary Contact

The primary contact for this SIG proposal is Matthew Kay <mjskay@northwestern.edu>.