



# Charles Ives

*Central Park in the Dark*

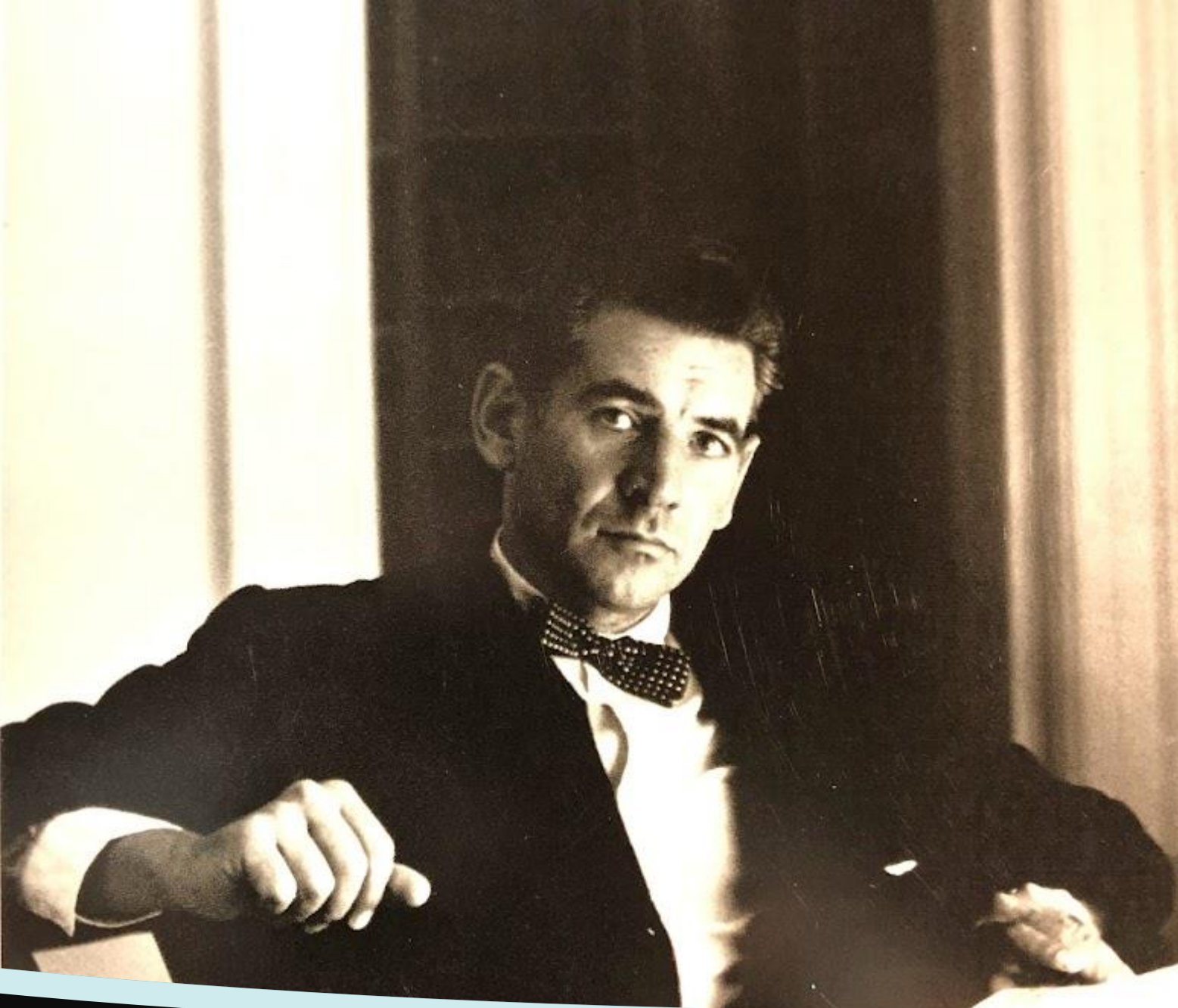
*Leonard Bernstein*

*New York Philharmonic*



# Music and the Mind

*Bernstein, Chomsky, and the relationship between music and language*



# Leonard Bernstein and the Norton Lectures

*“It’s the artists of the world, the feelers and thinkers, who will ultimately save us; who can articulate, educate, defy, insist, sing, and shout the big dreams.”*

*Opening of Tanglewood season, 1970*

# Charles Eliot Norton



- Born 1827 in Cambridge MA
- Father was Dexter prof of sacred literature at Harvard
- Cousin of Charles Eliot (president of Harvard) and T.S. Eliot
- Member of Hasty Pudding, and graduated 1846
- Toured India and Europe
- Translated Dante's *Vita Nuova* and *The Divine Comedy*, and founded the Dante Society with Longfellow and Lowell
- Professor of classical architecture and art at Harvard
- Honorary doctorates from Oxford, Cambridge, Yale & Harvard



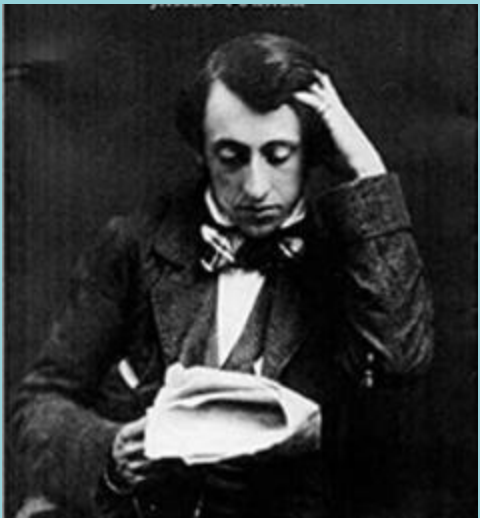
# Charles Eliot Norton



*"We visited at Boston [my father's] old friend, Charles Eliot Norton of Harvard, whose daughters I had known at The Grange in my boyhood and since. They were Brahmins of the Boston Brahmins, living delightfully, but Norton himself, full of forebodings as to the future of his land's soul, felt the established earth sliding under him, as horses feel coming earth-tremors. ... Norton spoke of Emerson and Wendell Holmes and Longfellow and the Alcotts and other influences of the past as we returned to his library, and he browsed aloud among his books; for he was a scholar among scholars."*

*Rudyard Kipling, in his autobiography (1937)*

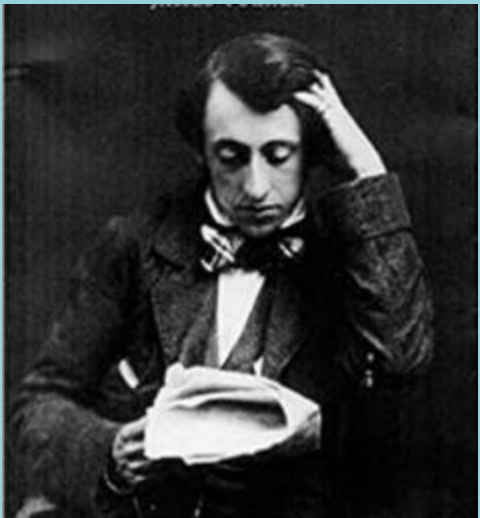
# The Charles Eliot Norton Lectures



*The Charles Eliot Norton Professorship of Poetry was established in 1925 as an annual lectureship in “poetry in the broadest sense”*

1933	T.S. Eliot	1980	Helen Gardner
1936	Robert Frost	1982	Czeslaw Milosz
1940	Igor Stravinsky	1984	Frank Stella
1950	Paul Hindemuth	1988	Harold Bloom
1951	Thornton Wilder	1989	John Cage
1952	Aaron Copland	1993	Umberto Eco
1953	e.e. cummings	1995	Nadine Gordimer
1962	Buckminster Fuller	2007	Daniel Barenboim
1968	Jorge Luis Borges	2014	Herbie Hancock
1972	Octavio Paz	2016	Toni Morrison
1973	<b>Leonard Bernstein</b>	2022	Laurie Anderson

