UC San Diego

# Lecture 3.2 The Origins of Music

**MUS 20 Exploring the Musical Mind**

**Summer Session II 2025**

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# Are Music's Origins Biological or Cultural?

- Music's age and ubiquity seem to argue that its origins are biological. But the diversity of musical practices around the world seems to argue instead that its origins are cultural…
- Despite evidence that culture plays a critical role in shaping aesthetic responses to music, something about the ease and power of musical communication makes it difficult for people to imagine that their own fundamental responses to sound are not universally shared.
- This divide between perceived naturalness and actual cultural dependency is precisely what allows music such tremendous force: It transmits messages about culture and identity while feeling direct and unmediated.

# Musical Ability as a Biological Function

## The nature of music from a biological perspective

- Much music cognition research has focused on the musical properties that are deemed “universal” as investigators search for the fundamental underpinnings of musical thought and behavior.
- Common principles may underlie the world’s diverse musical cultures. These principles may also be guided by innate mechanisms.
- Throughout human history and across all cultures, individuals have produced and enjoyed music (*Merriam, 1964*). Music has emerged spontaneously and in parallel in all known human societies.

# Music as a Cultural Convention

**A Cross-Cultural Investigation of the Perception of Emotion in Music: Psychophysical and Cultural Cues (optional reading)**

- Some theorists favor an enculturation explanation–that musical meaning is determined exclusively by cultural convention (Blacking, 1973; Feld & Keil, 1994; Walker, 1996). These theorists may acknowledge certain universalities in music, such as octave equivalence, but they assume that the interpretation of emotional meaning in music is determined solely by enculturation to a specific tonal system.
- *"All musical sound structures are socially structured in two senses: they exist through social construction, and they acquire meaning through social interpretation."* – Feld & Keil

# Music as a Cultural Convention

- Much ethnomusicological research is rooted in the assumption that differences in musical understanding exist between cultural "insiders" and "outsiders," a contrast often referred to as the *emic-etic dichotomy* (*Merriam, 1990; Nettl, 1983*).
- *". . . in general, it is possible to 'get to know' the music of the Other, although one will never 'know' it as well as the insider, the emic, the native"* – Nercessian
- Modern Composers argue that musical preferences are *culture-specific* and can be modified by exposure alone (*Schonberg, 1984*).
- Musicologists typically study music as a *social construct* that varies from culture to culture, rejecting cross-cultural quests for universals underlying the diversity (*Blacking, 1990*).

# Is Music a Universal Language?

- **Ancient times**
  - Since the Ancient Greeks, many philosophers have posited that music expresses universal principles or truths (Pythagoras ‘Harmony of the Spheres’).
  - *“Music is the universal language of mankind.”* – Henry Wadsworth Longfellow
- **Modern views**
  - Music is a universal phenomenon and a shared capacity, but its structures and meanings are not universally comprehensible.

Ethnomusicologists have compiled a rather small list of ‘near universals’ that appear to inform much of the world’s music—and there are a few cross-cultural social contexts in which music appears to play an important role.

# ‘NEAR-UNIVERSALS’

## ‘Lower’ Level / Structural

| Near Universal | Possible Explanation |
| --- | --- |
| Octave ‘equivalence’ (2:1) and the prevalence of a ‘perfect 5th’ (3:2) | Easier for the mind to process simple integer relationships?<br>A result of men and women’s physiology?<br>Not all cultures use scales that duplicate at the octave |
| Most scales have 7 +/- 2 discrete pitches | Working memory limitations that underpin ‘chunking’ (Miller 1956) |
| Most common intervals tend to be small | Easiest to sing/play? |
| Most scales apportion the octave unequally | Produces intervallic variety that facilitates perception/memory/coherence/transposition |
| Songs can be transposed (to a different pitch level) | Only humans appear to exhibit relative pitch perception (some non-human animals exhibit absolute pitch recognition) |

