

# Timbre Tools for the Digital Instrument Maker

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Timbre is conspicuously **absent** from the digital luthier's toolbox.

Making digital musical instruments (DMIs) is still based on concepts from early analog and digital synthesis, and relies on classical tools like oscilloscopes and signal generators [1].

Such tools value technical knowledge for *producing sounds* (e.g., pitch, rhythm) over perceptual knowledge for *designing timbres*.

This effectively marginalises sonic cultures where timbre-based practice predominates or is equally important (e.g., didgeridoo, tabla, techno) from partaking in the music maker movement.

We seek to **shift** this perspective of DMI design to a more sound-based, **timbre-first practice**.

**Our long term goal** is to investigate how timbre can play an active role in designing sound synthesis and AI tools which empower everyone to partake in DMI making.

**Learn by making:** through building instruments using flexible, open-ended tools for timbral design, amongst other tools, makers and artists can **learn** about sound technologies, **become more aware** of timbre phenomena, and **craft** compelling new instruments.

## What is a Timbre Tool?

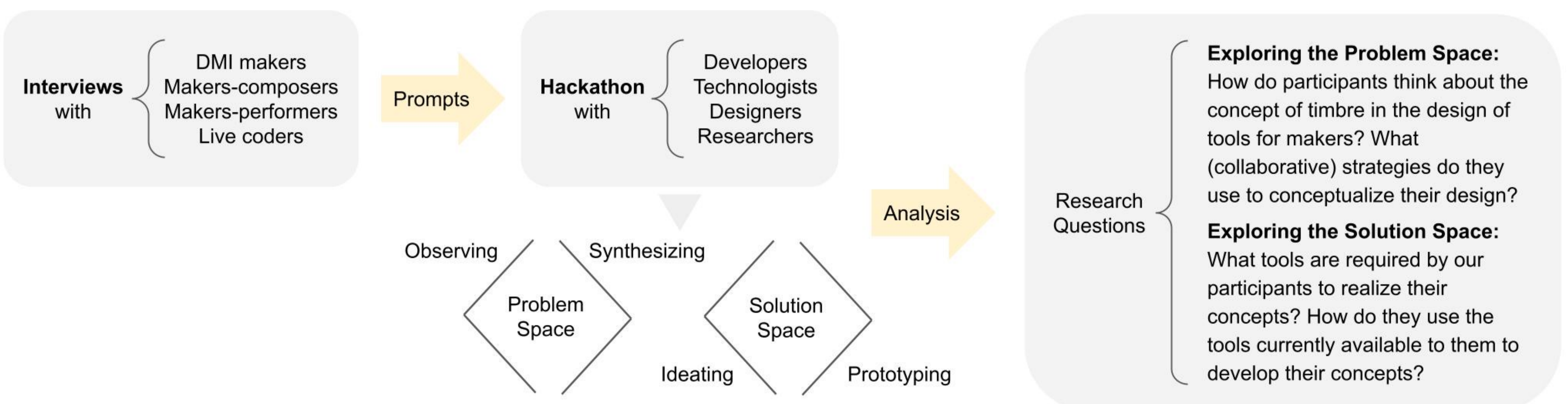
It supports the timbral design of DMIs. It is a tool **for makers**, not for musicians (who are not makers) and audiences.

It can be about **sensor** design and fabrication, **interfacing** between the physical and digital worlds, or enabling expressive **control** at multiple levels of meaningful abstraction.

**Machine learning and AI** provide interesting opportunities to interface with sound via timbre [2] and can be a point of entry for creating a Timbre Tool.

## An exploratory design activity based on a 48-hour **hackathon**

Hackathons are time-bounded, low-pressure collaborative events that present themselves as **observatories of design thinking** [3].



We will borrow from methods of **rapid ethnography** [4] (e.g., self-reports, workbooks) to observe the design thinking process of participants, drawing on models of **divergent and convergent thinking**, and the notion of **problem and solution space** [3], using the answers to the above questions to inform our future work.

## References

- [1] C. Saitis, M. F. Torshizi, V. Preniqi, B. M. Del Sette, and G. Fazekas, "When NIME and ISMIR Talk Timbre," in Proceedings of Timbre 2023, 3rd International Conference on Timbre, 2023, pp. 125–129.
- [2] <https://github.com/rconstanzo/SP-tools/releases/tag/v0.9>
- [3] K. Gama, G. Valença, P. Alessio, R. Formiga, A. Neves, and N. Lacerda, "The Developers' Design Thinking Toolbox in Hackathons: A Study on the Recurring Design Methods in Software Development Marathons," International Journal of Human-Computer Interaction, vol. 39, 2023, pp. 2269–2291.
- [4] D. R. Millen, "Rapid ethnography: time deepening strategies for HCI field research," in Proceedings of the 3rd Conference on Designing Interactive Systems (DIS), 2000, pp. 280–286.



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