UC San Diego

Lecture 3.1 Music and Evolution

MUS 20 Exploring the Musical Mind

Summer Session II 2025

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What is Music Good For?

In an Evolutionary Context

- Mate selection
- Coordinating group effort
- Social cohesion and solidarity (conflict resolution)
- Trans-generational communication
- To refine cognitive, perceptual and motor skills

The “Let’s Get It On” Hypothesis

Sexual Selection

- Charles Darwin reasoned that music was a trait of 'sexual selection’ — females assess the strength, endurance, and coordination of prospective mates through music.
- Music in humans is not sexually dimorphic — as it is in birds and whales, for instance.
- Playing music does not seem to guarantee more offspring.
    - Although much pop music is, arguably, about sex, and music plays a prominent role in human ‘mating rituals’.
    - Also, teenagers—with hormones racing— often create the strongest attachments to specific music & styles.

The “Let’s Get It Sync” Hypothesis

Entrainment

- Entrainment is the synchronization of organisms to an external perceived rhythm.
- Entrainment is the process by which two independent rhythmic systems interact with each other and synchronize.
- Rhythmically ‘entraining’ together facilitates more coordinated work. It lessens the psychological burdens of work. And it may allow individuals to feel a part of something larger than themselves.

It’s sort of stumbling into this area where there’s a lot of energy and something happening and not a lot of control. So that the sense of individual control disappears and you are working at another level entirely. Sometimes this feels to me as though you don’t really have to think about what’s happening. Things just flow. – Bailey, D. (1992). Improvisation: Its Nature and Practice in Music.

The “Let’s Get It Sync” Hypothesis

Entrainment

There is a phenomenon called entrainment, which is the synchronization of two or more rhythmic systems into a single pulse. If a group of men is hammering on a building site, after a few minutes they fall into the same rhythm without any explicit communication. In the same way, the body’s physiological rhythms resonate with each other… When improvisers play together they can rely on this natural phenomenon to mesh the music so that they breathe together, pulse together, think together.

– Nachmanovitch, S. (1991). Free play: Improvisation in life and art.

The “Let’s Get It Along” Hypothesis

Social Cohesion and Solidarity

- The grooming-at-a-distance theory (In large social groups, vocal exchanges supplant the need for physical grooming).
- Across cultures caregivers soothe their young with song (freeing their hands for other tasks).
- Across cultures, adults talk to infants in a more musical fashion—*infant-directed speech* (IDS):
  - In addition to promoting speech acquisition (by extending the vowel sounds), IDS promotes synchronization, attuning, and empathy.
  - We also speak to our pets in more musical tones, but we tend not to stretch out the vowel sounds, presumably because we don’t expect our pets to learn to speak!

The “Let’s Get It Along” Hypothesis

Conflict Resolution

- Singing together releases oxytocin, which promotes relaxation and bonding.
- Musicking provides a ‘consequence free’ (no one gets hurt) way for groups to address concerns (perhaps less aggressively or more indirectly) and work to resolve conflict (while creating solidarity).
- Protest songs have helped shape history proving that when people come together and raise their voices extraordinary things can happen.
- Several theories focus on music’s importance in relation to social cohesion, promoting cooperative behaviour and synchronising the emotions of many individuals who can then collectively take action to protect and defend themselves. The downside of this is that it also has the potential for developing feelings of hostility towards outgroups.

Other Hypotheses

In an Evolutionary Context

- “Let’s Pass It On” Hypothesis
- “Let’s Build On It” Hypothesis

Is Musicality:

- An Adaption?
  - Conferring survival advantages
  - Shaped by natural selection and governed by genes
- An Exaptation?
  - A helpful side-function of an evolved trait which drives further evolution
- A Spandrel?
  - A mere by-product with no obvious evolutionary significance
  - Steven Pinker's "auditory cheesecake"
- Tabula rasa/ Blank slate
  - Result of general-purpose learning capacities that are shaped by the environment

Evidence for Music as An Adaptation

- Music and musicality is widespread.
- Music can evoke strong emotions (which often implies adaptive behaviors).
- Musical development in children broadly follows the same pattern.
- Specialist memory and specialized cortical mechanisms for music.
- Parallels in other species (e.g., birds, whales, gibbons), although many of our closest primate relatives (chimps and bonobos) are not particularly ‘musical’.
- “*The fact that humans’ closest relatives do not display more of the component abilities than more distant relatives implies that no simple and unambiguous path for the evolution of musicality exists.*” – Margulis

Some Arguments

- *“Even if music were 100 percent spandrel, having arisen through no direct selective pressure, its reliance on so many biological substrates, its global universality, and its substantial societal power all make the case for sustained inquiry into this distinctively human art.”* —Elizabeth Margulis
- *“Our obsession with music arose because it ‘harnessed’ so much of nature around us and because it used existing and ancient brain mechanisms for new and exciting purposes… music is a part of us because we designed it based on who we were and what we needed as humans. The human animal, our evolving brains and bodies, were the blueprint for music.”* — Victoria Williamson (citing Changizi)