# The Charles Eliot Norton Lectures



*The Charles Eliot Norton Professorship of Poetry established in 1925 as an annual lectureship in “poetry in the broadest sense*

1933	T.S. Eliot	1980	Helen Gardner
1936	Robert Frost	1982	Czeslaw Milosz
1940	<b>Igor Stravinsky</b>	1984	Frank Stella
1950	<b>Paul Hindemuth</b>	1988	Harold Bloom
1951	Thornton Wilder	1989	<b>John Cage</b>
1952	<b>Aaron Copland</b>	1993	Umberto Eco
1953	e.e. cummings	1995	Nadine Gordimer
1962	Buckminster Fuller	2007	<b>Daniel Barenboim</b>
1968	Jorge Luis Borges	2014	<b>Herbie Hancock</b>
1972	Octavio Paz	2016	Toni Morrison
1973	<b>Leonard Bernstein</b>	2022	<b>Laurie Anderson</b>

HARVARD UNIVERSITY  
DEPARTMENT OF MUSIC

CAMBRIDGE 38, MASSACHUSETTS

Nov 5 '51

Dear Lenski:

These old Norton Lectures are paralyzing all my other activities - including letter writing.

It was wonderful to hear from you. Wouldn't want you to be completely swallowed up by marriage!

There's lots to tell - but I'll have to leave point every thing. First, as per usual, is Olga told me she wrote about C.M. Tangle - and the directorship. (All still very quiet) He really wants you to head orch. & conducting dept. and say he'll do no teaching if you are with us! What have you decided? I'm waiting breathlessly to hear...

Joe & Todd seem to be depending on me a lot since I'm around, but in exactly what capacity is not clear.

Every stone in Cambridge reminds me of you. Also I.B. Cohen at the Faculty Club. Also (same day) a note from M. Ruykjes. I don't see anybody as yet because I'm writing

my lectures out. Oy, what a headache... E decided to live in N.Y. on account of dance work at M. Graham's. So we took an apt in the Willage and go down weekends. It feels funny to be back in N.Y. - bag & baggage.

V writes very enthusiastic letters from Rio. Seems pleased with himself and Pearl and Rio and job. It's a miracle, and I'm awfully pleased about it.

In the meantime I get no music written since a year now and finally decided I was on a composing sabbatical. Maybe it's good?

Did you hear the recording of the Pini Quartet on the back side of the Clar. Concerto? If not, ask Dave to send you a copy. It's out. Soon as the score is out I'll send you one - but it may be 6 months.

I'm jealous if you in Cuernavaca. (Have you seen my house in Tepotzlan yet?) But I'm pleased with the upstairs at the Forbes. In berry's Landing where I am living. Nice and quiet with a view of the Charlas.

Lukas was here last week with his brand new wife and Piano Concerto at the B.S.O. It leaves an impression (Polonaise) (Some L.B. in it) but it's too long (40 min.) My love to Felicia and always for you



# Leonard Bernstein and the Norton Lectures

- Conducted a nationally-broadcast performance of Mahler's *Resurrection Symphony* the day after President Kennedy was killed (Nov 23, 1963)
- Conducted the music for Robert F. Kennedy's funeral mass (June 1968)
- Became *Laureate Conductor* of the NY Philharmonic in 1969, and conducted tours in Europe (1976) and Asia (1979)
- Jacqueline Kennedy commissioned Bernstein's *Mass* for the inauguration of the Kennedy Center for the Performing Arts in Washington DC (1971)– a collaboration with Stephen Schwartz & Alvin Ailey in Latin, Hebrew & English that incorporated musical theater, jazz, gospel, folk, rock, and classical touches
- Appointed in 1972 as the Charles Eliot Norton Professor of Poetry



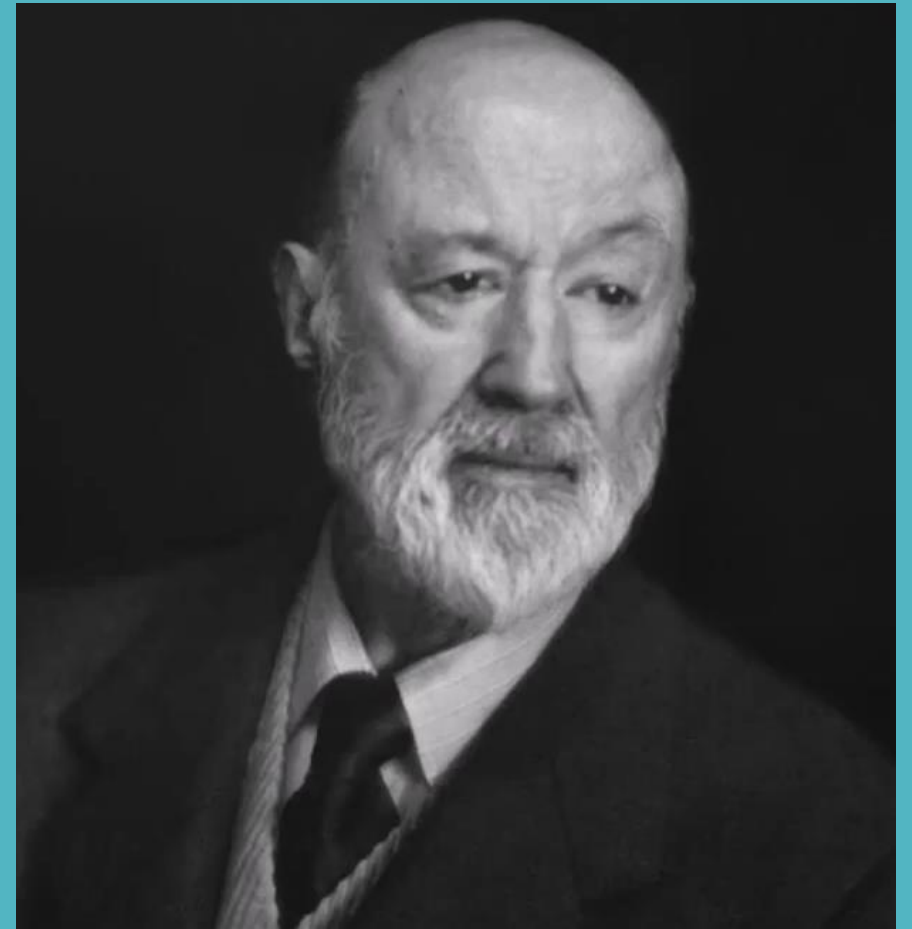


# Charles Ives “The Unanswered Question”

*Frankfurt Radio Orchestra*

– ***A Contemplation of a Serious Matter or The Unanswered Perennial Question***

- A chorus of strings plays a long motif of slow tonal triads from offstage: “The silence of the Druids – who know, see and hear nothing”
- A solo trumpet poses "The Perennial Question of Existence“
- A flute quartet of "Fighting Answerers" responds. They “realize a futility and begin to mock The Question, only to give up eventually”
- He had in mind that each instrument cluster would play independent tempos, and may require separate conductors
- At the end of the piece, the strings "hum softly in the distance, like the eternal music of the spheres.”

