Exploring distributed co-listening experiences through tempo-based interactions with Queue Player

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Abstract

As music streaming libraries continually grow, finding meaningful ways to revisit, reflect on, and share these collections over time—both individually and socially—becomes increasingly important. *Queue Player* is a network of four domestic music players that allow for synchronous distributed co-listening across geographical distance and for the long-term exploration of the collective music listening histories among four close friends. Queue Player leverages tempo metadata (i.e., beats per minute) as the cornerstone of its interaction design, enabling users to explore an ever-changing queue of songs from their collective pasts shaped by tempos steadily tapped out on their respective device. While the four Queue Players exist in real, highly finished physical form, this video offers an artistic explanation and user scenario of their outer and inner workings, drawing on stop motion, collage, and zine aesthetics to emphasize the reflective, temporal, material and subtly evolving conceptual qualities shaping the design of this system.

CCS Concepts

• **Human-centered computing**; • **Interaction Design; Interaction design theory, concepts and paradigms.**;

Keywords

Digital Music, Co-Listening, Slow Technology, Research through Design

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1 Overview of Queue Player Project and Video

Today, music listening practices are often mediated by data-driven technologies and services. As an example, users of the music streaming service Spotify listen to over 165 billion combined hours of music worldwide annually [9]. These practices lead to the generation of vast archives of personal and shared data that precisely log music listening histories, which raise new challenges and opportunities for the HCI community. As music streaming libraries continually grow, finding meaningful ways to revisit, reflect on, and share these collections over time—both individually and socially—becomes increasingly important.

Figure 1: Top: A user tapping a tempo on Queue Player; The four finished Queue Players; Bottom: Dynamic illustrations of explaining the interaction design and system functionality via stop-motion, collage, & zine aesthetics.[1]

Motivated by these issues and to ground our thinking in this emerging space, we designed *Queue Player*, a music player that mobilizes tempo metadata (i.e., beats per minute) as the cornerstone of its interaction design to support open-ended experiences among a group of co-listeners [4]. We created four Queue Players which materialize the combined music listening histories of four close friends living apart, into an ever-changing 'queue', enabling them to traverse, experience, and live with songs from their collective pasts over distance. The Queue Players act as a network and surface users' songs from a shared music archive according to steady tempos tapped out on their respective device. Once a tempo is tapped, songs populate the 'queue' at that specific tempo and distinct colors indicate whose listening history the song came from. If left 'untouched', songs continue to play at that tempo. Any users can interject new songs at different tempos in the queue, but each song must play out in its entirety before the queue advances. Additionally, users can only add a new tempo if they don't already have one waiting in the queue. The Queue Player project explores how

[1]The Queue Player video is available to be viewed here: https://vimeo.com/1062909247

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the physical embodiment of people's personal listening history data, when combined with others', can facilitate rich experiences of co-listening over distance. We also investigate how the combination of people's personal histories for mutual exploration might lead to opportunities for interpersonal connections and group reflections among listeners.

While the four networked Queue Players exist as highly finished, robust artifacts (see Figure 1.), as a Research through Design (RtD) [7] project, its primary mode of distribution is through a highly textual, static research paper. Inspired by recent work advocating for creation of alternative representations of RtD projects [3, 5, 6], our video offers an extension of the Queue Players through a dynamic artistic explanation and user scenario of the outer and inner workings of them, drawing on stop motion, collage and zine aesthetics [1, 2, 8]. Taken together, these artistic techniques and aesthetics aim to emphasize the reflective, slow, and subtly evolving conceptual qualities shaping our design of Queue Player. Our work contributes a modest case illustrating how video can operate as a medium that is both explanatory and creatively expressive in understanding and distributing artifacts from an RtD project. The short video embodies key qualities of reflection, temporality, social connection and materiality – core to the conceptual framing of Queue Player – while opening the project up in a playful and creative way, potentially to an audience beyond what can be served by a small batch of functioning systems.

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References

[1] Samuel Barnett, Nico Brand, William Odom, and Kaitlyn Andres. 2022. Exploring Data Intermediaries as Infrastructure for a Human-Centric Data Economy: Speculations & Critical Reflections. In Nordic Human-Computer Interaction Conference, 1–20. https://doi.org/10.1145/3546155.3547286

[2] Branden Wayne Joseph, Drew Sawyer, Gwen Allen, Brooklyn Museum, and Vancouver Art Gallery (eds.). 2023. Copy machine manifestos: artists who make zines. Phaidon, London New York, NY.

[3] William Odom, Samuel Barnett, Nico Brand, Minyoung Yoo, Henry Lin, and Jordan White. 2024. Negotiating Conceptual and Practical Frictions in Making the Capra Short Film: Extending a Research through Design Artifact with Video. In Designing Interactive Systems Conference, 2866–2881. https://doi.org/10.1145/3643834.3660739

[4] Samann Pinder, William Odom, MinYoung Yoo, Ayush Misra, Henry Lin, Carman Neustaedter, and Samuel Barnett. 2025. Queue Player: Investigating Distributed Co-Listening Experiences for Social Connection across Space, Time, and Tempo. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. https://doi.org/10.1145/3706598.3714293

[5] Minyoung Yoo, Arne Berger, Joseph Lindley, David Philip Green, Yana Boeva, Iohanna Nicenboim, and William Odom. 2023. Beyond Academic Publication: Alternative Outcomes of HCI Research. In Designing Interactive Systems Conference, 114–116. https://doi.org/10.1145/3563703.3591458

[6] MinYoung Yoo, Sophia Ppali, William Odom, Yumeng Zhuang, Kritika Kritika, Wyatt Olson, Catherine Wiezorek, Heidi Biggs, Arne Berger, Audrey Desjardins, Ron Wakkary, and Katherine Ringland. 2025. Translating HCI Research to Broader Audiences: Motivation, Inspiration, and Critical Factors on Alternative Research Outcomes. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. https://doi.org/10.1145/3706598.3713884

[7] John Zimmerman, Jodi Forlizzi, and Shelley Evenson. 2007. Research through design as a method for interaction design research in HCI. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, 493–502. https://doi.org/10.1145/1240624.1240704

[8] 2018. How to edit like Dan Mace. Retrieved January 25, 2025 from https://www.youtube.com/watch?v$=$J64YekAS_8A

[9] Spotify - Financials. Retrieved August 29, 2024 from https://investors.spotify.com/financials/default.aspx#quarterly-results