

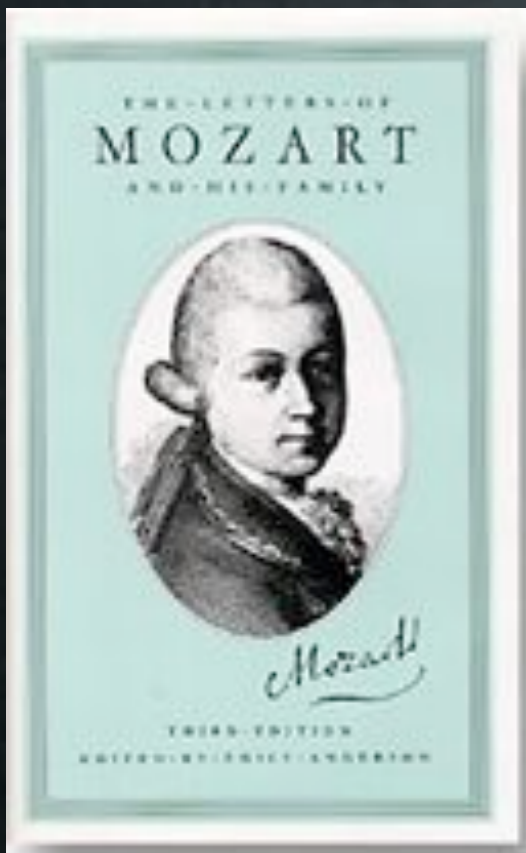


Embodied cognition



Gotye: «Hearts a Mess» (2007)





“Just in the middle of the first Allegro there was a passage which I felt sure must please. The audience were quite carried away – and there was a tremendous burst of applause. But as I knew, when I wrote it, what effect it would surely produce, I had introduced the passage again at the close – when there were shouts of ‘da capo’.”

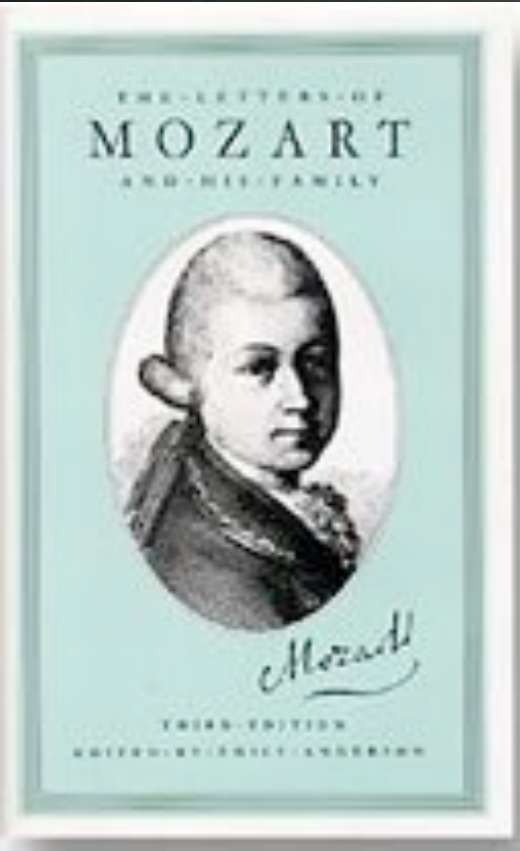
Anderson, Emily, 1966, *The Letters of Mozart and his Family*. Chronologically arranged, translated and edited with an Introduction, Notes and Indexes. (311 Mozart to his Father) P. 558.

The Orchestra of the Eighteenth Century, conducted by Frans Brüggen:

Wolfgang Amadeus Mozart: Symphony No. 31 in D, KV 297 ‘Paris’, I Allegro assai

03:29 - 03:43





“The Andante also found favour, but particularly the last Allegro, because, having observed that all last as well as first Allegros begin here with all the instruments playing together and generally unisono, I began mine with two violins only, piano for the first eight bars – followed instantly by a forte; the audience, as I expected, said ‘hush’ at the soft beginning, and when they heard the forte, began at once to clap their hands.”

Anderson, Emily, 1966, *The Letters of Mozart and his Family*. Chronologically arranged, translated and edited with an Introduction, Notes and Indexes. (311 Mozart to his Father) P. 558.

The Orchestra of the Eighteenth Century, conducted by Frans Brüggen:

Wolfgang Amadeus Mozart: Symphony No. 31 in D, KV 297 ‘Paris’, III Allegro

0:00 - 0:27



F.o.m. 1800-tallet: Et stillesittende, konsentrert publikum.



Et disiplinert, kontrollert publikum.



Swing Jazz - jazz som dansemusikk



Benny Goodman



The Charleston

Be bop - cool jazz - jazz som lyttemusikk



Dizzy Gillespie

Rock - Elvis - bevegelse



Elvis Presley performing “Hound Dog” at the TV-show “Texaco Star Theater” in 1956





Mind-body split



Rene Descartes (1596-1650)



Musikkpsykologi

Musikkforskning - hørsel



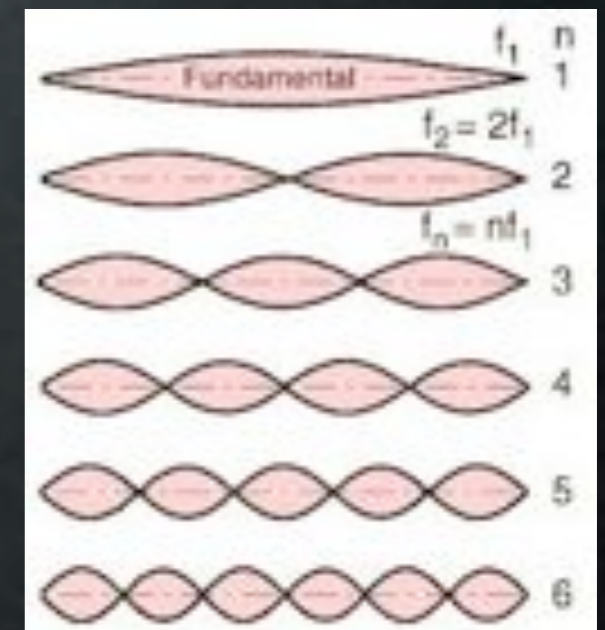
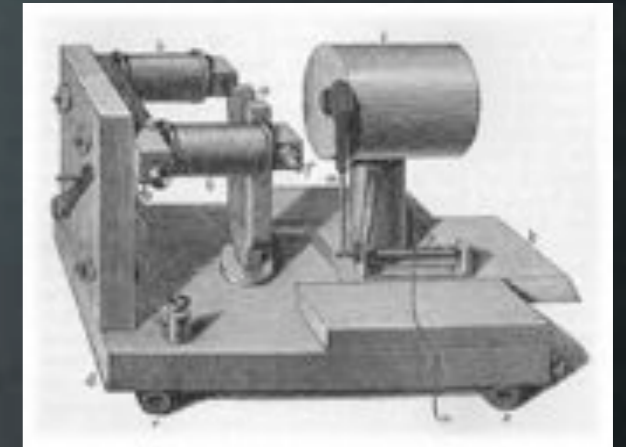
Hermann von
Helmholtz
(1821-1894)



Die Lehre von den Tonempfindungen:
als physiologische Grundlage für die
Theorie der Musik (1863)

«Læren om toneopplevelsen: som et
psykologisk grunnlag for musikkteori»

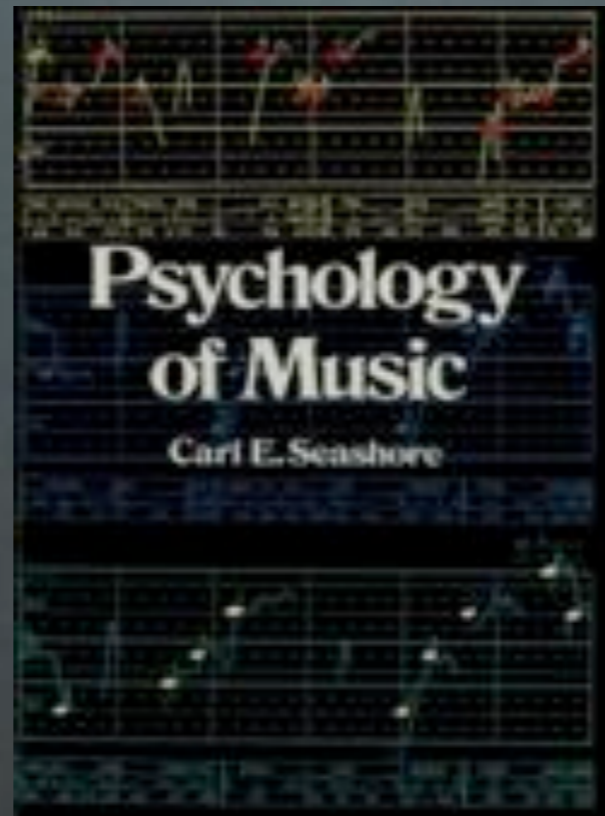
- studere et musikalsk fenomen som et fysisk objekt
- et matematisk språk
- i overensstemmelse med fysiske lover



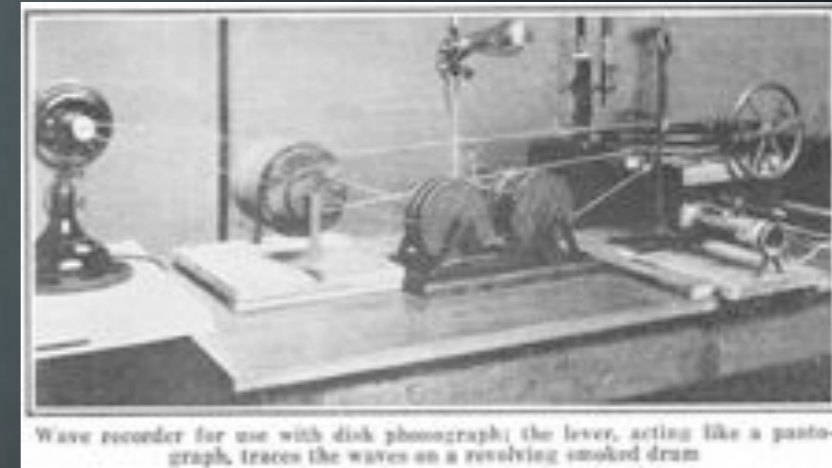
Musikkpsykologi



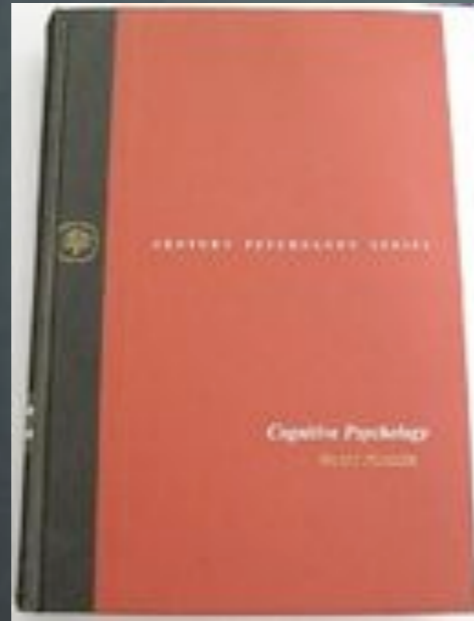
Carl Emil Seashore
(1866-1949)