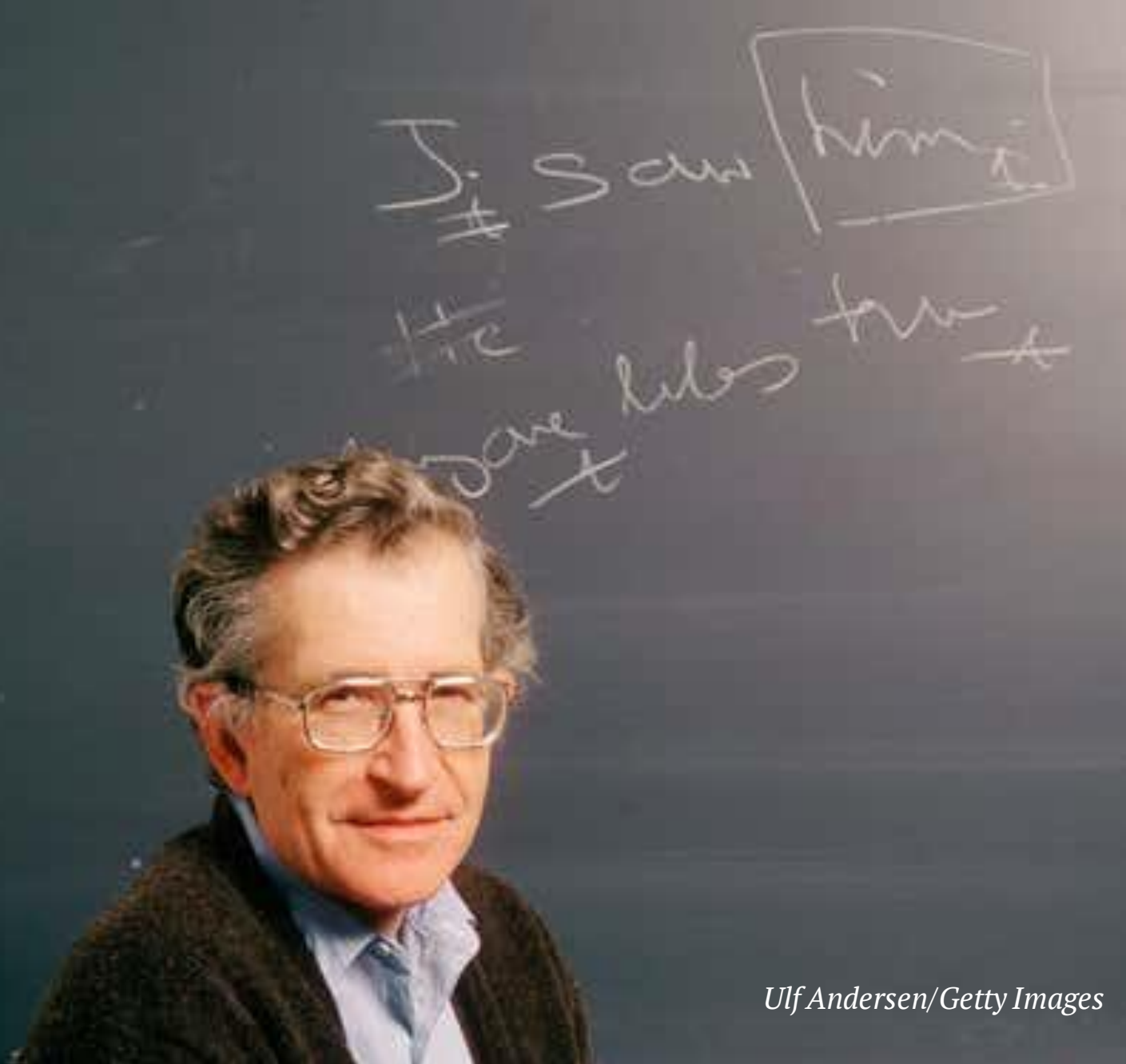


Edward T. Jones

# Lecture 1, Harvard Square Cinema, 9 Oct 1973

1. Ives had a highly metaphysical question in mind, but was also asking a purely musical question: “Whither music?”
2. Purpose of these lectures not so much to answer the question but “to understand it, to redefine it” -- must first ask: Whence music? What music? Whose music?
3. Turned to “musical phonology,” and introduced Noam Chomsky – “he is the best-known, most revolutionary, and best-publicized name” in linguistics
4. Linguistics as a window into the definition of “Mind” – “our newest key to self-discovery.”
5. Hypothesis of innate grammatical competence – “a genetically-endowed language faculty that is universal.” “It proclaims the unique power of the human spirit...and so does music!”
6. Music is “a metaphorical phenomenon, some kind of mysterious symbolization of our innermost affective existence”



