Probability matching as a cognitive basis of cultural drift

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Abstract: In the field of cultural evolution, cognitive agents are either seen as perfect imitators who reproduce cultural variants veridically (e.g. Boyd & Richerson 1985) or as imperfect imitators who transform the variants as they replicate them (e.g. Sperber 1996). In this poster, I explain how the transformative view of cognition applies to not only to the generation of variants, but also to the way we learn frequency distributions. Probability matching is a widely-observed human behavior where learners reproduce a frequency distribution over variants with a small amount of error and is equivalent to Wright-Fisher drift when the variance in error is binomial/multinomial. However, humans and learning algorithms can produce error distributions that are non-binomial/non-multinomial, which constitute a broader class of drift processes than those that exist in genetic evolution or in perfect-imitator models of cultural evolution.