If lullabies and hero stories are super-attractors, what are music and language? Absolute universals imply genetic mechanisms [Commentary on Singh, 2025, "Subjective selection, super-attractors, and the origins of the cultural manifold"]

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ABSTRACT

I praise the synthesis and expansion of attractor theory to explain near-universals, but critique its failure to explain absolute universals. I agree that lullabies, hero stories, and shamanism are good candidates for primarily cultural evolutionary explanation, but argue that the larger, most universal categories they are sub-phenomena of - music, language, religion - require gene-culture coevolutionary explanations.

MAIN TEXT

Singh's (2025) explanation of near-universal "super-attractors" is the most persuasive case I've read yet generalising cultural attractor theory to phenomena widespread across cultures. Singh frames his approach as addressing what he calls "laws that apply across time and throughout human history" in order to solve what Boas (1896) called "the most difficult problem of anthropology". This makes it sound like Singh will address what are known as "absolute universals" found in all societies without exception. But in fact, Singh focuses on "near-universal" traditions (also known as "statistical universals"; Bickel, 2011; Brown, 1991; Savage, 2019)

At the top of most lists of absolute universals is the uniquely human capacity for language, which has been described as "what makes us human" (Fitch, 2010). Arguably next on the list might be music (for which Singh has helped provide some of the strongest evidence for absolute universality; Mehr et al., 2019), along with things like religion, tool use, and control of fire (Brown, 1991).

The examples of super-attractors Singh provides include multiple examples that can be seen as restricted cases of broader absolute universals such as music (e.g., lullabies, dance songs), language (e.g., hero stories, happy endings), or religion (e.g., shamanism, prosocial religions). Yet the broader, most universal domains of music, language, and religion themselves are curiously absent from the target article (Fig. 1).