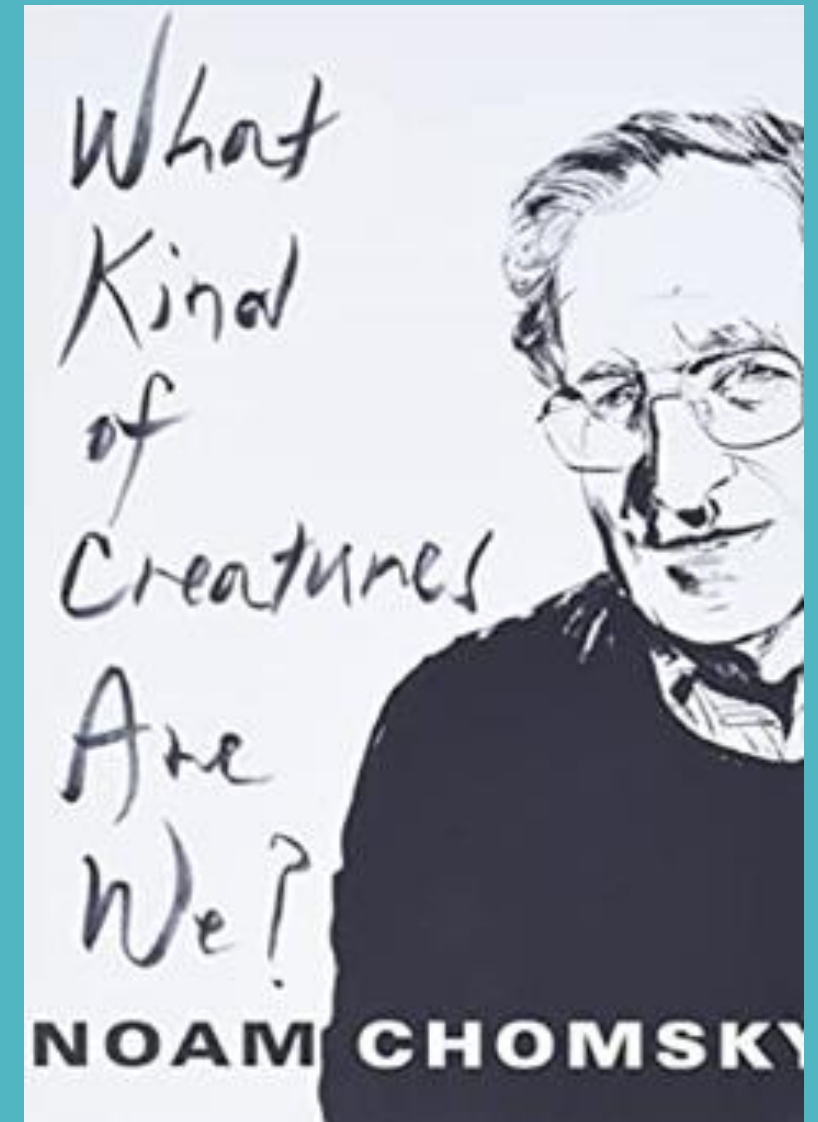


*Ulf Andersen/Getty Images*

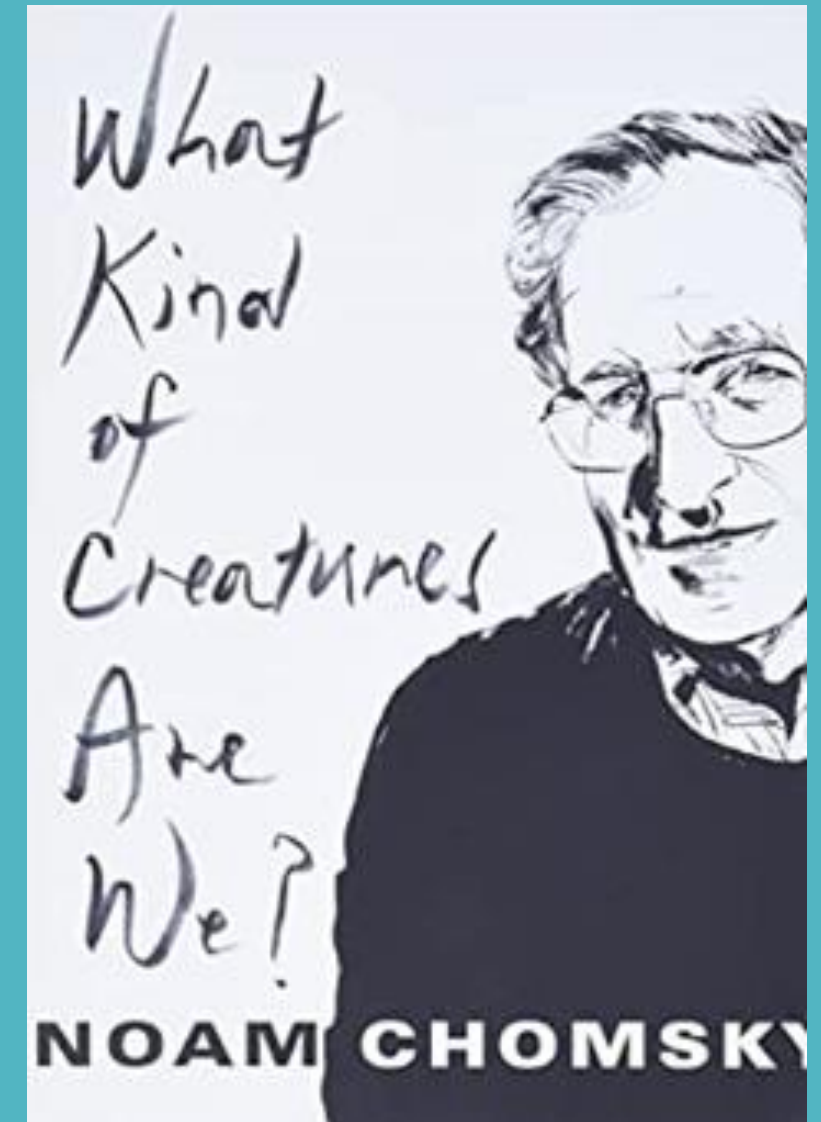
# Noam Chomsky

- Principles underlying language structure are biologically determined
- Syntactic knowledge is partially innate
- “Deep structure” refers to the general properties and abstract principles that provide a commonly understood meaning for a variety of verbal grammatical sequences

- Darwin concluded that “the lower animals differ from man solely in his almost infinitely larger power of associating together the most diversified sounds and ideas.” *The Descent of Man*, 1871
- Ian Tattersall: “...it is becoming increasingly clear that the acquisition of the uniquely modern [human] sensibility was instead an abrupt and recent event...And the expression of this new sensibility was almost certainly crucially abetted by the invention of what is perhaps the single most remarkable thing about our modern selves: language.” *Masters of the Planet*, 2012
- Chomsky’s “basic property”: that “each language provides an unbounded array of hierarchically structured expressions that receive interpretations at two interfaces, sensorimotor for externalization and conceptual-intentional for mental processes.”
- Aristotle: “Language is sound with meaning”
- Edward Sapir: Language is “a purely human and non-instinctive method of communicating ideas, emotions, and desires by means of a system of voluntarily produced symbols.” *Language: An Introduction to the Study of Speech*, 1921



- The parts essential for external language and perception were in place long before language emerged – the auditory system of chimpanzees may be well-adapted for speech
- But apes cannot take even the first step in language acquisition like babies can
- The production of human language is modality-independent – e.g. with sign language
- Reference to the “language of thought” – internalized language. “Externalization is rarely used. Most use of language by far is never externalized. It is a kind of internal dialogue...what reaches consciousness is scattered fragments.”
- “Languages are not tools that humans design but biological objects, like the visual or immune or digestive system.”
- Galileo: “Nature is simple, and it is the task of the scientist to prove it.”



# A “scientific” approach to music?

- Music “is made of mathematically-measurable elements, frequencies, durations, decibels, intervals”
- Linguistics provide three broad topics for studying music: phonology, syntax, semantics
- Innate grammatical competence – universal musical grammar
- Skeptical of the idea that music is the “universal language”



# “Music is the universal language of mankind”

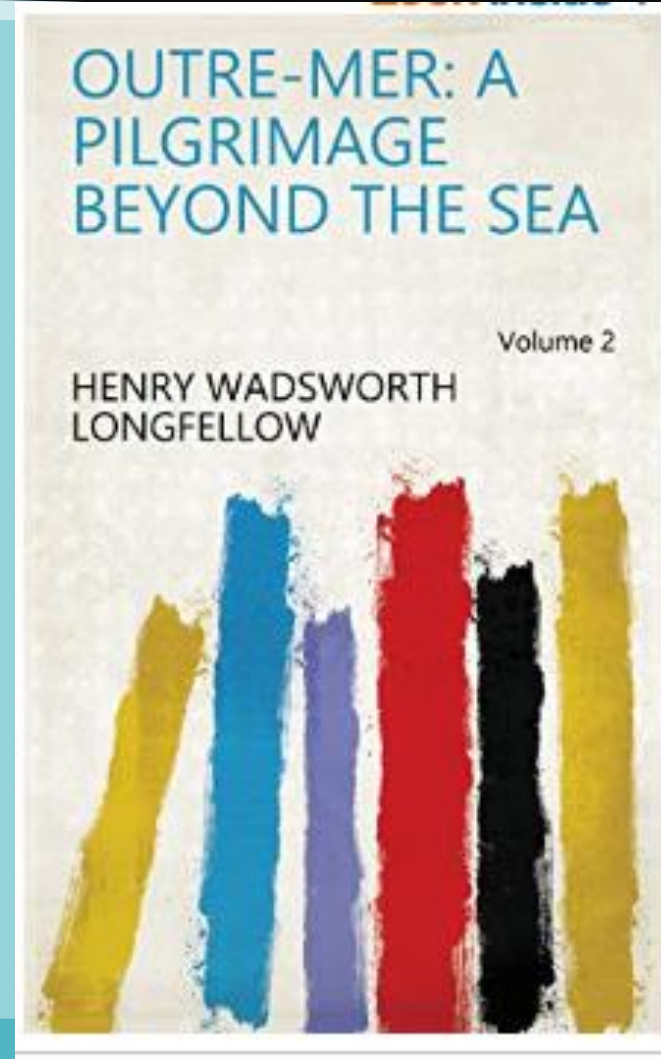
## Henry Wadsworth Longfellow (1835)

The goatherd of Switzerland and the Tyrol—the Carpathian boor—the Scotch Highlander—the English ploughboy, singing as he drives his team a-field—peasant—serf—slave—all, all have their ballads and traditionary songs. **Music is the universal language of mankind**—poetry their universal pastime and delight.

