
Simple learning systems and evolvability: Why culture isn't all that matters

Rachael Brown*¹

¹Australian National University – Canberra ACT 0200 Australia, Australia

Abstract

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Traditional accounts of the role of learning in evolution have concentrated upon its capacity as a source of fitness to individuals. Research supporting its role as a non-genetic inheritance stream and genetic accommodation challenges the narrowness of this account by suggesting that social learning is both a source of fitness to individuals and a source of evolvability to populations. Unfortunately, although the evidence offered for this broader account is persuasive, there is widespread skepticism of it within mainstream evolutionary biology. Here, I use a case study from invasive species biology—the role of conditioned taste aversion in mitigating the impact of cane toads on the native species of Northern Australia—to demonstrate that, even should this skepticism be ultimately vindicated, there is still good reason to think that learning (whether social or not) provides a source of evolvability to populations. In doing this, I provide a broader account of the role of learning in evolution that is more palatable to the mainstream evolutionary biologist.

*Speaker