These are Kim Sterelny's thoughts (written up at mid-workshop) on the [workshop on cultural evolution](#) convened by Dan Dennett in Santa Fe in May 2014. Dennett's introduction is [here](#).

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Santa Fe Summary: Key Issues From Discussion

1.Attraction and selection. What is the relationship between the SMC attractor based framework, and the BRH approach, which prima facie finds a more obvious role for selection and adaptation, especially cumulative adaptation. While the SMC group do not deny the existence of examples of adaptive complexity, their discussion and models are not organised around these kinds of cases. In the discussion, I tried out one way of seeing how the two approaches might fit together, borrowing from the saner versions of evo-devo: see the mechanisms identified in the SMC approach as constraints and biases in the supply of variation to selection-like processes. Except in extreme cases where those constraints reduce the supply of variation to a trickle (as in C's zebra finch case, we the experimental set up exposes the hatchling to a single model) that can still leave plenty of work for selection-like forces. I take it the SMC suggestion was to see the attractor-approach as more general than selectionist approaches, which for them come out as a special form of attraction. That seems to me to obscure an important distinction between the supply of variation and its fate. But maybe M's suggestion does not fit that evo-devo picture, seeing he focuses on downstream constraints that affect success rate (on whether a cultural variant is a flop). But what is the difference between that and selection (selection often depends on factors internal to a lineage, as in the relationship between sexual selection and sensory biases).

2. How "blind" is cultural transmission/cultural learning? Or better: how important are relatively blind processes, where agents adopt new cultural variants (a) without actually understanding the effects of these variants on their lives, and why they have those effects; or (b) without even taking themselves to understand those effects (perhaps by some form of unconscious imitation; perhaps because the agent acquiring the CV acts on some form of father-knows-best principle. I take it that the selectionist formal models abstract away from this issue: a selectionist model of bow-improvement or kayak making will apply just fine, even if each incremental improvement in technology is guided by causal understanding of why the old design worked, and why the new design will work just a little better. But it seems to me that when the transmission and improvement process is relatively blind, the cultural selectionist models are explanatory in a way that they are not, if the incremental changes are made and adopted because the individual agents understand what is gong on (obviously, though, blindness is a matter of degree).

Perhaps one of the differences between the SMC group and the BRH group is that the SCM group seem to emphasise somewhat more the role of the agent's own resources to the transmission process.

3. Imitation. A closely related issue is the role of imitation and its nature (what are its cognitive requirements; again, what is the role of causal understanding in the transmission process). I have been sceptical about the role of imitation in the cultural transmission of (at least) technique, artisanship, (perhaps until relatively recent composite technologies). Rob Boyd thinks I am flat wrong, massively overselling the role of "field testing" technique as an agent acquires a capacity (so he thinks imitation is both way important, and not especially demanding of causal understanding: see 2 above). I remain utterly unpersuaded. Dan Sperber helpfully pointed out (and I carry on about this in The Evolved Apprentice, too) that in the transmission of complex skills (i) demonstration is very important, and (ii) demonstration is not the input to imitation. Moreover, (iii) demonstration depends pretty clearly on some reasonable causal understanding of the capacity in question, since it often involves a meta-commentary as well as stylised/exaggerated action patterns.

4. Tokens, types, memes. It seems pretty clear that when we focus on tokens of cultural variants: (i) typically, any given token in a transmission network will have multiple parents; (ii) these often play unequal roles in the transmission process; (iii) jointly, (i) and (ii) above will make it theoretically difficult and/or computationally intractable to specify the fitness of cultural tokens. Prima facie, if we cannot identify parent offspring relations, and hence cannot define either fitness or hereditary, we cannot apply the Darwinian framework.

Can we think of selection as acting on types? After all: it is often true that cultural variants are increasing (of decreasing) in relative frequency within a culture, and that that change is plausibly caused by the effects of cultural variants on those that adopt them. One bow design (perhaps using fletched arrows) is displacing another in a community, at a time, because it is fitter. Up to a point, I think this is OK, but talk of fitness here is only serving as a form of score-keeping; it is just a measure of the size of the ensemble of tokens; fitness will not explain anything about the size of that ensemble — the explanation will come from a comparison of the mechanics of the two bows; the ecological and economic upshot of those differences, and the various social and psychological mechanisms through which those bow-design-differences became salient to individual. Cultural fitness becomes a purely statistical notion. Admittedly, there is a line of thought that says that about biological fitness too (but not one I accept).