## Henry David Thoreau (1840)

*“What music shall we have?”*

In a world of peace and love music would be the universal language, and men greet each other in the fields in such accents as a Beethoven now utters at rare intervals from a distance. All things obey music as they obey virtue. It is the herald of virtue. **[Music] is God’s voice.**



# Parallels between language and music

- Finding equivalence between notes and letters, musical motives and words
- “Chords are like adjectives” – lending emotional context to melody/narrative
- Accompaniment, tempo, vamping constitute the verb of the musical idea
- “It is in the nature of music to be ongoing,” with only infrequent “punctuation” – “no pause for the period”
- Chomsky’s “**transformational grammar**”
  - Language organized on a surface level (form) and a deep level (meaning)
  - Innate capacity of the child to follow grammatical rules: “the combustion engines of language”

# Music and language

- Parallels

- Both are unique to *Homo sapiens*
- Both organized in time
- Tonality communicates incompleteness and seeks resolution
- Both structured with unconscious rules: deletion, pronomialization, embedding, conjoining, repositioning
- Steven Pinker: “Music, like language, lacks close homologs in other apes; has a hierarchical structure of phrases within phrases; has a complex rhythmic structure that matches that of languages so uncannily that we can put words to music; feels like it’s communicating something even when it isn’t; and is composed of harmonically related frequencies found in no commonly experienced natural acoustic stimulus other than the human voice” (“Sex and drugs and rock and roll,” *Behav Brain Sci* 2021;44:e59)

- Differences

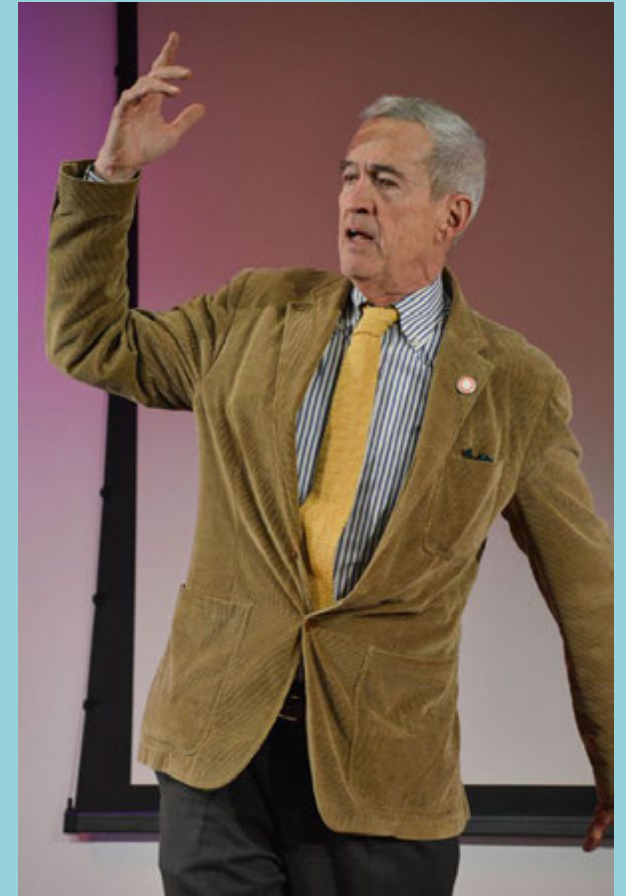
- Superficial acoustic features
- Differing purposes
- “Language leads a double life” – communicative and aesthetic; music resides only in the aesthetic domain
- “A verbal surface structure...can be converted into art, whereas musical surface structure already \*is\* art”
- Language delivers one word at a time. But music simultaneously expresses multiple “strings” in form, melody, harmony and rhythm

# Prof Thomas Forrest Kelly

Morton B. Knafel Professor of Music  
*Harvard University*

Professor of Historical Performance  
*Juilliard School*

- Harvard University, Ph.D. 1973
- Harvard University, M.A. 1971
- Institut de musicologie, University of Paris, 1964-1966
- Institut Grégorien, Paris, 1964-1966
- Diplôme de virtuosité, Schola Cantorum, Paris, 1966
- L.R.A.M., Royal Academy of Music, London, 1966
- B.A., University of North Carolina, 1964





# Probing Shakespeare for lessons of musical grammar



# Mozart and a musical grammar



## *Symphony No. 40*

*(In G minor K. 550)*

*Wolfgang Amadeus Mozart*

*Arr: Raif Husicic*



# The popular response

“**HOW** many public speakers can you think of who could get applause by announcing that tonight's lecture would be exceptionally long and who could hold an audience of 1,650 from 7:30 until 11:20? Even after you discount a 15-minute delay in starting, a 15-minute intermission, and a 50-minute film of Stravinsky's “Oedipus Rex,” it leaves you two and a half hours of lecture. Who would even try?

Leonard Bernstein did it on Nov. 20 at his sixth and last lecture as Charles Eliot Norton Professor of Poetry at Harvard, and, from the beginning of the series on Oct. 9, he had a success rarely equaled in the academic world in recent years—if you measure success in terms of attention, laughter, damp eyes, and adoration.”

“That it was good theater, a spectacular and generous entertainment is not in question. That it was the cultural or intellectual event that some heavy breathers around Cambridge have hyped it into is enormously in doubt.”

*Michael Steinberg, NYT, 16 December 1973*



# Rephrasing the question

Prof Ray Jackendorf (Brandeis):

“The musicians say ‘So what's new?’ and the linguists think ‘It's crazy, he doesn't understand.’ I can see both. Bernstein has very, very good intuitions, but he's not putting it across effectively because he's groping. He doesn't know linguistic theory and so he can't always come up with the right examples.”

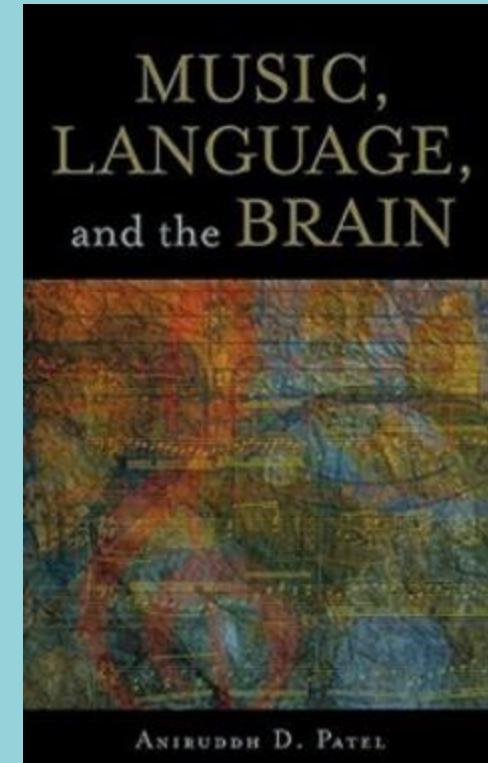
He sees Bernstein pointing in a direction where interesting questions might be asked, leading to a “more formalized system of analysis to capture our intuitions about how a piece works. Will we find substantive universals indicating something about music as a whole? Are there innate properties of human perception or cognition that music shares with other forms of information processing? To what extent do formal principles of music parallel those in language and poetry?”

“Beneath the defects in exposition lay intuitions that were sound, insightful, and often striking.” Many people in the Boston area took a fresh interest in the idea of an alliance between music theory and linguistics, and Irving Singer and David Epstein formed a faculty seminar on music, linguistics, and aesthetics at MIT in the fall of 1974



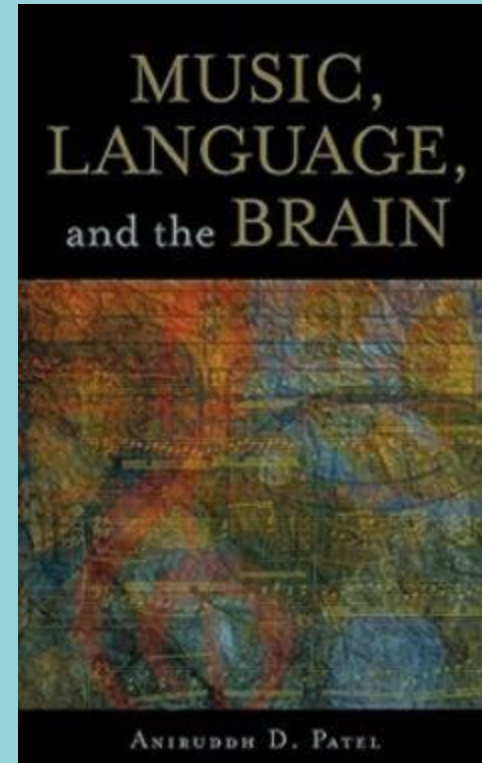
# Evolution, language, and music

- Animals show no evidence for language-like communicative systems in the wild
- No non-human primate has ever been trained to speak
- Songbirds and whales learn “songs” by listening to adults
- Projected by males for mating or territoriality – a hormonally-guided reproductive behavior
- The structural diversity of animal songs is not associated with equally diverse meanings



