

Cumulative improvements in iterated problem solving

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github.com/pedmiston/iterated-problem-solving

The cultural inheritance of problem solving knowledge

Why are humans effective problem solvers?

- We evolved specialized intelligences (Pinker, 2010).
- We developed systems of cultural inheritance (Boyd et al., 2011).

Lost European explorer experiments¹

Starvation on nardoo is by no means unpleasant, but for the weakness one feels, and the utter inability to move oneself, for as the appetite is concerned, it gives me the greatest satisfaction.

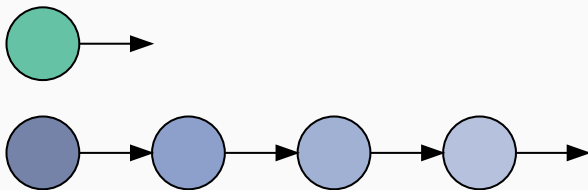


Figure 1: The nardoo aquatic fern, native to Australia.

¹(Boyd, 2018; Boyd, Richerson, & Henrich, 2011; Henrich, 2015)

The adaptiveness of cultural inheritance²

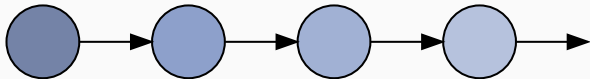
Cultural inheritance is adaptive because **even smart people die**. Cultural inheritance enables problem solving to extend far longer than any lifetime.



²(Boyd & Richerson, 1985; Richerson & Boyd, 2005)



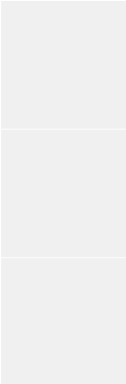





Experimental models of cumulative culture

How likely are future generations to exceed their ancestors?



- knapping stone tools
- building baskets
- solving puzzles on a computer

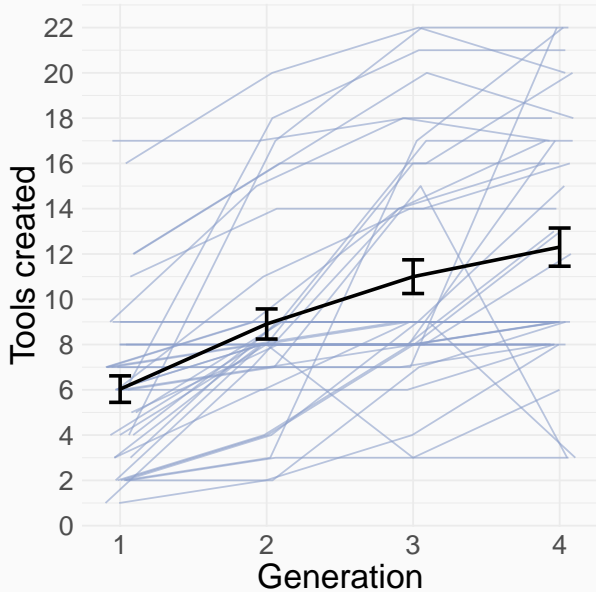
The Totem Game (Derex & Boyd, 2015)

Resources		Stock				Totem
						 0
						
						
Workshop						Bin 
				Try		

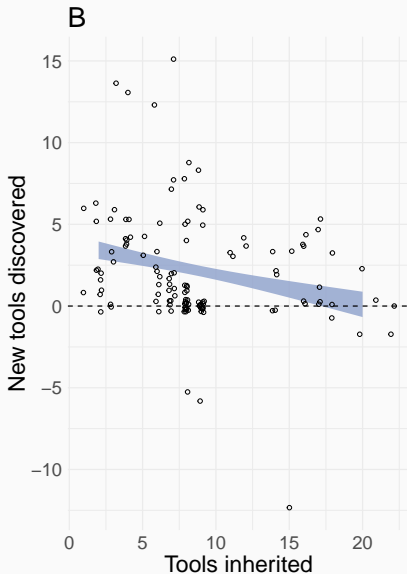
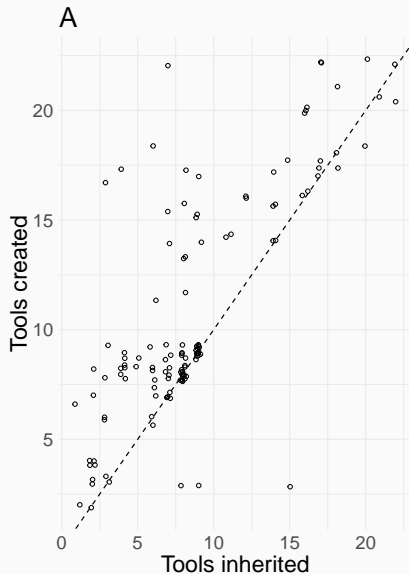
Solution landscape