Psychology of Music (1938)

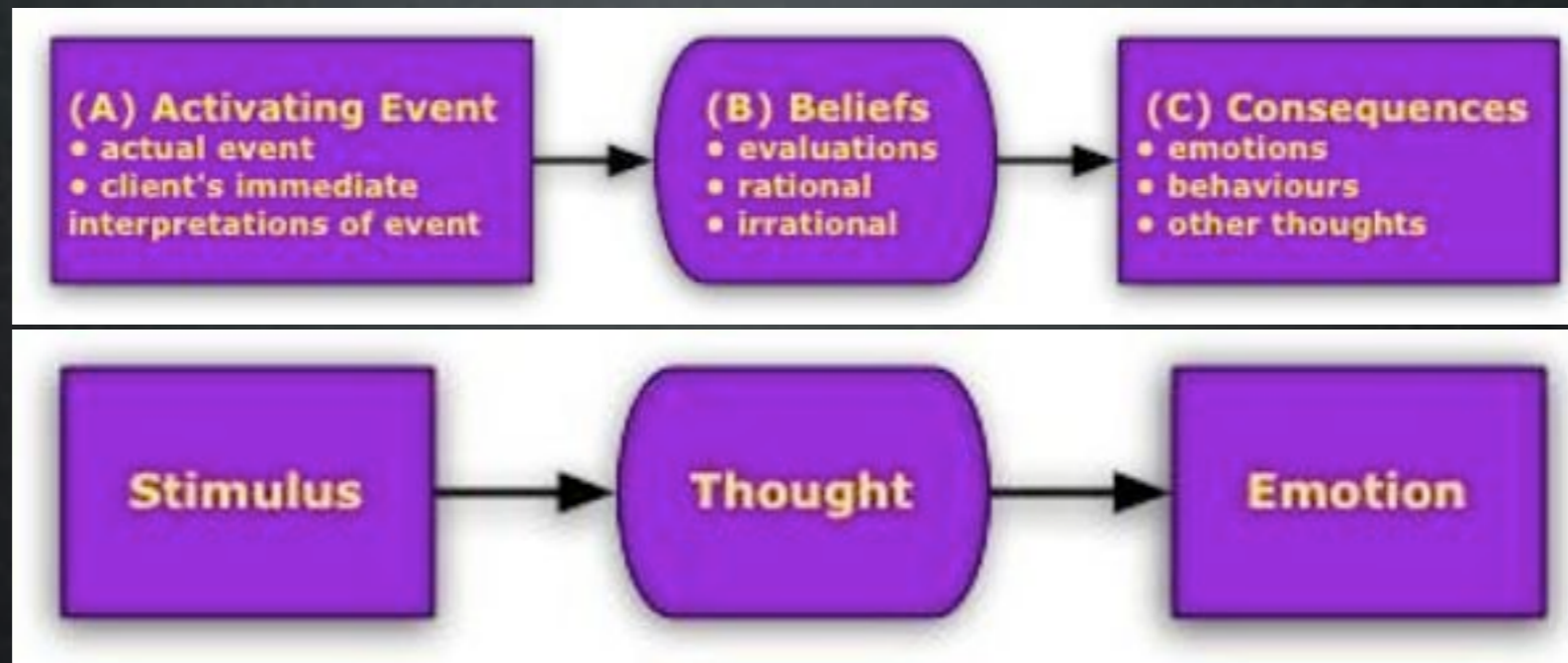


Kognitiv psykologi



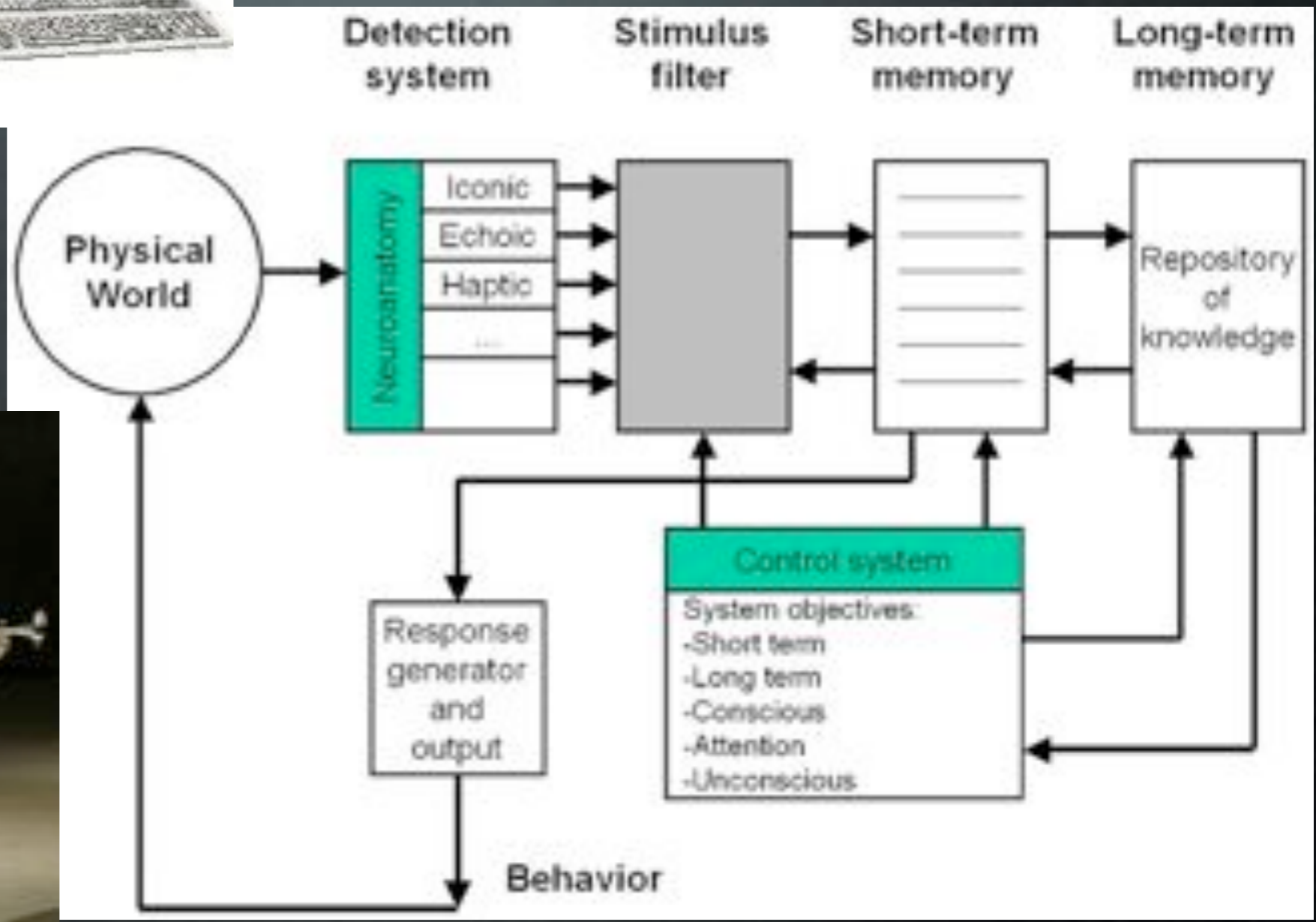
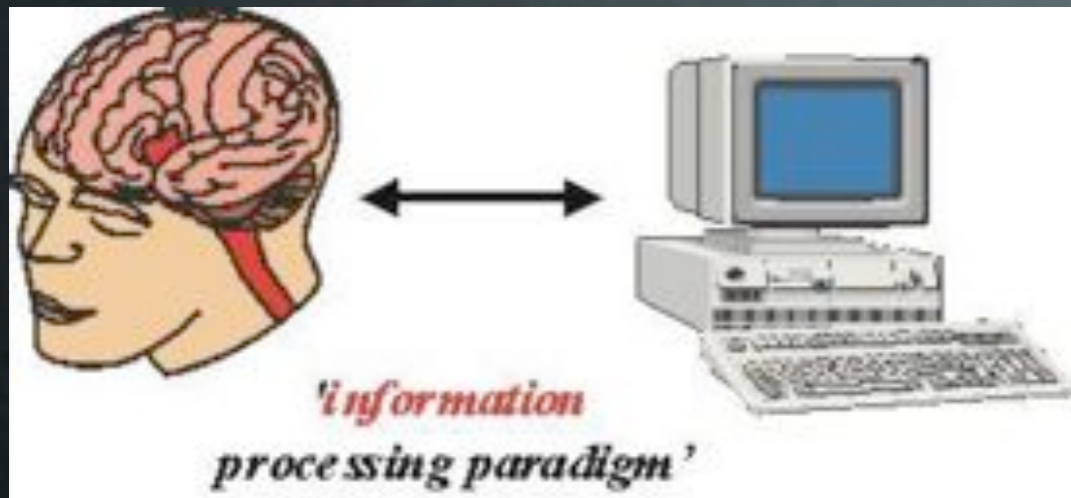
Cognitive Psychology
(1967)

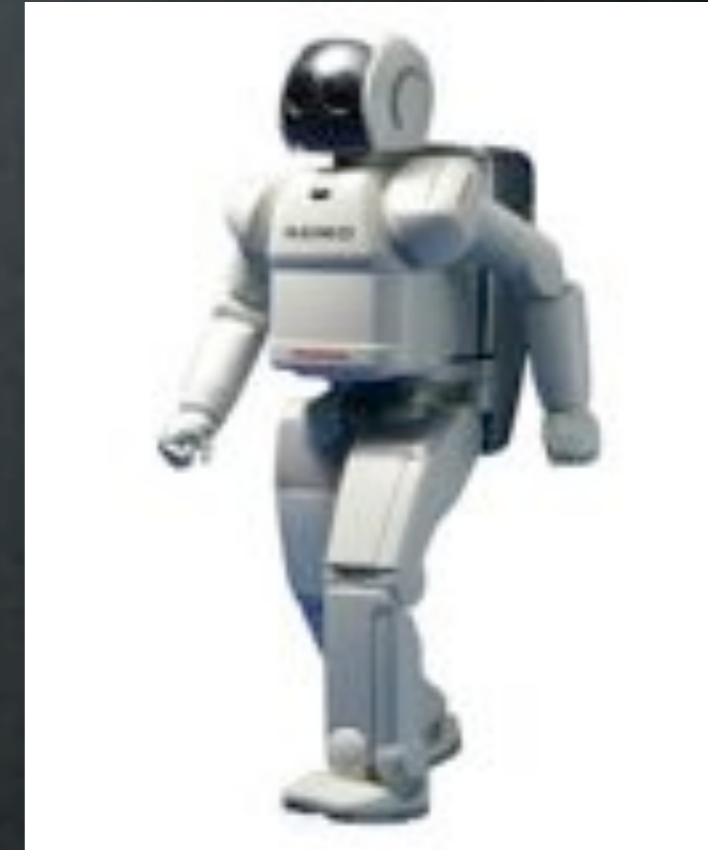
Ulric Neisser
(1928-2012)