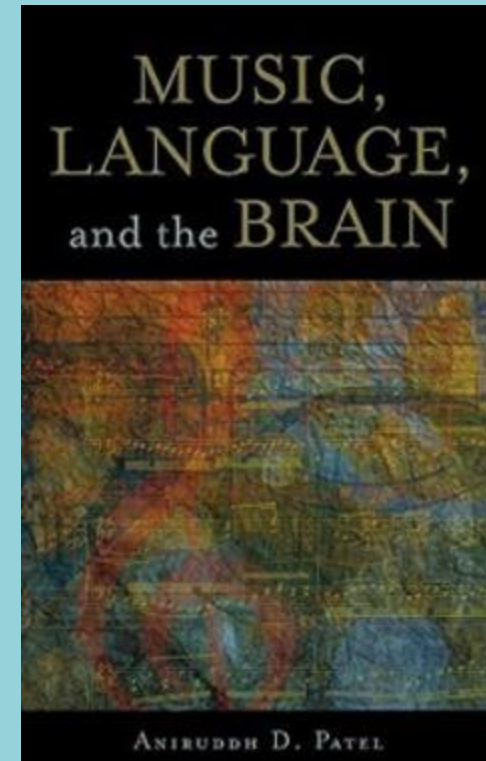
# Evolution, language, and music

- Is music sense something that “evolved,” or was it invented?
- Darwin’s view: musical abilities “must be ranked among the most mysterious with which [we] are endowed.”
- William James thought that the human talent for music was “a mere incidental peculiarity of the nervous system, with no teleological significance” (echoed by Stephen Pinker)



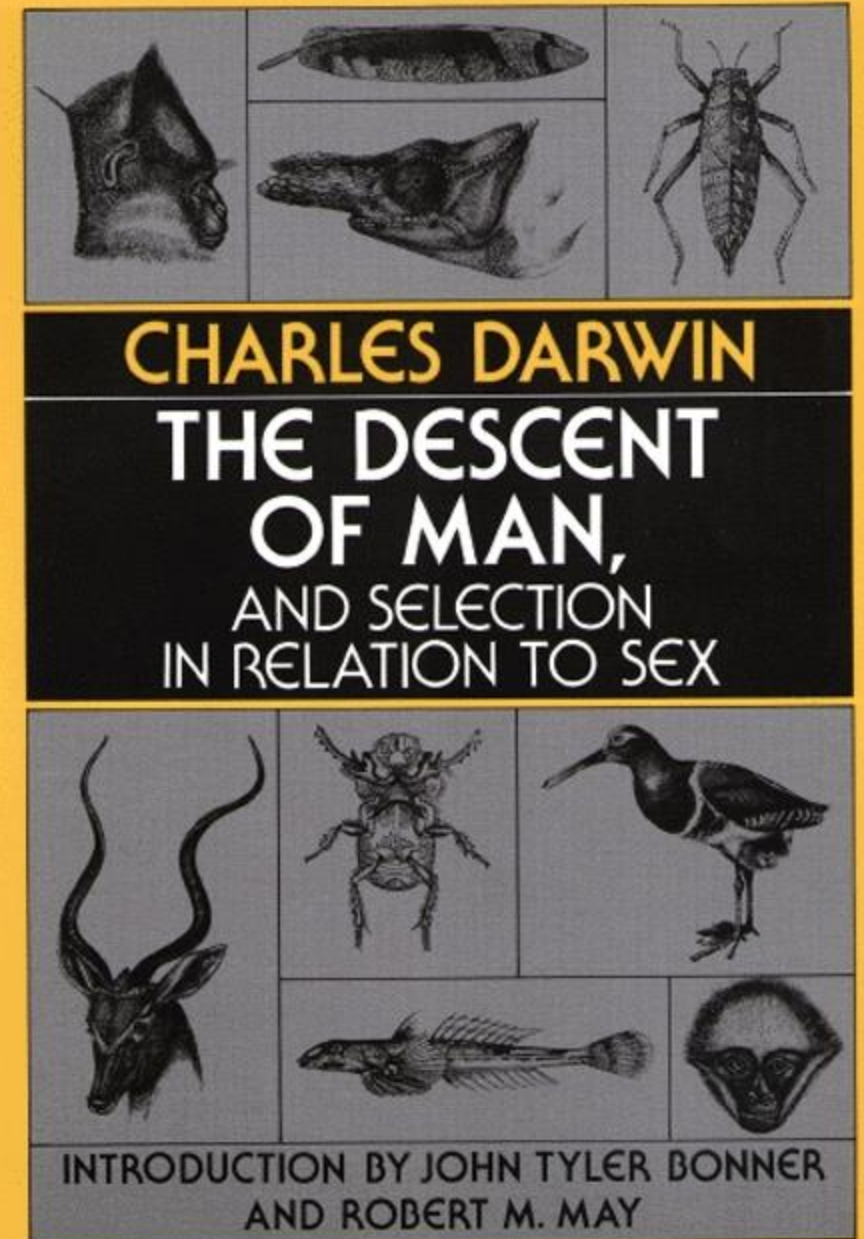
# Evolution, language, and music

- Are humans born with mental capacity to learn music?
- Are there genes that natural selection has shaped for a music sense?
- Are other animals capable of acquiring basic musical abilities?



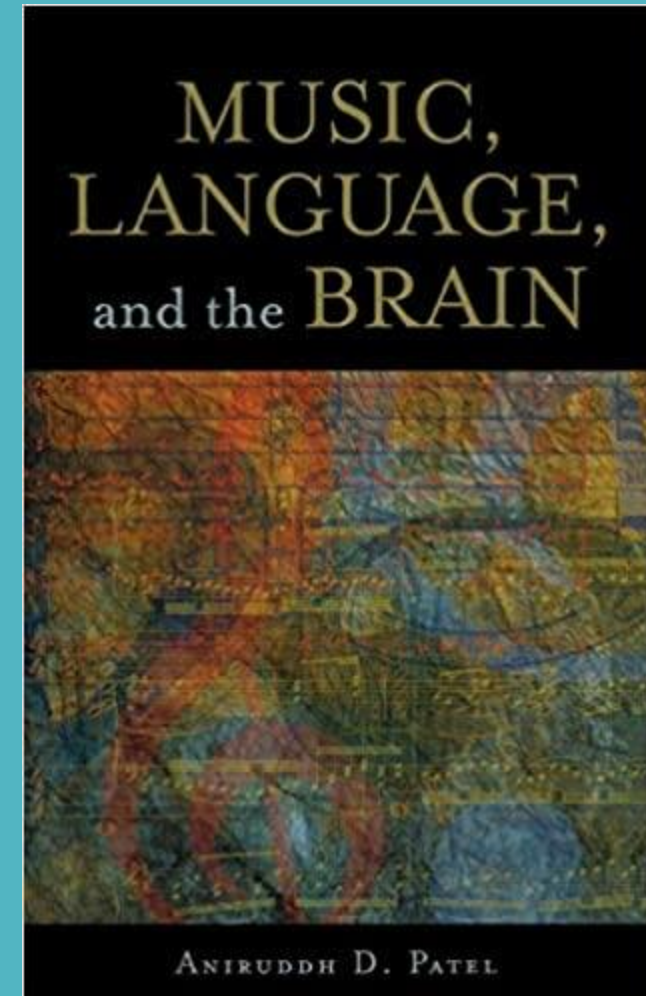
# Evolutionary Origins of Music

1. Charles Darwin: adaptive trait in mate attraction -- the strong emotional responses to music “become...intelligible if we may assume that musical tones and rhythm were used by the half-human progenitors of man, during the season of courtship, when animals of all kinds are excited by the strongest passions.”
2. Darwin’s theory related to phylogeny: “The perception, if not the enjoyment, of musical cadences and of rhythm is probably common to all animals, and no doubt depends on the common physiological nature of their nervous systems” (*Descent of Man*, 1871) – birdsong, rhythmic patterning in nature.
3. Protolanguage?



