

竹脑– *zhu nao*

IURII KUZMIN, The Hong Kong University of Science And Technology, Hong Kong SAR

ZHENGYANG MA, The Hong Kong University of Science And Technology, Hong Kong SAR

Additional Key Words and Phrases: bamboo, environment improvisation, cosmotechnics

ACM Reference Format:

Iurii Kuzmin and Zhengyang Ma. 2024. 竹脑– *zhu nao*. 1, 1 (September 2024), 3 pages.

1 PROGRAM NOTES

This performance presents 竹脑– *zhu nao* (meaning bamboo brain or bamboo mind in Mandarin), a new instrument inspired by bamboo craftsmanship as a common technical practice in South East Asia and the articulation of the symbolic dimension of the material. Concurrently, it is an exploration of the concept of environment improvisation – an approach to free improvisation grounded in aesthetics and philosophy of *shanshui* (山水) – traditional Chinese landscape painting and the associated way of forming relations with environment and locality. This allows us to frame these reference points: bamboo craftsmanship and environment improvisation as cosmotechnical activities (i.e. technical activities that reconcile cosmic and moral orders), following the Hong Kong philosopher Yuk Hui’s proposition to abandon the one-sided narrative of Western technological modernity in favor of the pluralist notion of technodiversity[1].

2 PROJECT DESCRIPTION

With this performance, we aim to explore the concept of “environment improvisation” developed by the Chinese sound artist Li Jianhong[5]. Widely acknowledged as one of the underground pioneers of improvised music in China, Li’s explorations of free improvisation as a means of retaining memories of familiar places and sounds of everyday life drove him to incorporate extra-musical influences into his practice, one of them being the philosophy of *shanshui* commonly associated with Chinese landscape painting.

According to Wang, *shanshui* exemplifies reciprocity between aesthetic, cosmic and moral qualities and thus can be considered a form of cosmotechnics as described by Hui[2, 5]. From its simple initial goal to “make music with the rain” while weathering heavy rainstorm in the Faxi temple in Hangzhou[4], Li’s practice of environment improvisation developed into a consistent artistic strategy drawing on the intimacy of personal experience and memory while tuning into the “tacit resonance” (*moqi* 默契) with the environment[5].

zhu nao is a new instrument designed specifically to explore this form of music making and is discussed in-depth in a paper presented at NIME2024[3]. Combining expressive gestural input (flexing bamboo strips) with environmental data (ground moisture and WiFi signal strength) and simple yet timbrally rich synthesis technique (filtered white noise) allows the performer to establish rapport with a given environment.

Licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0). Copyright remains with the author(s).

In addition to the gestural input enabled by the natural flexibility of bamboo, environmental stimuli form the training data for the neural network that retains "memories" of the past performances and modulates the parameters of audio synthesis. The use of AI in this performance is intended to be subtle to an almost imperceptible level.

With this project, we propose to consider NIME as a possible form of cosmotechnics drawing on multiple technological lineages that emerged from different cultures and engender their respective cosmologies.



Fig. 1. Left: *zhu nao*. Right: *zhu nao* in concert

3 PERFORMANCE NOTES

The instrument will be transported to the venue and assembled on the spot by the first author. A stool or a chair without armrests is required for the performance. The performance is better suited for open air environments with access to open soil (the Nijverheid would be a good choice of venue). If not possible, a ceramic pot with locally sourced soil will be used (pot provided by the author). Access to the wireless network is preferable, but the author will set up a local network if needed. All sounds are produced by the laptop (one 3.5mm TRS stereo jack or two 6.35mm TS mono jacks) connected to the venue's PA system. The venue is expected to provide extension cords (euro plug) and 3.5mm or 6.35mm audio jack cables to the FOH mixer.

4 MEDIA LINKS

- Video: <https://vimeo.com/913265461?share=copy>

ACKNOWLEDGMENTS

The authors would like to thank Clarence Cheung for his contribution at the initial design stage, Raul Masu for his guidance, and Yao Dajuin for his encouragement to showcase the instrument to a larger audience.

ETHICAL STANDARDS

All photo, video and audio documentation was made by the authors, no unauthorized assets were used while working on the projects. All relevant sources were cited. The instrument is built around the ESP-32 micro-controller, programmed with the open source Arduino IDE. All sounds were created in freeware Pure Data (vanilla distribution). The instrument

was built using renewable materials (locally sourced bamboo). All electronic components and a single 3D printed part were transferred to each successive design iteration to minimize waste. No disposable batteries were used while working on this project.

REFERENCES

- [1] Yuk Hui. 2019. *The question concerning technology in China: An essay in cosmotechnics*. Vol. 3. mit Press.
- [2] Yuk Hui. 2021. *Art and cosmotechnics*. U of Minnesota Press.
- [3] Iurii Kuzmin, Zhengyang Ma, and Raul Masu. 2024. Toward Musical Cosmotechnics: the case of zhu nao 竹脑- a bamboo based instrument . , Article 85 (September 2024), 9 pages. <https://doi.org/10.5281/zenodo.13904957>
- [4] Jing Wang. 2020. Shanshui-thought in Experimental Music Practices: China and beyond. *Organised Sound* 25, 3 (2020), 292–301. <https://doi.org/10.1017/S1355771820000242>
- [5] Jing Wang. 2021. *Half Sound, Half Philosophy: Aesthetics, Politics, and History of China's Sound Art*. Bloomsbury Publishing USA.