Kognitiv psykologi

datamaskin- modellerna

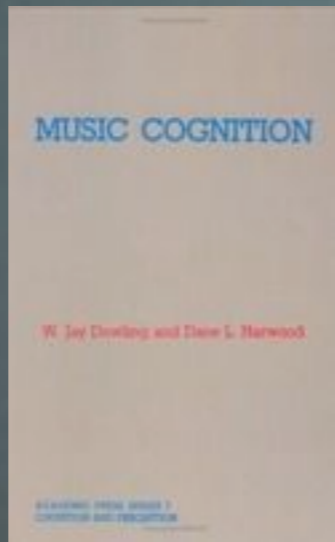




Hondas robot Asimo

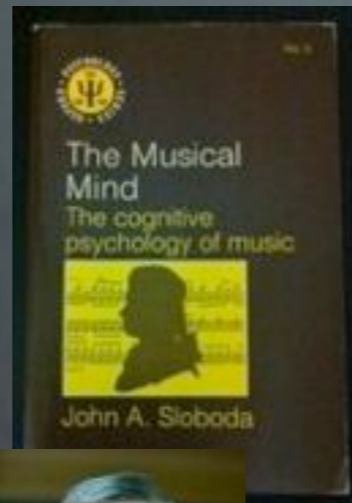


Carol L. Krumhansl:
Cognitive Foundations of Musical Pitch (1990)

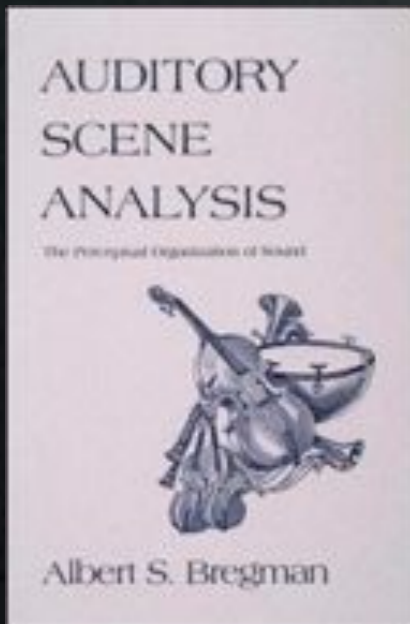


W. Jay Dowling & Dane L. Harwood: Music Cognition (1986)

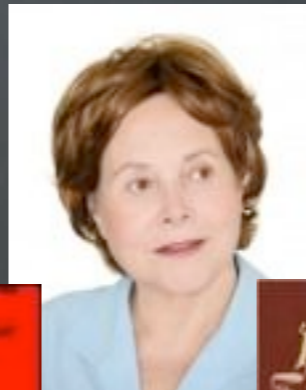
Fred Lerdahl & Ray Jackendoff:
A Generative Theory of Tonal Music (1983)



John A. Sloboda:
The Musical Mind:
The Cognitive psychology of music (1985)



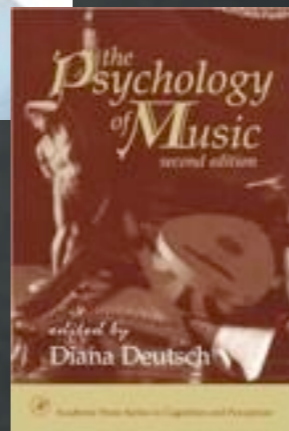
Albert S. Bregman:
Auditory Scene Analysis:
The Perceptual Organization of Sound (1990)



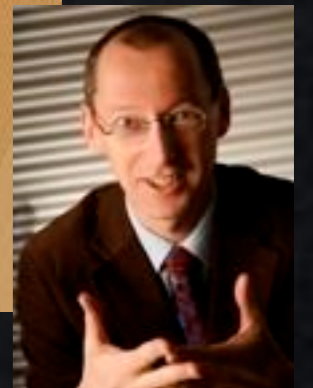
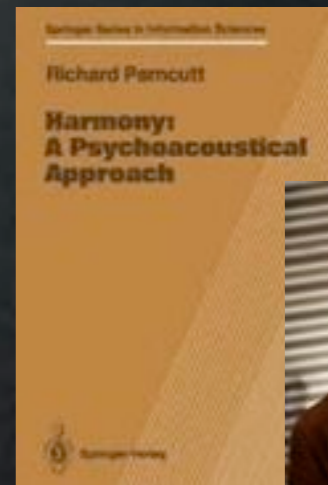
Diana Deutsch



1982



1998



Richard Parncutt:
Harmony: A Psychoacoustical Approach (1989)

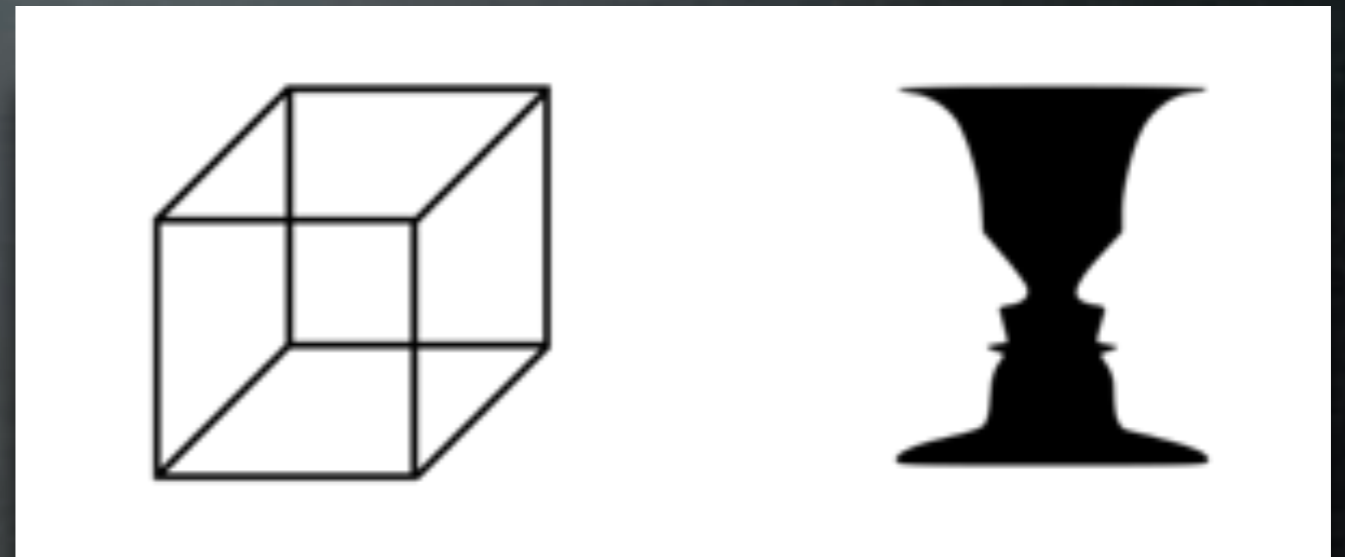
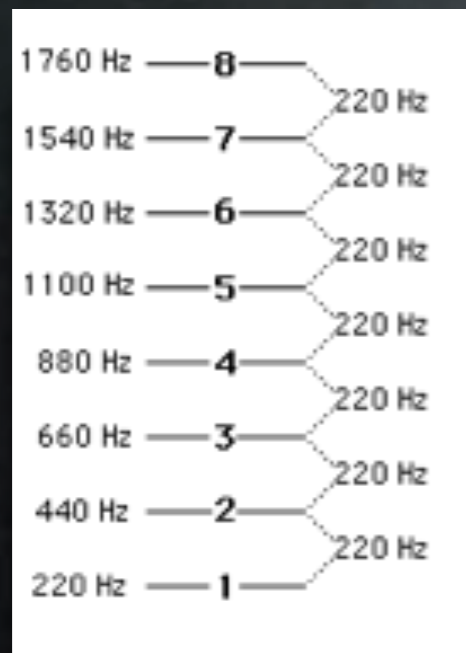
Typiske
forskningsfelt
innen
musikk-
psykologi:

Manglende grunn tone
- the missing fundamental

Harmonics: Hz:

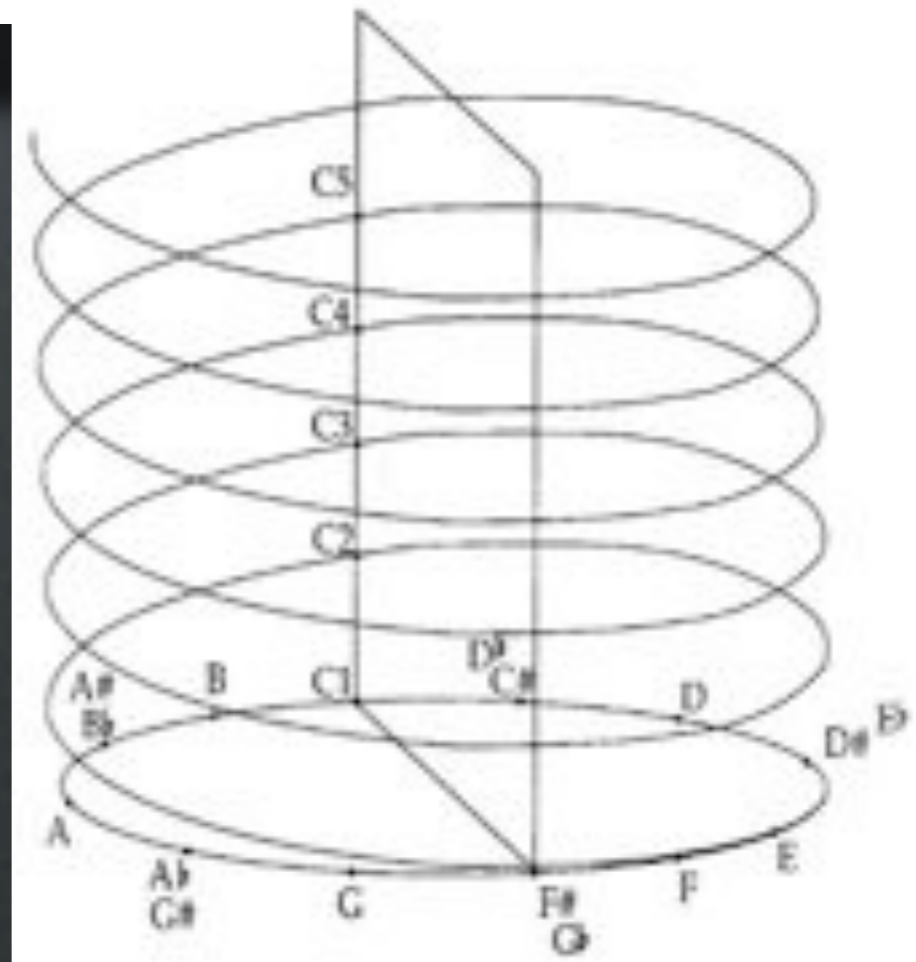
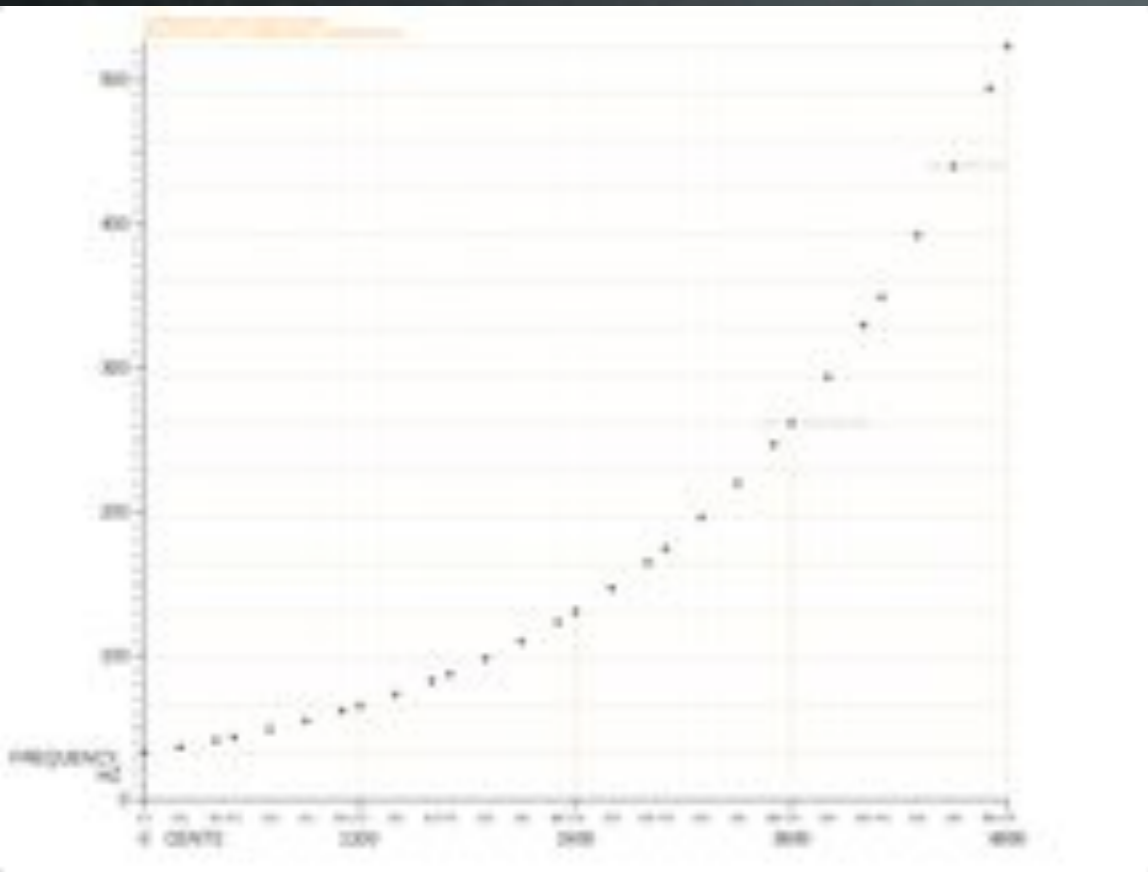
440 / 55 = 8
385 / 55 = 7
330 / 55 = 6
275 / 55 = 5
220 / 55 = 4
165 / 55 = 3
110 / 55 = 2

Fundamental: (55)



Typiske
 forskingsfelt
 innen
 musikk-
 psykologi:

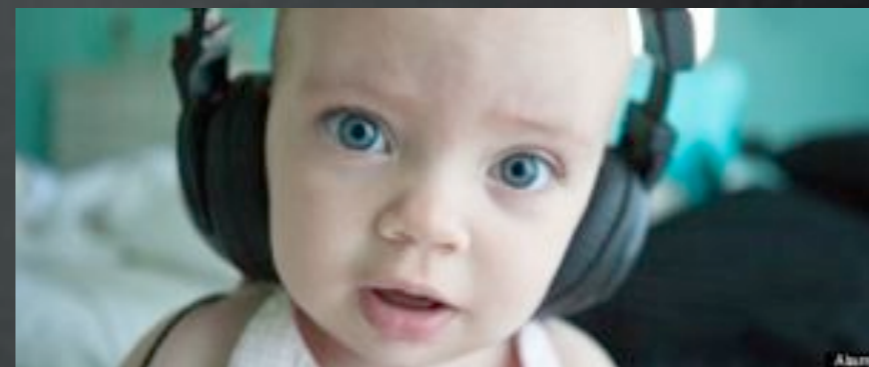
Tonehøyde - toneklasse



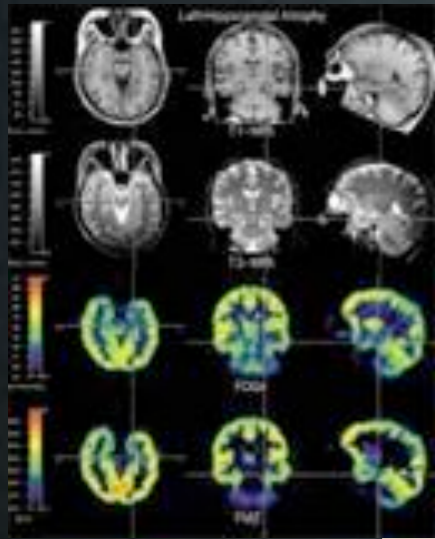
Shepard-tone

Typiske forskingsfelt innen musikk-psykologi:

Absoluttgehør

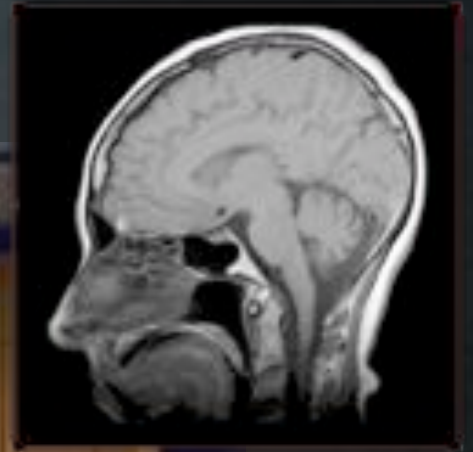


Kognitiv nevrovitenskap



PET

positronemisjonstomografi



MR

magnetresonanstomografi



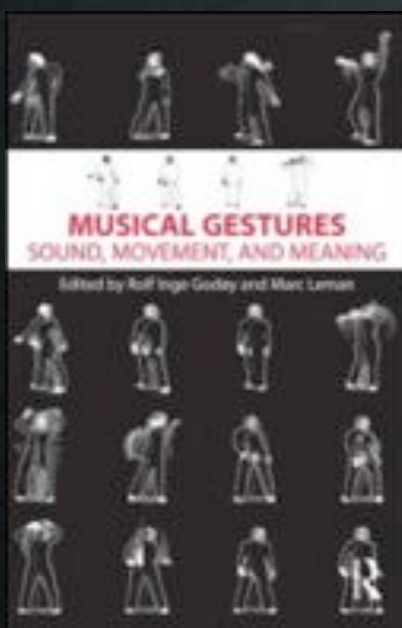
EEG

elektroencefalogram

Pensum:



Kap. 6-7 i
Jensenius, Alexander Refsum
Musikk og bevegelse
2009. Unipub



Kap. 5 i
Godøy, Rolf Inge & Leman, Marc
Musical Gestures: Sound, Movement, and Meaning.
2010. Routledge

Lawrence Shapiro, 2011: Embodied Cognition: New Problems of Philosophy



Forfatterens mål med boken:

1. Introdusere og utvikle sentrale temaer innen *embodied cognition*.
2. Vurdere forholdet mellom *embodied cognition* og tradisjonell kognisjonsvitenskap (*standard cognitive science*).

Embodied cognition:

- mer et forskningsprogram enn en veldefinert teori.

Tradisjonell kognisjonsvitenskap versus

Embodied cognition (kroppsorientert kognisjon?)

Studerer de det samme?

hvis JA: Har de konkurrerende forklaringer?

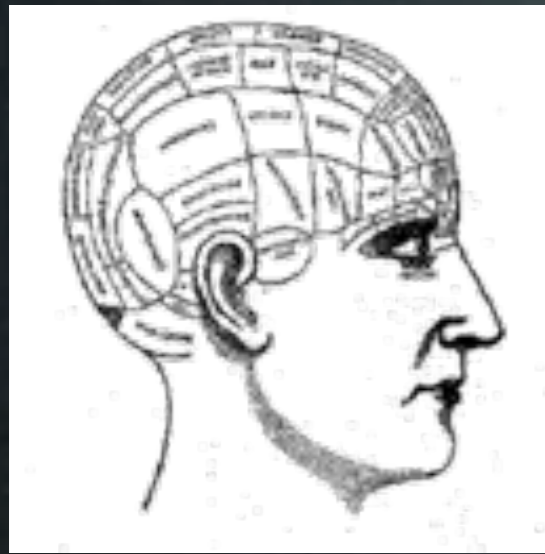
- forskere bør velge den beste forklaringen.

hvis NEI: Forklaringene er overflødige eller komplementerende og forskere kan velge fritt hva de vil følge.

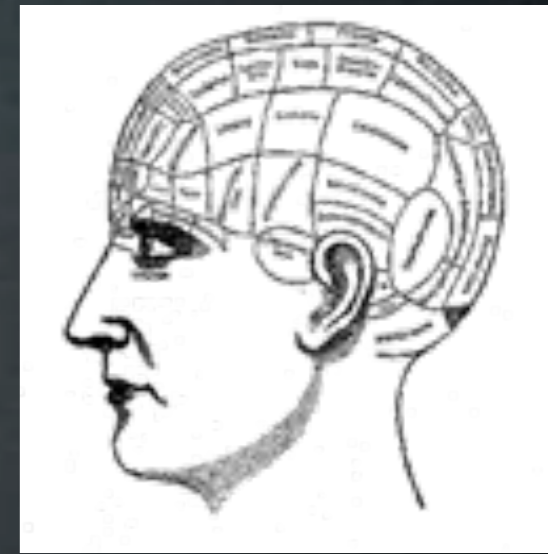
hvis NEI: er de forskjellige retningene verdt å forfølge?

hvis JA: alt er bra og begge retninger kan være nyttige.

hvis NEI: en av retningene bør avvikles.



Tradisjonell kognisjonsvitenskap



Kognisjon anses som algoritmiske prosesser utført med symbolsk representasjon.

Benytter standardiserte metodologiske praksiser for å studere trekk ved algoritmiske prosesser og representasjoner (f.eks. måling av reaksjonstid, gjenkjenning, avvenningsprosesser, etc.)