# ‘NEAR-UNIVERSALS’

## ‘Higher’ Level / Functional

| Near Universal | Possible Explanation |
|---|---|
| Singing and dance are ubiquitous | Social cohesion? Entrainment? (in-group) Empathy? |
| Cultures use musical instruments (of enormous variety, but built on fundamental principles) | Physics of sound production<br>[NOTE: **Organology**] |
| Some music in every known culture is pulsed/metric | Entrainment |
| repetition plays a significant role (at multiple levels of musical structure) | Entrainment? Memory? Pleasure? |
| Musicking is used in infant care, healing, dance, love, mourning, warfare, processions, and ritual | Music’s ability to evoke emotion is highly recognized |

# Musical Ability as a Biological Function

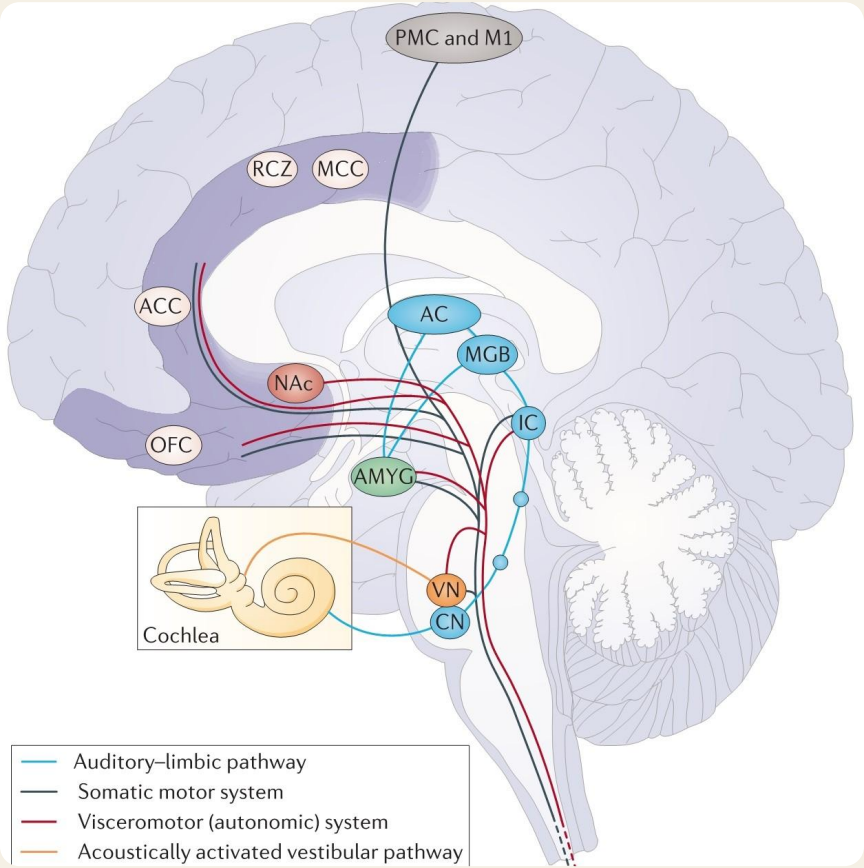
**Brain correlates of music-evoked emotions**

- Functional neuroimaging studies on music and emotion show that music can modulate activity in brain structures that are known to be crucially involved in emotion, such as the amygdala, nucleus accumbens, hypothalamus, hippocampus, insula, cingulate cortex and orbitofrontal cortex.
- Findings to date indicate that the superficial amygdala has a central role in the processing of stimuli with universal socio-affective significance (such as music), that music-evoked pleasure is associated with activity of the dopaminergic mesolimbic reward pathway (including the nucleus accumbens) and that the hippocampal formation is involved in emotions related to social attachments.

# Musical Ability as a Biological Function

**Brain correlates of music-evoked emotions**

- The auditory system evolved phylogenetically from the vestibular system.
- The vestibular nerve contains a substantial number of acoustically responsive fibres.
- Both the *vestibular nuclei* and *cochlear nuclei* project to the reticular formation, and the vestibular nucleus also projects to the parabrachial nucleus, a convergence site for vestibular, visceral and autonomic processing. Such projections initiate and support movements and contribute to the arousing effects of music.




# Brain structures involved in music-evoked emotions

- The main pathways underlying autonomic and muscular responses to music.
- Emotions are understood to be the result of the integrated activity of affect systems (affect-generating brain systems ) and emotional effector systems (such as motor systems producing actions, action tendencies and motoric expression of emotion).