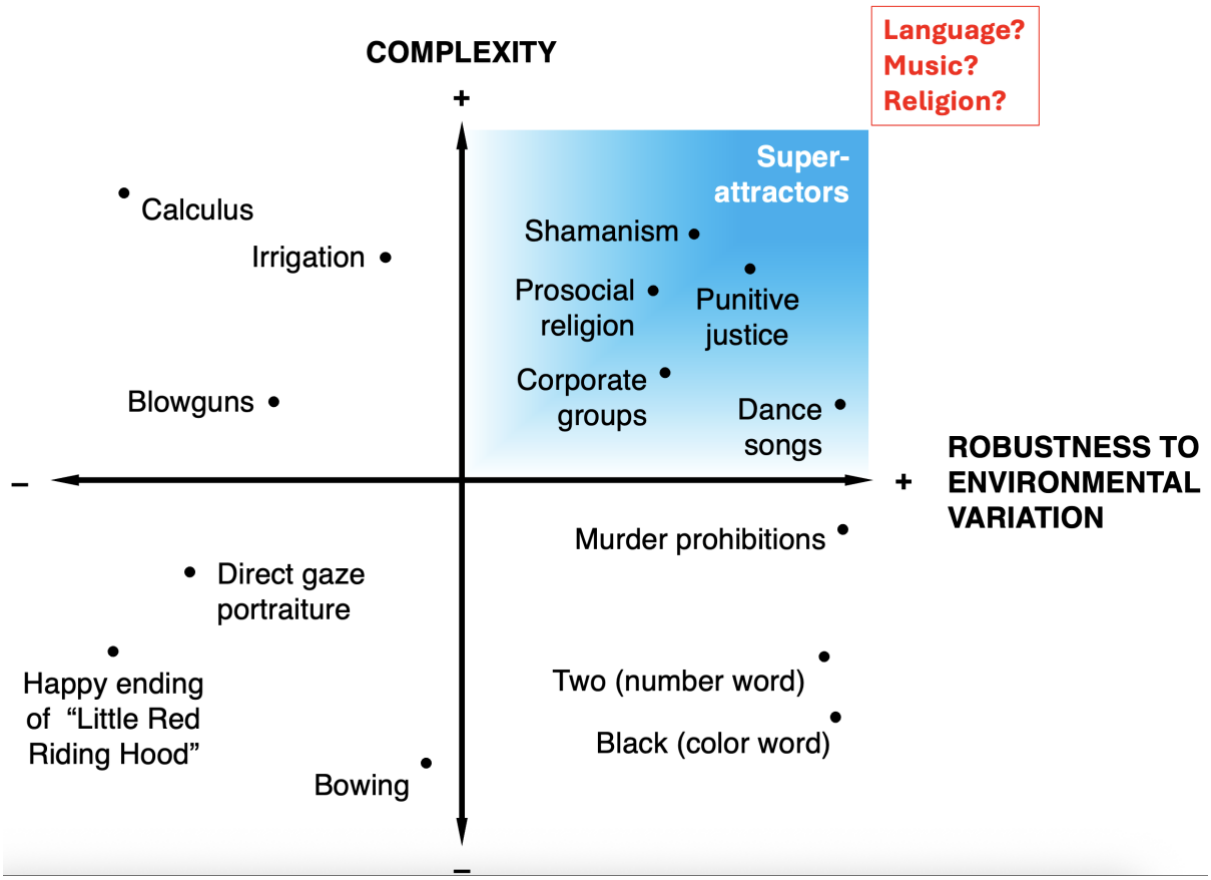

Figure 1. An adapted version of Figure 1 from Singh's target article with an added red box containing some of the most complex and universal cultural domains. These "absolute

universals" found in all known human societies without exception (e.g., language, music, religion) appear beyond the explanatory framework of super-attractor theory, and instead imply at least some genetic component.

Super-attractor theory is proposed as a phenomenon relying purely on cultural evolutionary mechanisms, without requiring any genetic component. This contrasts with alternative theories that invoke gene-culture coevolutionary mechanisms (e.g., Patel, 2018, 2023; Savage et al., 2021; Savage, In press). Singh argues that the existence of societies such as the Northern Aché without lullabies (Aubinet, 2024; Singh & Hill, 2025) is a key challenge to gene-culture coevolutionary theories of the evolution of musicality. Yet this conflates the broader, universal category of music with the narrower, less universal sub-phenomenon of lullabies. Even the Northern Aché still sing other, non-lullaby songs (Singh & Hill, 2025), as do every other known human society throughout history (Brown, 1991; Mehr et al., 2019; Savage, In press).

The analogy of "cheesecake" recurs repeatedly to explain super-attractor theory. Pinker (1997) famously used the cheesecake metaphor to argue that music ("auditory cheesecake") and other aspects of arts and culture were non-adaptive byproducts of other adaptations, such as the capacity for language. But even Pinker acknowledges that the language instinct, at least, requires biological adaptive explanations beyond a purely cultural evolutionary one. Further, I have argued that this "cheesecake" metaphor is fundamentally flawed because it again conflates a non-universal sub-phenomenon (cheesecake) with the universal category it is a part of (food; Savage, In press).

It is true that our capacity for synchronised dancing to a beat may have originated as a byproduct of learning, as it appears to have done in other vocal learners such as cockatoos (Patel, 2024; Patel et al., 2009; Schachner et al., 2009). But among those non-human animals that have the capacity to synchronise to a beat, they do not universally employ this capacity. Humans do, which I have argued was a result of a gene-culture coevolutionary selection following its initial origins as a byproduct of vocal learning (Savage, In press).

Singh correctly notes that one of the major challenges for biological explanations of music (and other cultural universals) is the "absence of evidence of adaptation". But there is relatively strong evidence for the adaptive value of language, at least (Patel, 2008), and the absence of evidence for music is not necessarily the same as evidence of absence. Global experiments reveal strong and cross-cultural consistent acoustic differences between singing and speaking (Albouy et al., 2024; Anikin et al., 2023; Ozaki et al., 2024), and follow-ups are underway to directly test the potentially adaptive social bonding functions of singing vs. speaking (Savage et al., In Principle Accepted).

Studies of the genetic bases of musicality and language are still in their infancy, but already a number of potential candidates have begun to emerge, such as the FOXP2 gene that could be implicated in either song and/or speech evolution (Enard et al., 2002; Fisher, 2019; Haesler et al., 2007). Genome-wide association studies have started identifying dozens of other genetic variants associated with musicality and language (Alagöz et al., 2025; Niarchou et al., 2022; Wesseldijk et al., 2023). More will likely come as the quantity and quality of data and methods continues to improve.

Such new data will provide an important opportunity to test Singh's cultural evolutionary predictions against predictions of alternative hypotheses that invoke genetic mechanisms. However, as currently framed, Singh's predictions do not mention genetics. Future studies

should aim to formulate testable hypotheses making specific predictions for purely cultural evolutionary theories vs. those that include genetic components. I will admit, however, that this is easier said than done. We did make some genetic predictions for our gene-culture coevolution hypothesis (e.g. "genetic differences (e.g., in DRD2) may predict variation in bonding experienced through musical activities."; Savage et al., 2021). However, it is not immediately clear how to conclusively test such predictions against alternative predictions of a purely cultural evolutionary theory such as Singh's.

On that note, I'd like to emphasize that it is much easier to criticise than to propose constructive new theories, and my criticisms of Singh's proposal should not detract from the value he has provided by proposing an impressive and broad new theory. I look forward to future tests of his and competing theories to help us understand the complex cultural and biological bases of human evolution.

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