Tradisjonell kognisjonsvitenskap:

1. Stimuli for psykologiske prosesser er mangelfulle.
2. I psykologiske prosesser dannes slutninger ut fra ufullstendig informasjon.
3. Denne prosessen beskrives best med å beskrive algoritmiske operasjoner over et domene av symbolske representasjoner.
4. Studier kan derfor begrenses til prosesser innad i hjernen.

Svakheter...

- utfordres av Gibson, Hatfield, connectionists...
- ny refleksjon om kroppens posisjon i kognisjonsstudiet.

2. Kap. Challenging standard cognitive science

1. Gibsons økologi-orienterte persepsjonsteori

2. Hatfields *Noncognitive Computationalism*.

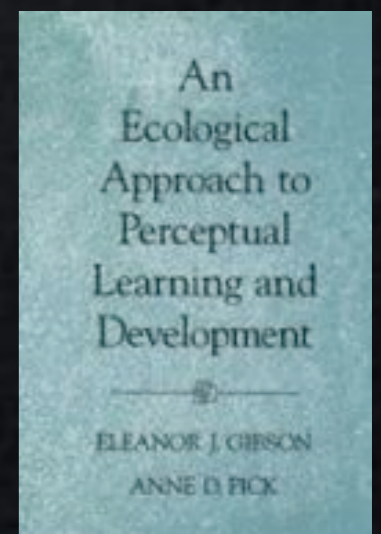
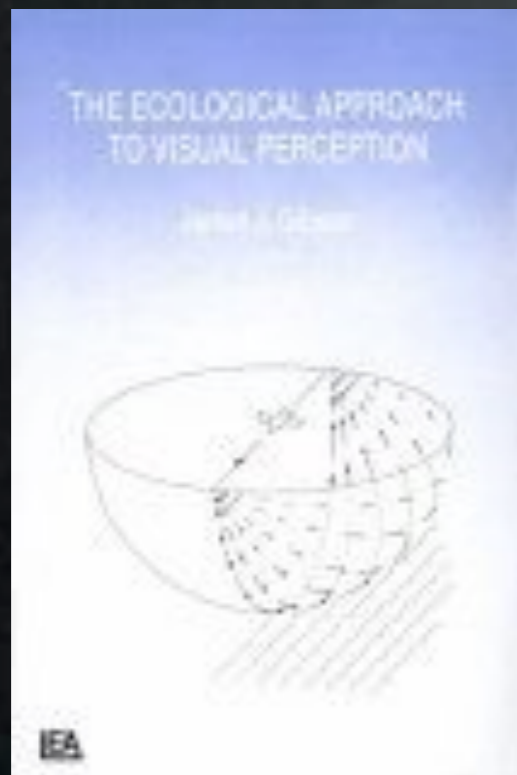
3. The Connectionist Challenge

Økologi-orientert persepsjonsteori



James J. Gibson (1904-1979)

- *Verden rundt oss er strukturert.
- *Hjernen trenger ikke å prosessere sansestimuli for å få informasjon - trenger bare å resonere til informasjonen som er i sansestimuliet.
- * Affordance
- * Persepsjon - aksjon
- * Perseptuell læring

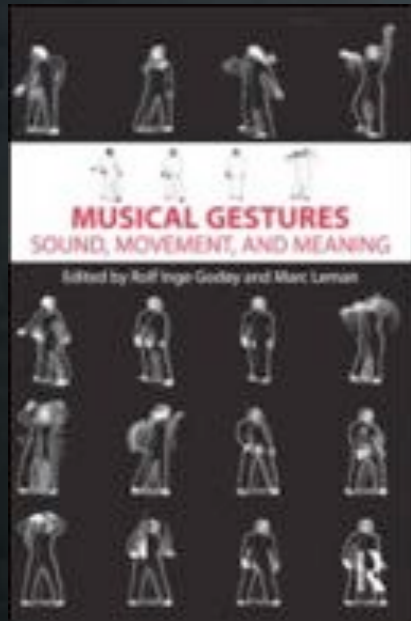


Affordances

Affordanser



Gestural affordances



Kap. 5 i

Godøy, Rolf Inge & Leman, Marc

Musical Gestures: Sound, Movement, and Meaning.
2010. Routledge

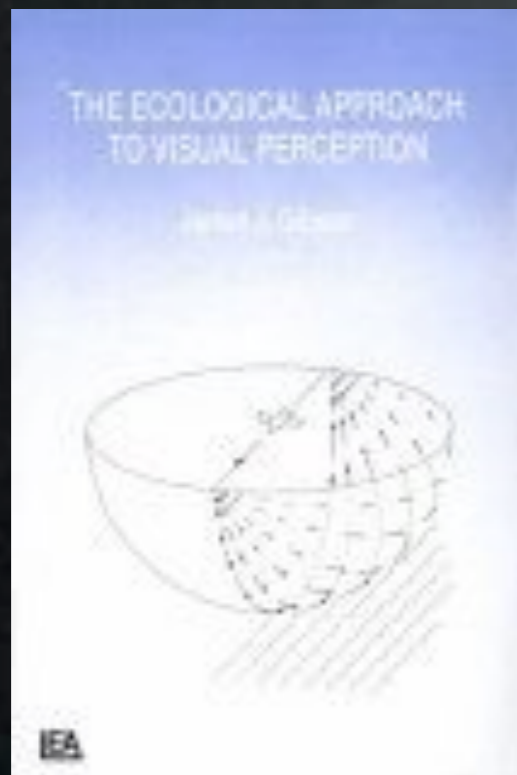


Økologi-orientert persepsjonsteori



“Perceiving is an act, not a response, and act of attention, not a triggered impression, an achievement, not a reflex”

Gibson, J. J., 1979. The Ecological Approach to Visual Perception. P. 127.



* Persepsjon - aksjon

Noncognitive Computationalism

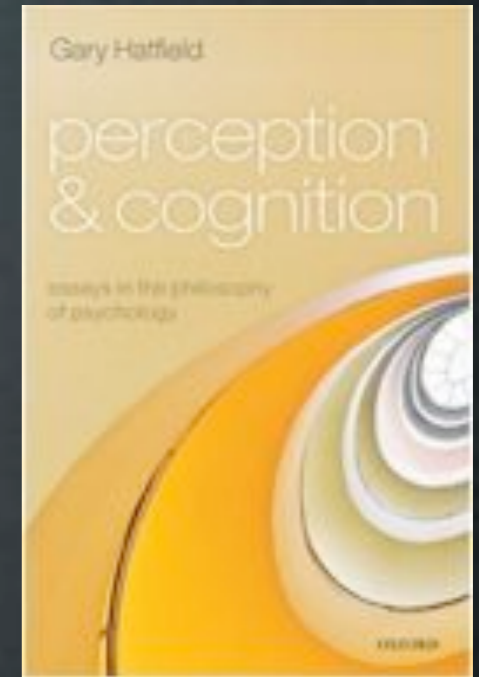
Gary Hatfield



- støtter mye av Gibsons ideer men mener han for dårlig beskriver kognitive prosesser.

- posisjon mellom Gibson og tradisjonell kognisjonsviteskap.

-forfekter at kognitive prosesser best beskrives som beregninger med representerende tilstander, men avviser at prosessene er konstruert rundt slutninger (*inferential*).

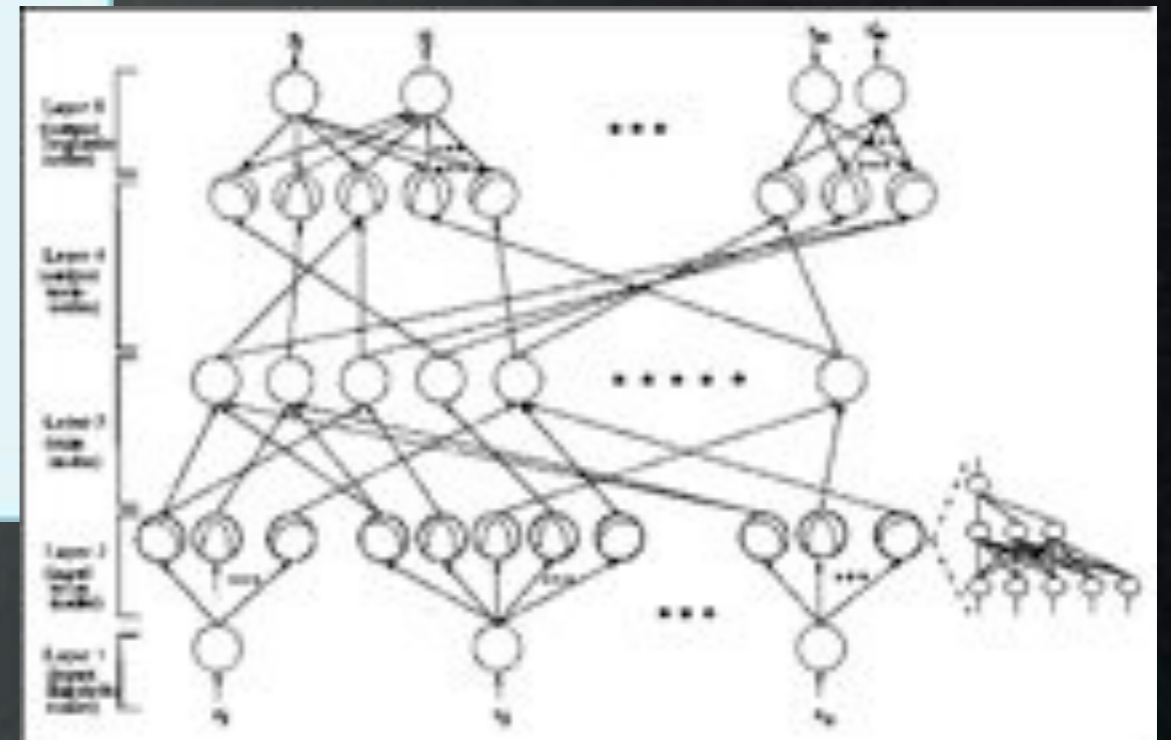
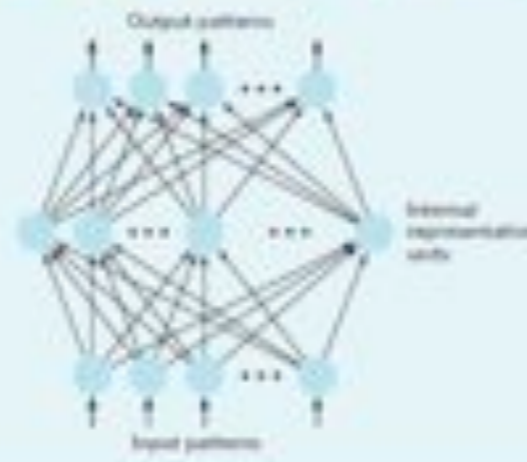
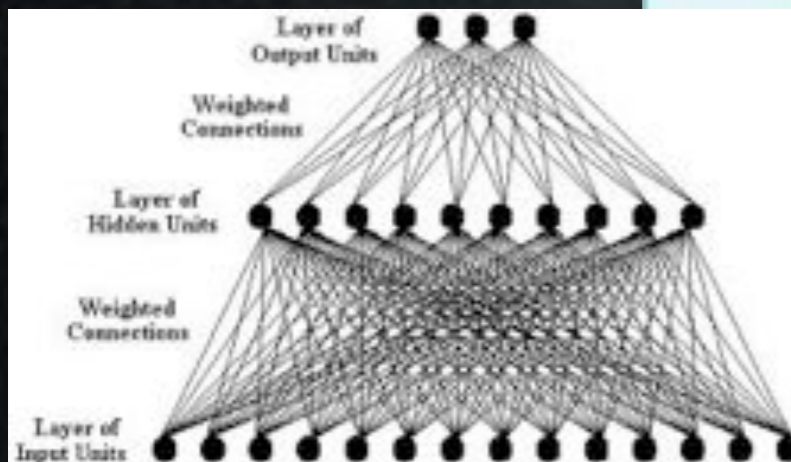


The Connectionist Challenge

Gir en datamaskin-modell et godt bilde av hvordan hjernen opererer eller ikke?