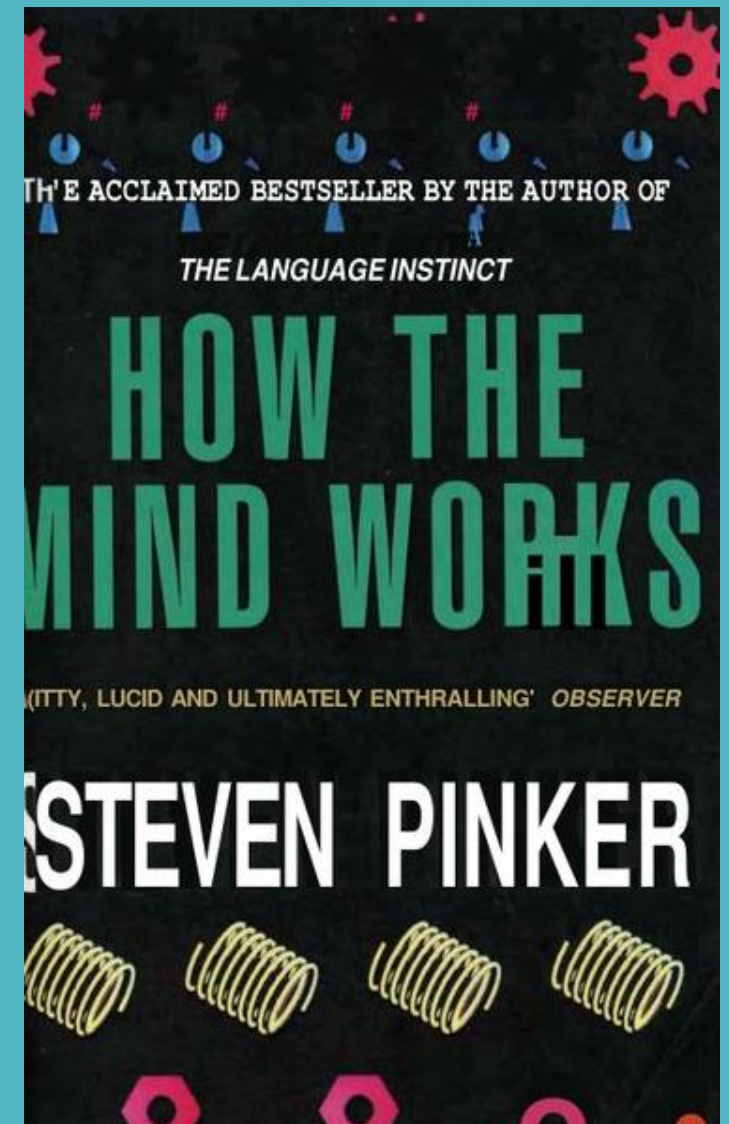
# Evolutionary Origins of Music

1. Engine for brain modification, with acquisition of new capabilities – cooperation, careful listening
2. Beat-based synchronization between performers and listeners – no evidence of non-human animals spontaneously moving to the beat of music
3. **Aniruddh Patel** likens it to fire: a human invention that has transformed the world



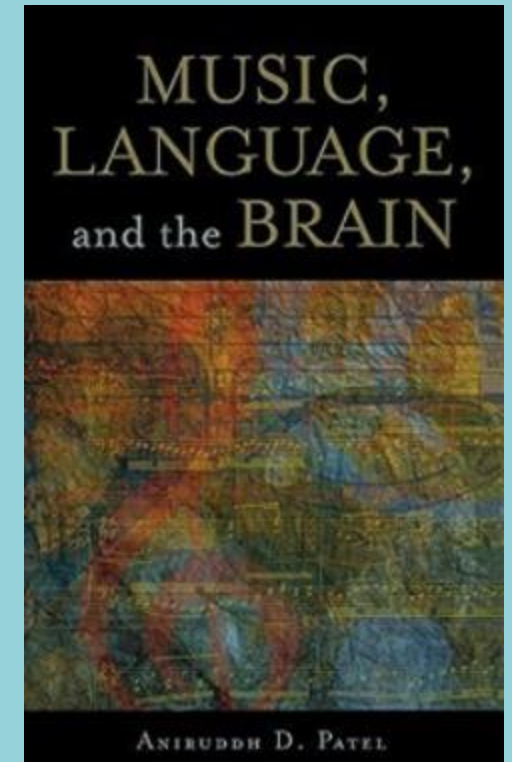


- “A pure pleasure technology, a cocktail of recreational drugs that we ingest through the ear to stimulate a mass of pleasure circuits at once”
- “As far as biological cause and effect are concerned, music is useless.”
  - No signs of design for long life, grandchildren, or accurate perception & prediction of the world
  - “Music could vanish from our species and the rest of our lifestyle would be virtually unchanged”
- “Auditory cheesecake” – a frill, a hedonic diversion easily dispensed?
- Crafted to tickle six of our mental faculties:
  - Language
  - Auditory scene analysis
  - Emotional calls
  - Habitat selection
  - Motor control
  - Something else



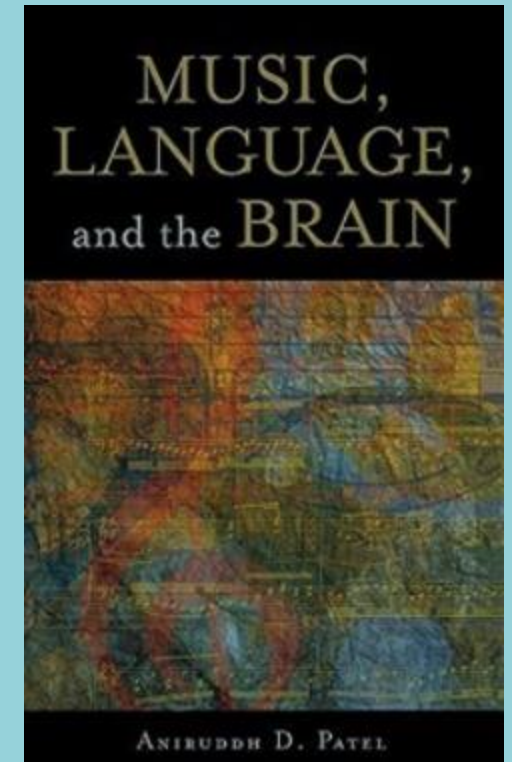
# Uniqueness of the human musical capacity

- Animals show no evidence for language-like communicative systems in the wild
- No non-human primate has ever been trained to speak
- Songbirds and whales learn “songs” by listening to adults
- Projected by males for mating or territoriality – a hormonally-guided reproductive behavior
- The structural diversity of animal songs not associated with equally diverse meanings
  - Readiness to mate, territorial warnings, social status