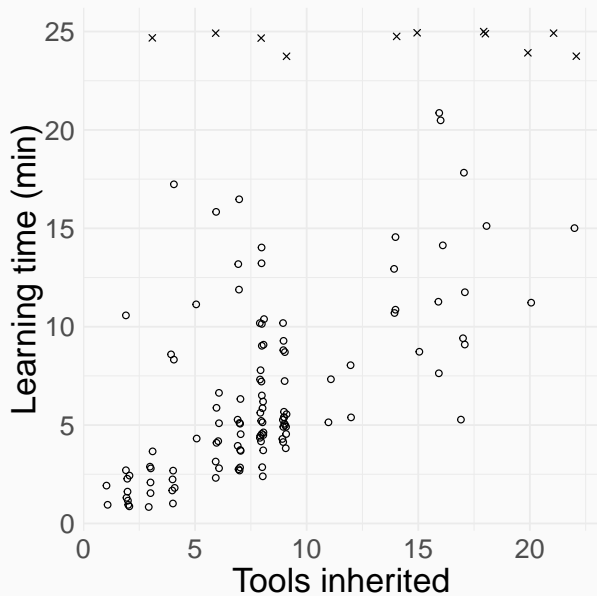
Tools by generation



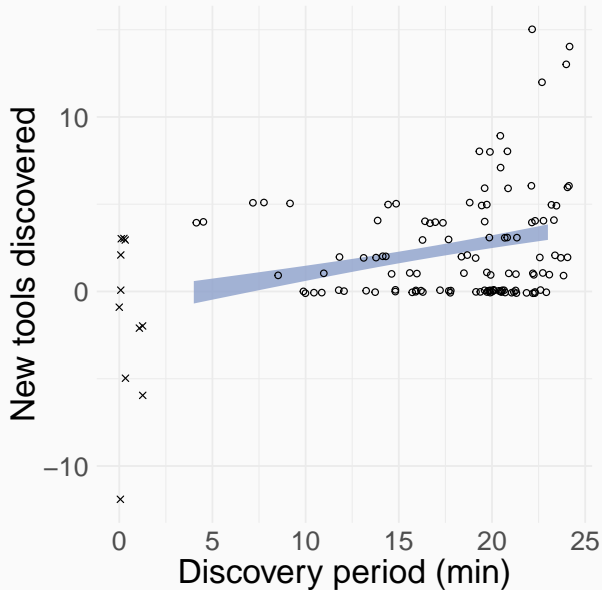
Tools by inheritance size



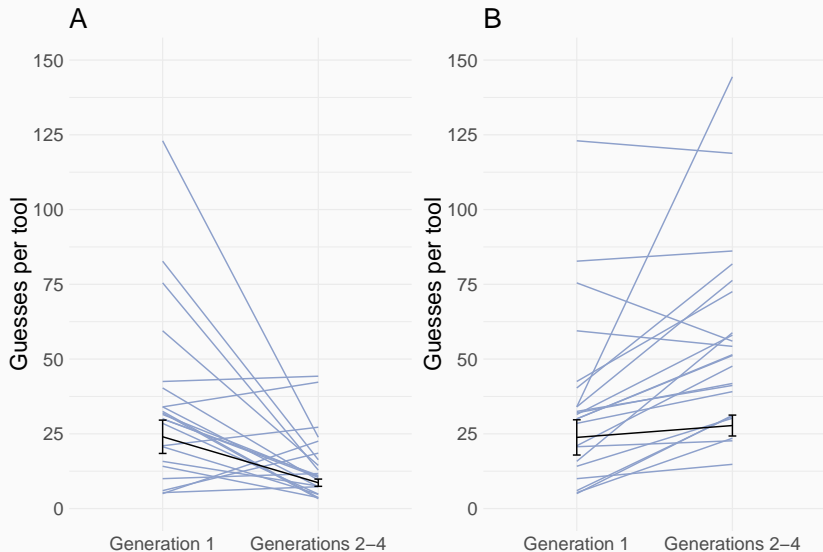
Learning times



Discovery rates



Guesses per tool



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