Connectionist-modeller: datamaskiner som ikke opererer serielt, men har mange samtidige operasjoner

- har læringsmuligheter
- har ikke behov for et internt symbolsystem



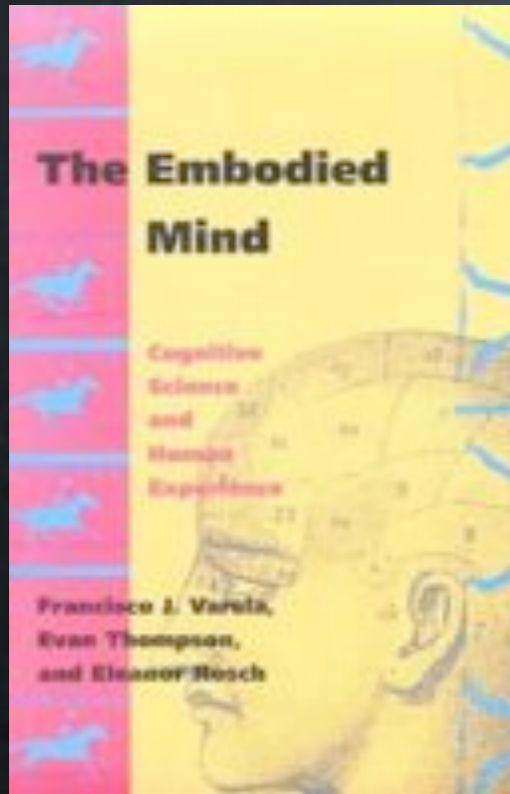
3. Kap. Conceptions of embodiment

1. Varela, Thompson, and Rosch: World Building

2. Thelen: Representation *Lite*

3. Clark: Thinking with the Body

Varela, Thompson, and Rosch: World Building



The Embodied Mind:
Cognitive Science and
Human Experience
(1991)

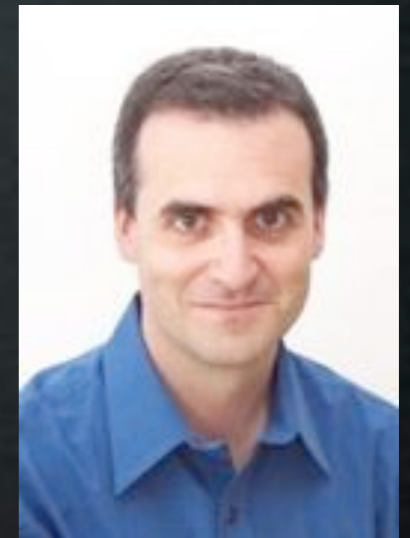
The Embodied Mind (1991)
-en urtekst innen
embodied cognition

Embodied:

1. Kognisjon avhenger av erfaringer som kommer fra å ha en kropp med visse sensomotoriske egenskaper.
2. Disse egenskapene er integrert i en mer omsluttende biologisk, psykologisk og kulturell kontekst.



Francisco Varela - nevrovit.
(1946-2001)



Evan Thompson - filosofi

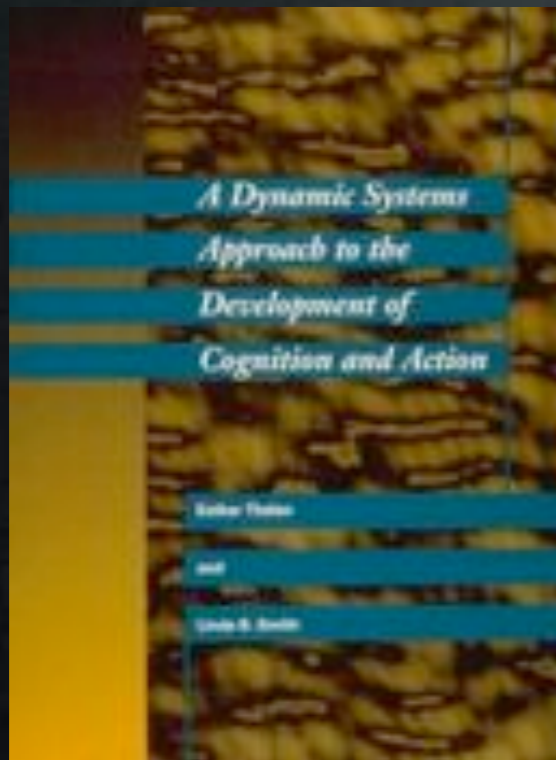


Eleanor Rosch - kogn. psyk.

Thelen: Representation *Lite*



Esther Thelen
(1941-2004)



Å si at kognisjon er *embodied* betyr at den har sitt utspring i vår kroppslig interaksjon med vår omliggende verden.

Kognisjon avhenger av den erfaring vi har fra å ha spesifikke perseptuelle og motoriske egenskaper som er uadskillelig sammenknyttet og sammen skaper en matrise der resonnering, hukommelse, følelser, språk og alle andre aspekter ved vårt mentale liv sammenveves.

Lawrence Shapiro, 2011: Embodied Cognition: New Problems of Philosophy



Cognition is embodied insofar as it emerges not from an intricately unfolding cognitive program, but from a dynamic dance in which body, perception, and world guide each other's steps. (p. 61)

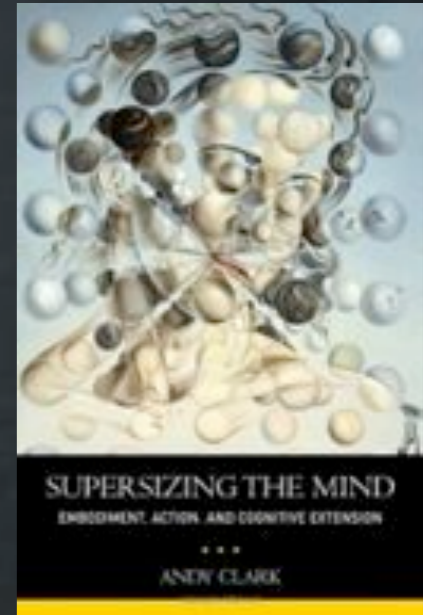
Clark: Thinking with the Body

Peker på seks kjennetegn ved studier innen *embodied cognition*:

1. Nontrivial Causal Spread (- flere muligheter - vi velger det enkleste - bruk av eksterne naturlige krefter i miljøet)
2. Principle of Ecological Assembly (- gode resultater via minst mulig anstrengelse)
3. Open Channel Perception (plukke opp invarianter - det som er forskjellig - mer effektiv sansning)
4. Information Self-structuring (ta del i handling som fremskaffer informasjon som har betydning).
5. Perception as Sensorimotor Experience (erfaringsbasert forventning om bevegelse).
6. Dynamic-Computational Complementarity (plass også for mer tradisjonelle forklaringsmodeller).



Andy Clark
filosof



Inndeling i tre temaer:



1. CONCEPTUALIZATION (BEGREPSDANNELSE)

De begreper vi bruker for å forstå den verden vi lever i avhenger av hva slags kropp vi har.

2. REPLACEMENT (UTSKIFTNING)

Vår kropps interaksjon med våre omgivelser erstatter behovet for representerende prosesser. Tenkning baserer seg ikke på algoritmiske prosesser med symbolske representasjoner.

3. CONSTITUTION (SAMMENSETNING)

Kroppen eller også den verden vi omgir oss med spiller en grunnleggende heller enn bare årsaksmessig rolle i kognitive prosesser.

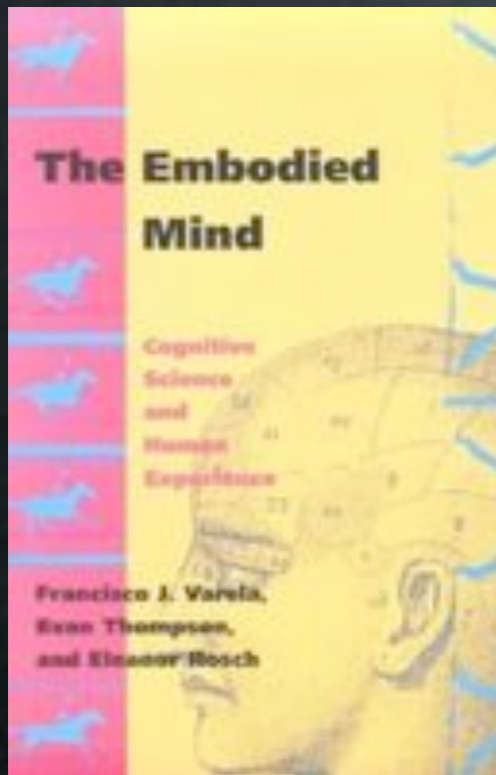
Lawrence Shapiro, 2011: Embodied Cognition: New Problems of Philosophy



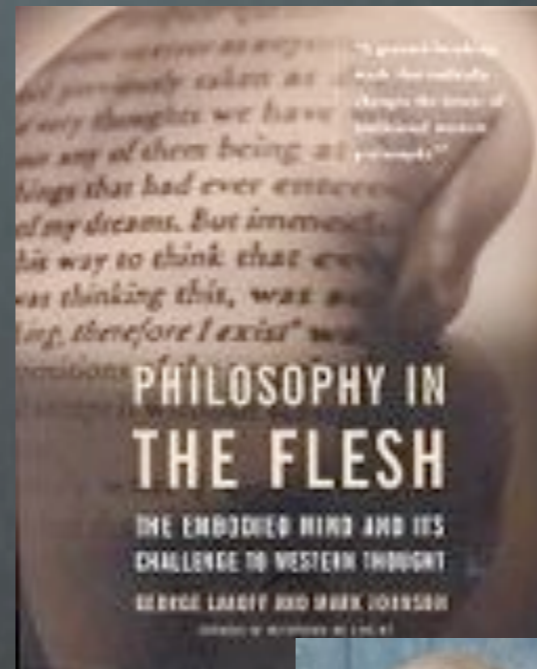
1. Hvordan er vår forståelse formet av kroppslige opplevelser?