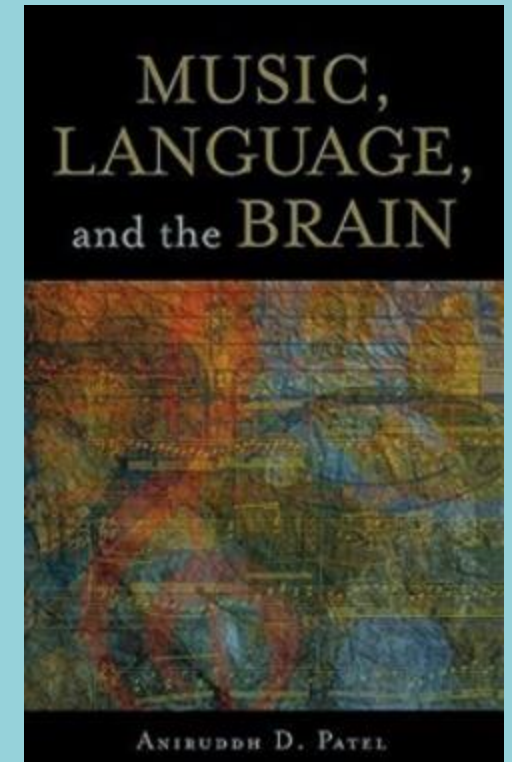
# Natural selection and music

- Are humans born with mental capacity to learn music?
  - Unique among primates in vocal learning (like songbirds, parrots, cetaceans)
  - “Infants come into the world with open ears suited to the sounds of any human language, but soon begin to ‘hear with an accent’”
- Are there genes that natural selection has shaped for a music sense?
  - Tone deafness affects 4% (tuning, melody recognition)
- Are other animals capable of acquiring basic musical abilities?
  - Juvenile birds learn their own species’ songs much better than others



# Animal musical competence

- Absolute & relative pitch
  - Zebra finches & other song birds can be trained to distinguish precise (absolute) pitches – better than most humans
  - Babies are better at relative pitch: “Natural selection may have modified the human auditory system to favor relative pitch processing, a modification that may have its origins in speech intonation perception”
- Consonance & dissonance
  - Consonant & dissonant intervals generate qualitatively different patterns of neural activity in monkey auditory cortex
  - Tamarins show no preference for octaves/fifths/fourths, in contrast to 2-month-old babies
- Tonality – monkeys don’t like atonal music!

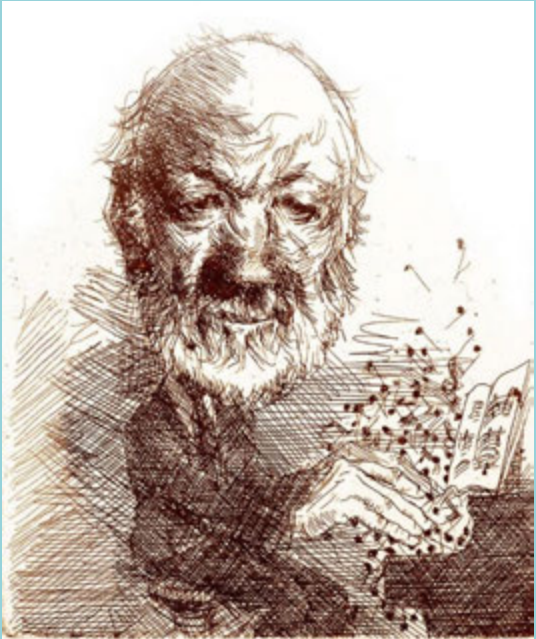








# Paper assignment for Sunday, Feb 4



David Levine

If Charles Ives was creating a musical illustration of Emerson's idea of *The Unanswered Question*

- *What exactly is the question being asked?*
- *How does Ives answer the question?*
- *How does Bernstein's interpretation of the question differ from Emerson and Ives?*



Mike Scott

# Post-script

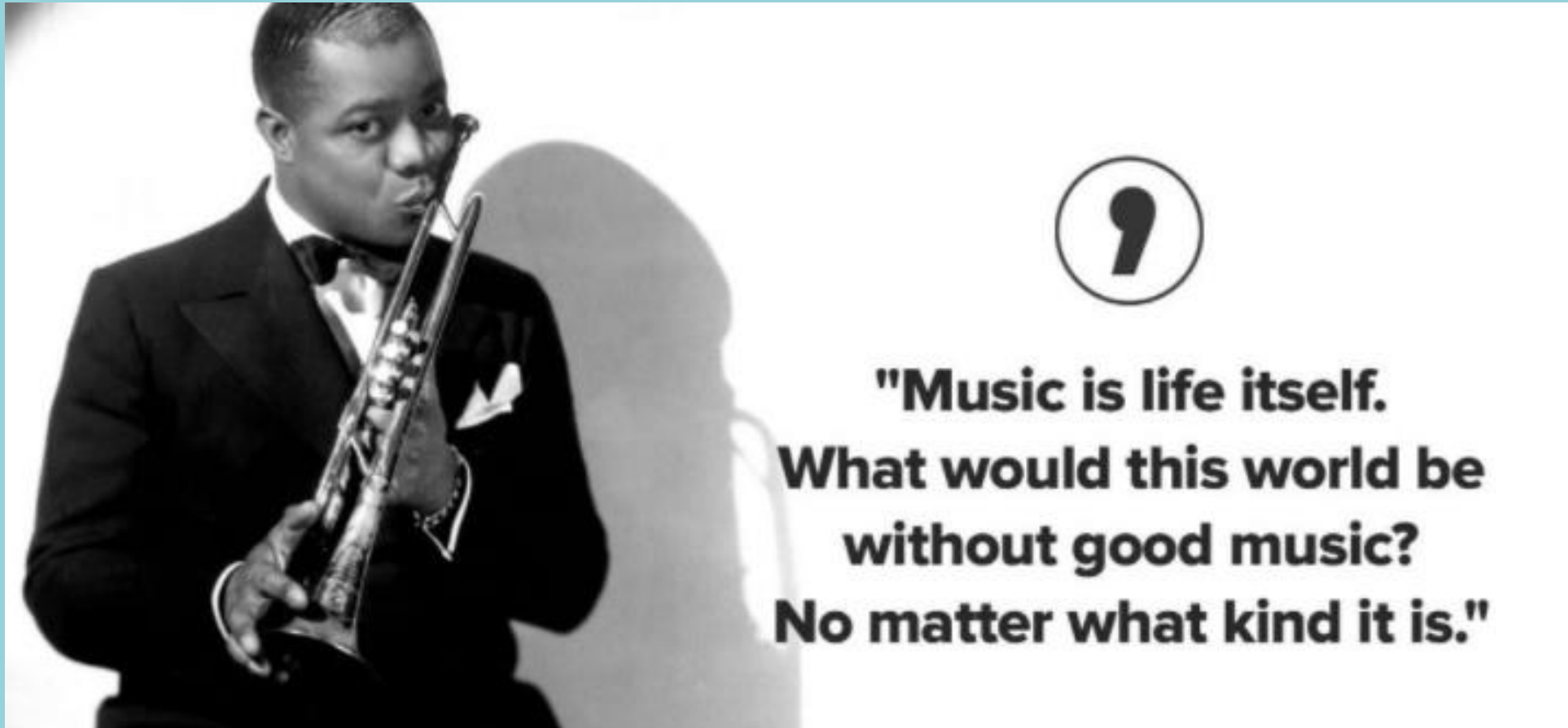


*The gift of imagination is by no means an exclusive property of the artist; it is a gift we all share; to some degree or other all of us, all of you, are endowed with the powers of fantasy...*

*The dullest of dullards among us has the gift of dreams at night — visions and yearnings and hopes. Everyone can also think; it is the quality of thought that makes the difference — not just the quality of logical thinking, but of imaginative thinking.*

Tanglewood, 1970

## *Post-script*



**"Music is life itself.  
What would this world be  
without good music?  
No matter what kind it is."**