Expanding the scope of experimental archaeology using the Perception-Process-Product analytical framework

Cheng Liu*

2022-12-03

Abstract

This paper presents the Perception-Process-Product analytical framework to expand the scope of experimental archaeology. ¶

¶ **Keywords:** Experimental archaeology; Ethological analysis; Ethnographical analysis; Collaborative knowledge production

Contents

1 Introduction

This paper presents the Perception-Process-Product analytical framework to expand the scope of experimental archaeology (**Figure** 1). Traditionally, experimental archaeology focuses on generating knowledge regarding the causal mechanism at behavioral level to explain the variation of material culture (Eren et al., 2016). In the past decades, actualistical experiments becomes more common (Liu & Stout, 2022).

*Department of Anthropology, Emory University, Atlanta, GA, USA; raylc1996@outlook.com

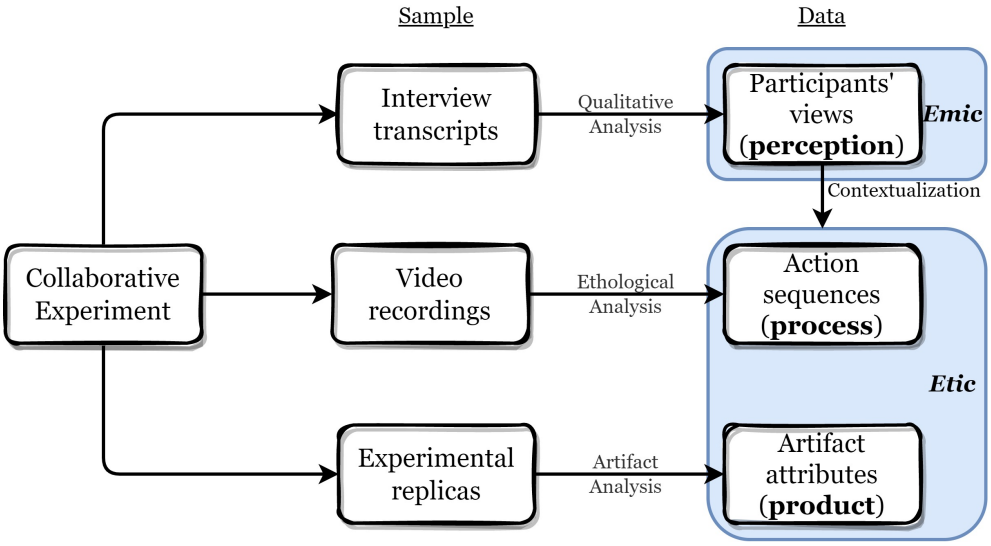

Figure 1: The conceptual diagram of the Perception-Process-Product analytical framework.

Ethological approaches has been first systematically developed and applied in the archaeological research by Haidle (M. Haidle, 2010; M. N. Haidle, 2009; Lombard & Haidle, 2012), essentially representing an abstracting process of a series of behavioral sequences achieving a similar goal. This approach is innovative yet limited by the curse of expertise (Hinds, 1999). Novices has a different sets of perception on the causal structure of how certain behaviors will modify the raw materials, leading to over-imitation. Here we used the ethogram, or the action grammar, developed by (Stout et al., 2021) as an example. Other coding scheme also exist such as (Mahaney, 2014).

2 Many places, many voices

The PPP analytical framework inherently advocate an collaborative mode of knowledge production (Ranhorn et al., 2020).

References

Eren, M. I., Lycett, S. J., Patten, R. J., Buchanan, B., Pargeter, J., & O'Brien, M. J. (2016). Test, model, and method validation: The role of experimental stone artifact replication in hypothesis-driven archaeology. *Ethnoarchaeology: Journal of Archaeological, Ethnographic and Experimental Studies*, *8*(2), 103–136. https://doi.org/10.1080/19442890.2016.1213972

Haidle, M. (2010). Working-memory capacity and the evolution of modern cognitive potential: Implications from animal and early human tool use. *Current Anthropology*, *51*(S1), S149–S166. https://doi.org/10.1086/650295

Haidle, M. N. (2009). *How to think a simple spear* (S. A. de Beaune, F. L. Coolidge, & T. Wynn, Eds.; p. 5773). Cambridge University Press.

Hinds, P. J. (1999). The curse of expertise: The effects of expertise and debiasing methods on prediction of novice performance. *Journal of Experimental Psychology: Applied*, *5*, 205–221. https://doi.org/10.1037/1076-898X.5.2.205

Liu, C., & Stout, D. (2022). Inferring cultural reproduction from lithic data: A critical review. *Evolutionary anthropology*. https://doi.org/10.1002/evan.21964

Lombard, M., & Haidle, M. N. (2012). Thinking a Bow-and-arrow Set: Cognitive Implications of Middle Stone Age Bow and Stone-tipped Arrow Technology. *Cambridge Archaeological Journal*, *22*(2), 237–264. https://doi.org/10.1017/S095977431200025X

Mahaney, R. A. (2014). Exploring the complexity and structure of acheulean stoneknapping in relation to natural language. *PaleoAnthropology*, *2014*, 586606. https://doi.org/10.4207/PA.2014.ART90

Ranhorn, K. L., Pargeter, J., & Premo, L. S. (2020). Investigating the evolution of human social learning through collaborative experimental archaeology. *Evolutionary Anthropology: Issues, News, and Reviews*, *29*(2), 53–55. https://doi.org/10.1002/evan.21823

Stout, D., Chaminade, T., Apel, J., Shafti, A., & Faisal, A. A. (2021). The measurement, evolution, and neural representation of action grammars of human behavior. *Scientific Reports*, *11*(1). https://doi.org/10.1038/s41598-021-92992-5