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The Embodiment of Color



The Embodiment of Metaphor

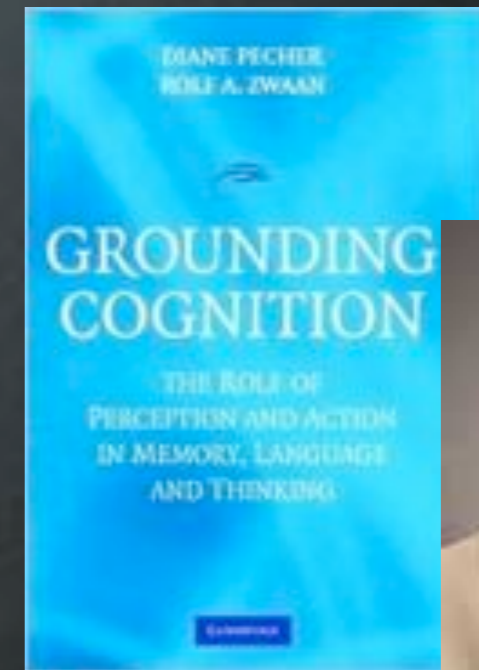


George Lakoff



Mark Johnson

The Indexical Hypothesis



Arthur Glenberg



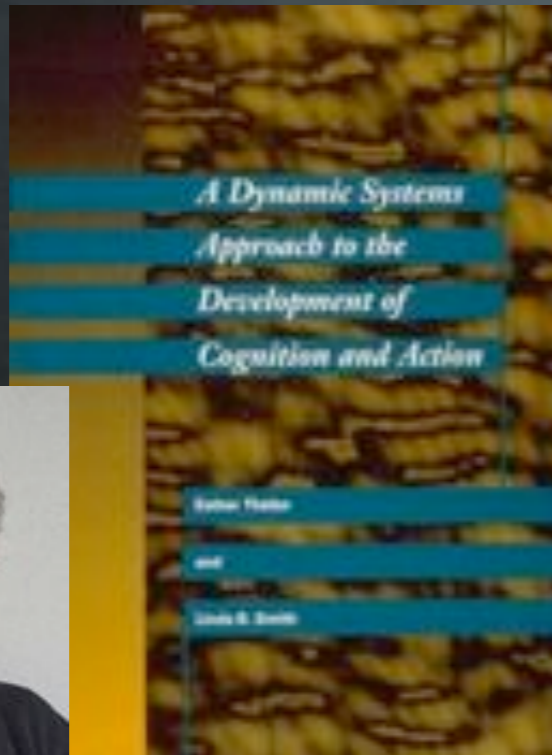
Lawrence Barsalou

Lawrence Shapiro, 2011: Embodied Cognition: New Problems of Philosophy



1. Hvordan er vår forståelse formet av kroppslige opplevelser?
2. Er datamaskinmetaforen en god metafor for hvordan vår tenkning fungerer?

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Esther Thelen
(1941-2004)



Tim van Gelder



Randall Beer



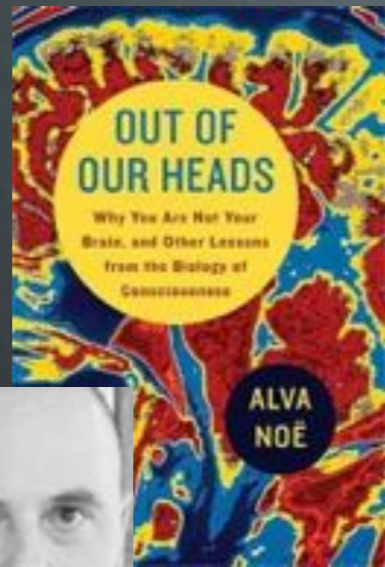
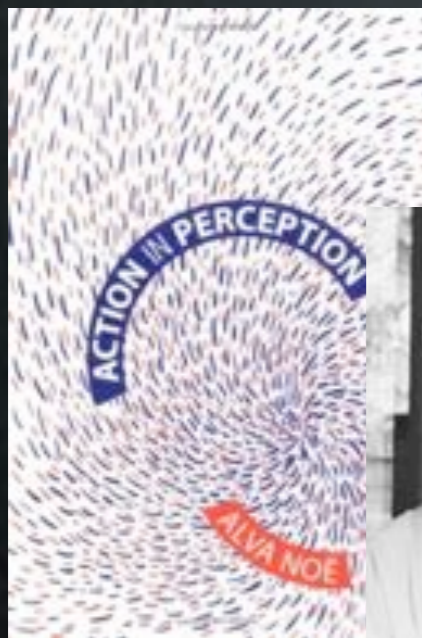
Rodney Brooks

Lawrence Shapiro, 2011: Embodied Cognition: New Problems of Philosophy

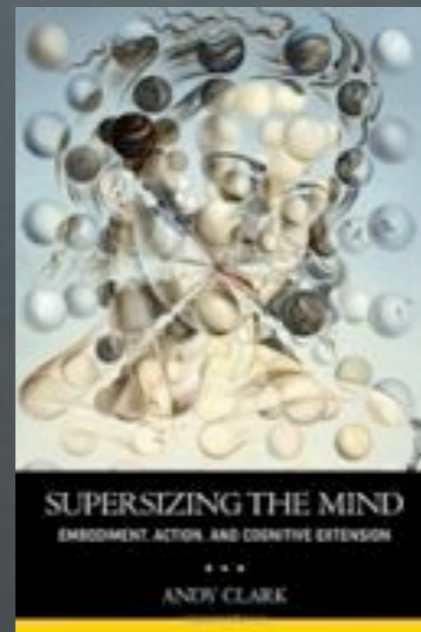


1. Hvordan er vår forståelse formet av kroppslige opplevelser?
2. Er datamaskinmetaforen en god metafor for hvordan vår tenkning fungerer?
3. Hva er rammen for vår kognisjon?

3. Hva er rammen for vår kognisjon?



Alva Noë



Andy Clark



Robert Rupert

Inndeling i tre temaer:

1. CONCEPTUALIZATION (BEGREPSDANNELSE)

De begreper vi bruker for å forstå den verden vi lever i avhenger av hva slags kropp vi har.

2. REPLACEMENT (UTSKIFTNING)

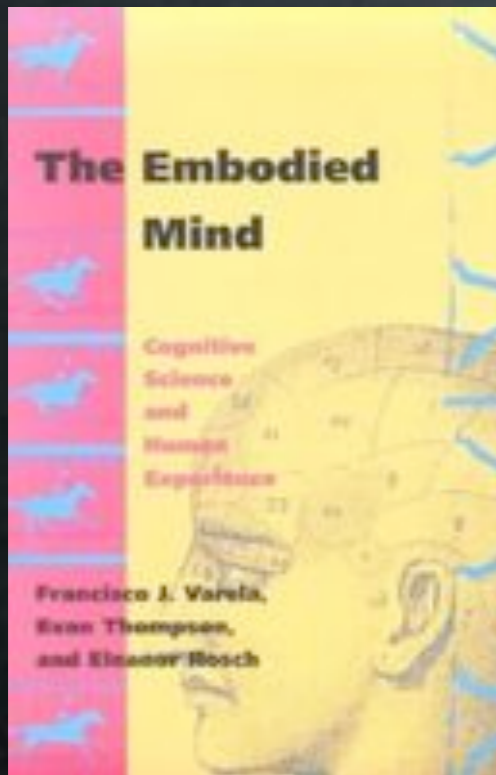
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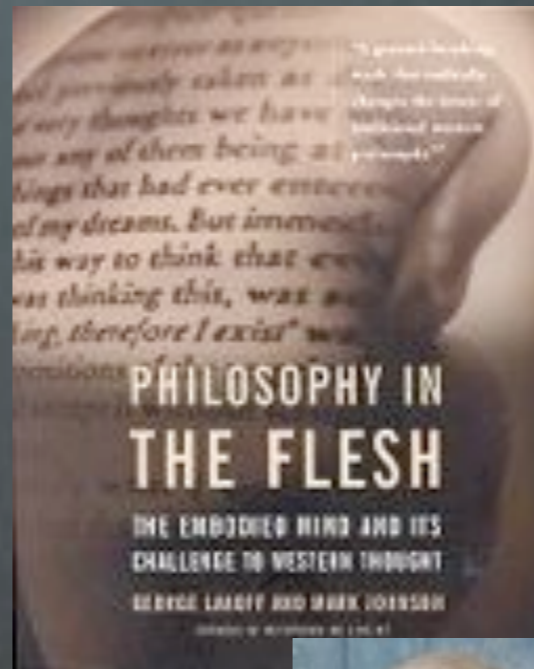
Kroppen eller også den verden vi omgir oss med spiller en grunnleggende heller enn bare årsaksmessig rolle i kognitive prosesser.

