

Beyond Papers: Rethinking Research Contributions and Knowledge Transfer in HCI

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1. Introduction

As human-computer interaction (HCI) continues to evolve, the community has recognized the need to better align research methodologies to reach the field's full potential. Many contemporary HCI studies focus narrowly on specific contexts, which can limit the comparability and integration of findings across studies. Addressing this fragmentation would significantly enhance the field's capacity for deeper insights and more broadly impactful contributions. Moreover, HCI researchers have highlighted the importance of systematic research data management (RDM) and reuse in strengthening the field, emphasizing the need for incentives and rewards that encourage these practices [1].

This opinion piece aims to contribute directly to CHI's inaugural meta-research workshop by highlighting opportunities for discussion on RDM and software reuse. Specifically, we seek to (1) re-examine what constitutes meaningful contributions to the field, particularly given the rapid adoption of Generative AI, and (2) propose approaches to foster the reuse of research data and software through continuously evolving repositories and standardized research tools.

2. States of the art

A researcher's ability to draw from past research contributions is an essential aspect of moving a discipline forward. With extensive related work sections, CHI submissions have created a lineage of findings-supported ideas. However, as we learn more and more about interaction in the real world[2] and the impact that context has on our findings, we should investigate how such information might be included in the way we explore past research. While we share measurements like questionnaire results, the volatile nature of the artifacts we build, the participants we recruit, and the context in which we conduct our experiments make attempts at a broader comparison a futile endeavor. Often, we learn very little about the artifacts or how the data was collected and processed.

2.1. Research Data Management

Research Data Management (RDM) is a concept developed to address this shortcoming. It provides structured practices for systematically collecting, documenting, archiving, and sharing research data and related artifacts. Guided by the FAIR principles—ensuring data is Findable, Accessible, Interoperable, and Reusable—Research Data Management aims to standardize metadata, establish sustainable archival infrastructures, and incentivize data sharing to facilitate meaningful reuse across the scientific community [3].

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In a previous contribution, we discussed the specific challenges that play a role in HCI when trying to deploy RDM [4]. Similarly, Wacharamanatham et al. [5] highlighted many challenges related to the various data types, artifacts, and policies typically used in HCI. The following three key areas we previously discussed:

2.1.1. Artifacts in HCI Research

HCI research frequently produces both software and physical artifacts, such as interactive controllers, interfaces, and hardware prototypes. Unlike purely software-based disciplines, these tangible artifacts require detailed documentation—including design files, schematics, mechanical and electronic specifications, and microcontroller code—to enable reuse and replication. The absence of standardized archival practices means valuable insights embedded in these artifacts and their creation are often lost, limiting cumulative advancement within the field.

2.1.2. Human Participant Data

A significant portion of HCI research involves human participants, generating sensitive data such as behavioral recordings (e.g., [6, 7]), questionnaire responses (e.g., [8]), sensor logs (e.g., [9]), and physiological or location data.

Ensuring participant privacy, especially in compliance with regulations like GDPR, introduces complexity, as data management must balance long-term archiving against privacy obligations. While regulations such as GDPR permit data archiving for research purposes, uncertainty often leads researchers to avoid collecting or prematurely deleting potentially valuable data, complicating effective long-term Research Data Management.

2.1.3. Context Information

HCI studies are highly context-sensitive, dependent on environmental, cultural, and temporal conditions. Capturing this context comprehensively—through ethnographic-style documentation, imagery, or metadata—is critical but challenging. The absence of widely accepted practices for documenting context restricts meaningful comparisons across studies. It diminishes the potential for data reuse, significantly constraining the development of generalized insights and broad theoretical frameworks within HCI.

The more comprehensively these elements—artifacts, participant data, and contextual information—are documented, the more effectively future research can build upon and meaningfully compare to previous contributions.

2.2. HCI Research Software

Research software developed in HCI, such as data collection tools, simulation environments, and statistical analysis scripts, is integral to the execution and reproducibility of studies. Although there is a growing trend toward publishing research software alongside paper submissions, significant portions of these valuable resources remain inaccessible, limiting their reuse and verification potential.

Furthermore, limited reuse of research software increases the likelihood of undetected errors or hidden bugs influencing study outcomes. When scripts and analysis tools are repeatedly created from scratch, any potential bugs remain undetected, unmeasured, and unaddressed, undermining the reliability of research findings. Reusing and openly sharing these tools would enable the community to collectively identify, address, and prevent such issues, ultimately increasing the robustness and trustworthiness of HCI research.

All of these points highlight a core issue of knowledge transfer. If we don't clearly document, archive, and openly share our data, tools, and contextual information, every new generation of HCI researchers will be forced to solve problems we've already tackled repeatedly. Better knowledge transfer would help us spend less time reinventing methods and more time exploring genuinely new ideas.

3. Open Questions for the Workshop

I resonate with the following three areas as particularly valuable topics for workshop discussion:

3.1. Exploring Alternative Forms of Publication

Current academic recognition in HCI primarily centers around CHI papers. While formats such as pictorials (TEI, DIS) and demos have somewhat broadened the publishing landscape, substantial room for growth remains. Research outputs emphasized by the RDM framework—such as reusable datasets, software, or detailed protocols—often remain secondary attachments rather than central contributions. Key questions include:

- What additional publication forms could we establish to enable more effective archiving, discovery, and reuse of research artifacts?
- What would these alternative formats provide to help with cumulative knowledge-building within HCI?

3.2. Refining the Incentive Structure in HCI

Recognizing that researchers are encouraged to align their efforts with career-focused incentives, the current system, where advancement often hinges on publishing CHI papers, can inadvertently limit innovation and discourage unconventional contributions. To foster broader, more impactful research, we might ask:

- How can we create incentives that elevate other contributions, such as artifacts and open-source software, to contribute alongside traditional papers?
- How do institutional success metrics shape researchers' incentives, and should we advocate for alternative evaluation criteria?
- Could dedicated tracks or repositories form incentives to build and maintain HCI research software?

3.3. Encouraging Use and Extension of Research Software Standards

Given the importance of enabling effective knowledge transfer and reducing redundancy in research efforts, should we more actively support the reuse and continuous development of shared research software within CHI? Specifically:

- What community-driven actions can we undertake to encourage a wider adoption and extension of existing research tools and standards?

We have gathered initial experience in sustaining an open research tool through the StrangeLand simulator¹, where we provide ongoing support to a diverse user base across multiple institutions. While this effort has demonstrated the value of community-driven research software, it is also resource-intensive and requires continuous engagement. Exploring sustainable models for such initiatives remains an open challenge.

4. Conclusion

As HCI matures, the field must move beyond fragmented contributions and develop stronger mechanisms for knowledge transfer, research reuse, and long-term impact. Addressing these challenges requires rethinking how we define valuable contributions, refining the incentive structures that shape academic careers, and fostering sustainable practices for sharing research artifacts and software. Engaging in these discussions can help shape a more cohesive and forward-looking research community.

¹<https://github.com/strange-land/>

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