



# Unbiased Cultural Transmission in Time-Averaged Archaeological Assemblages

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Unbiased models are foundational in the archaeological study of cultural transmission. Applications have assumed that archaeological data represent synchronic samples, despite the accretional nature of the archaeological record. I document the circumstances under which time-averaging alters the distribution of model predictions. Richness is inflated in long-duration assemblages, and evenness is "flattened" compared to unaveraged samples. Tests of neutrality, employed to differentiate biased and unbiased models, suffer serious problems with Type I error under time-averaging. Finally, the time-scale over which time-averaging alters predictions is determined by the mean trait lifetime, providing a way to evaluate the impact of these effects upon archaeological samples.

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