4. Kap. Embodied cognition; The Conceptualization Hypothesis

The Embodiment of Color



The Embodiment of Metaphor

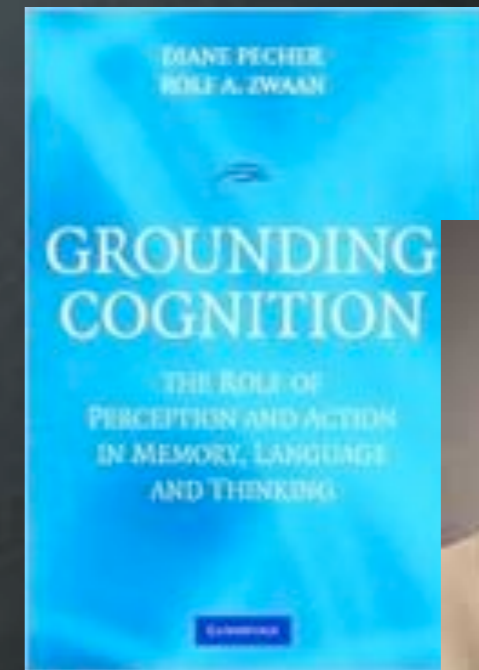


George Lakoff



Mark Johnson

The Indexical Hypothesis



Arthur Glenberg

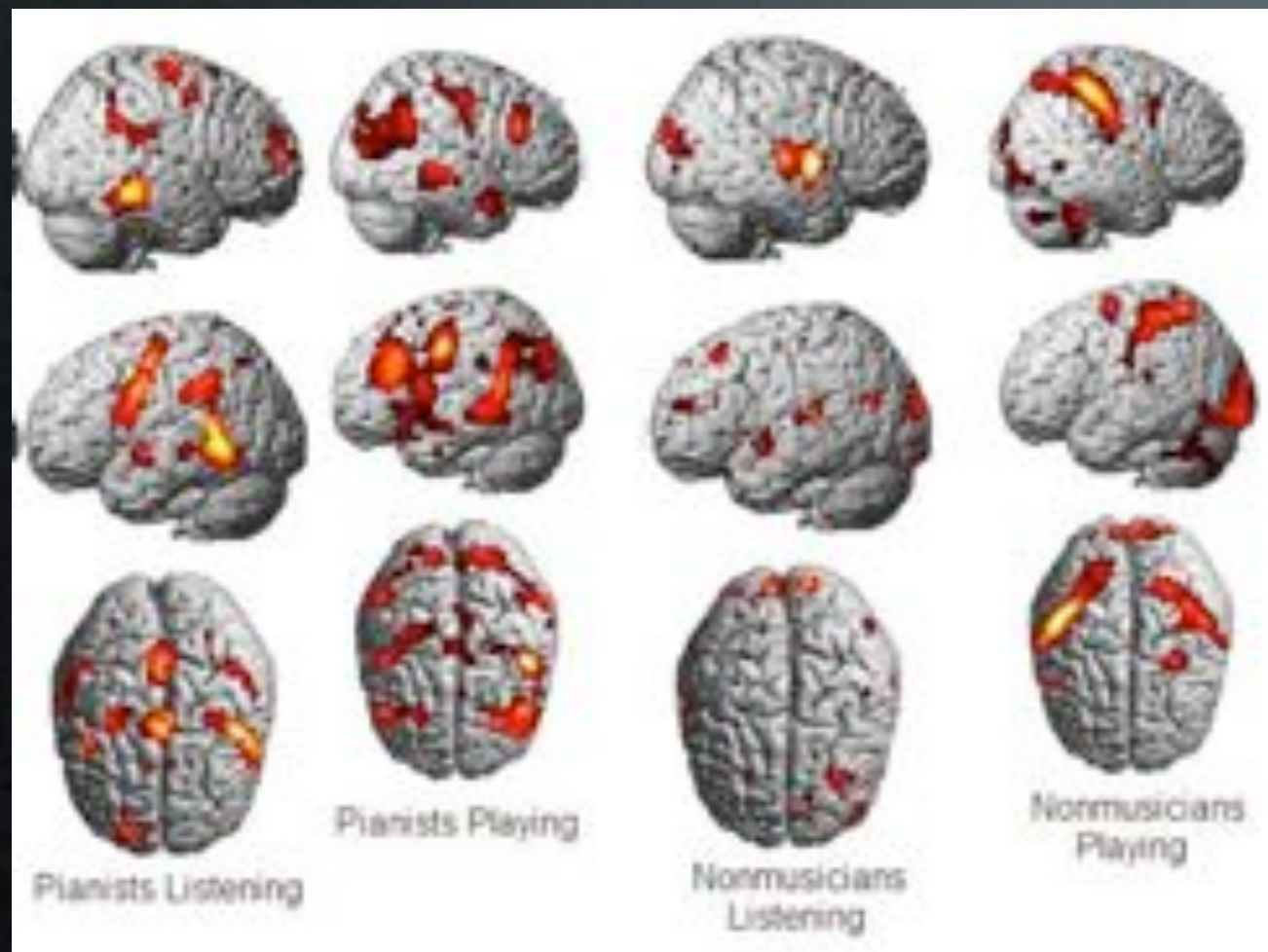


Lawrence Barsalou

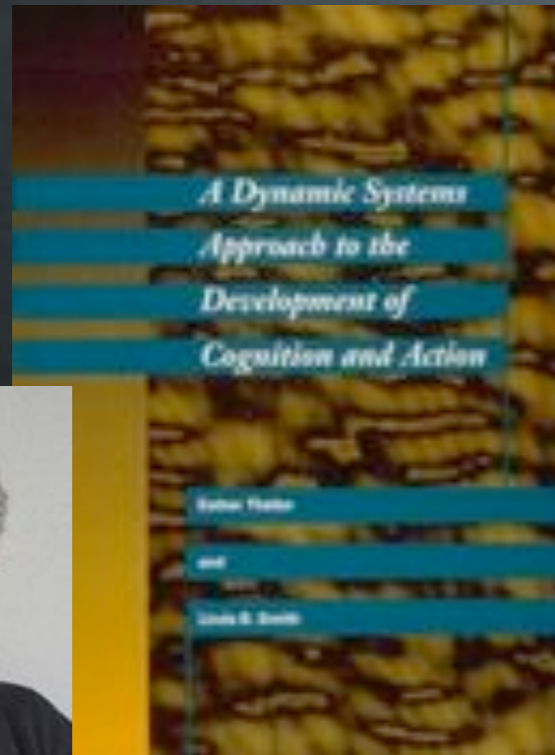
4. Kap. Embodied cognition; The Conceptualization Hypothesis

The body in the brain

Speilnevroneer:



5. Kap. Embodied cognition; The Replacement Hypothesis



Esther Thelen
(1941-2004)



Randall Beer



Tim van Gelder



Rodney Brooks

Dynamical systems

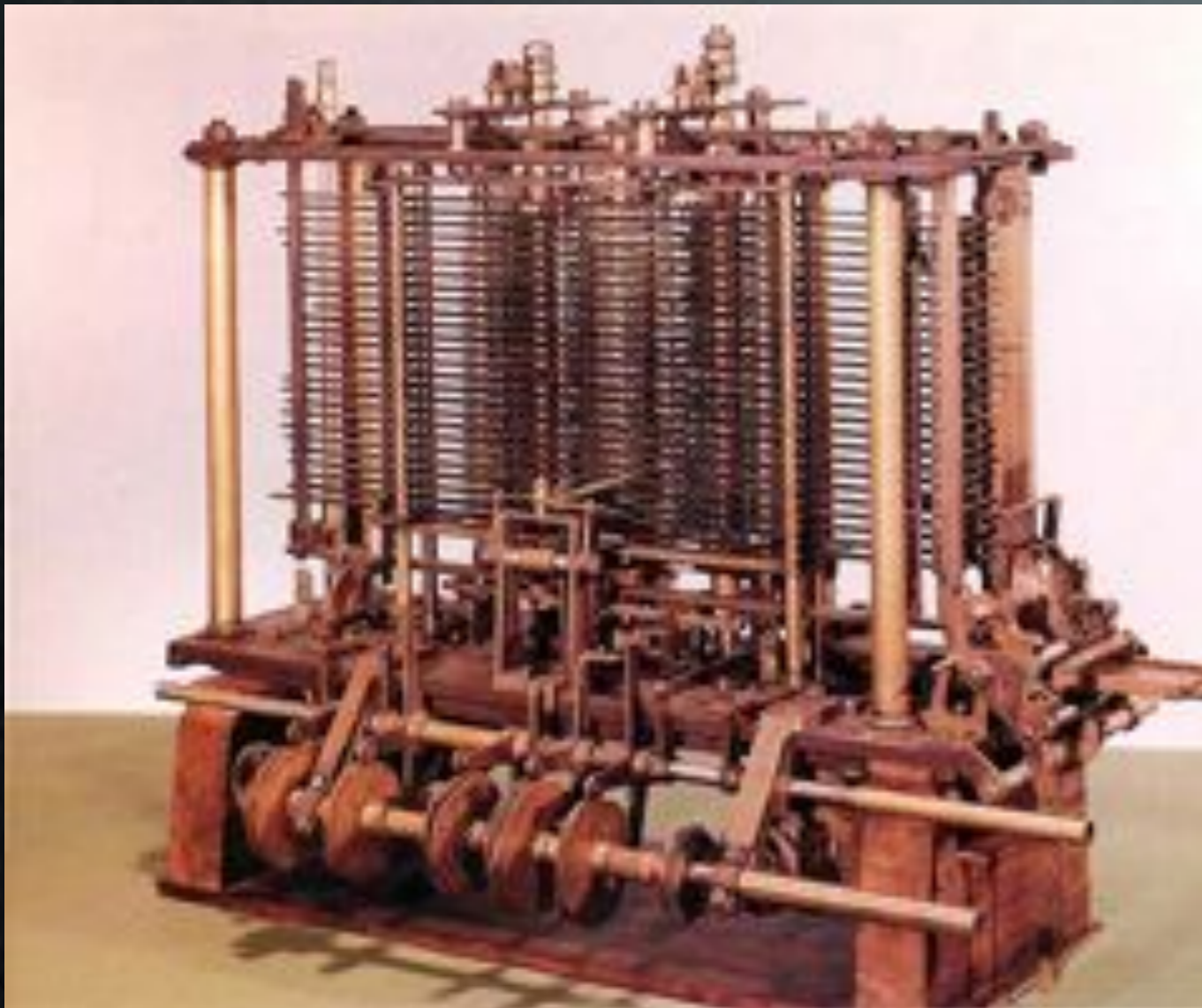
Van Gelder's Dynamical Hypothesis

Explaining Watt's Centrifugal Governor



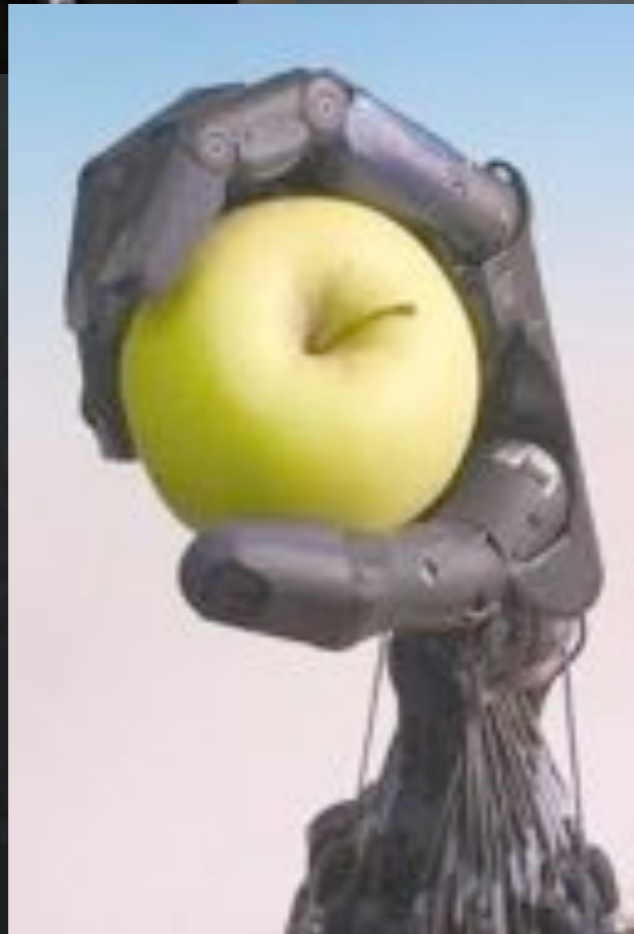
Tim van Gelder

The Turing machine versus Watt's centrifugal governor

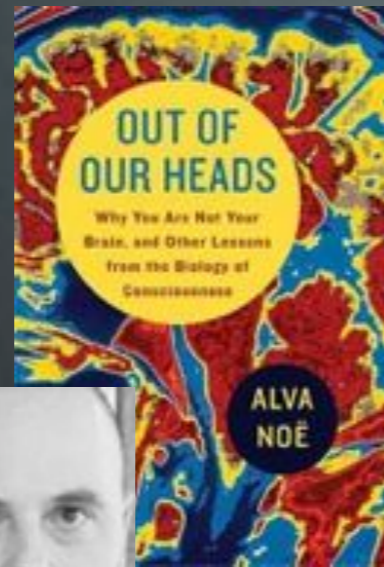


Replacement and Robotics

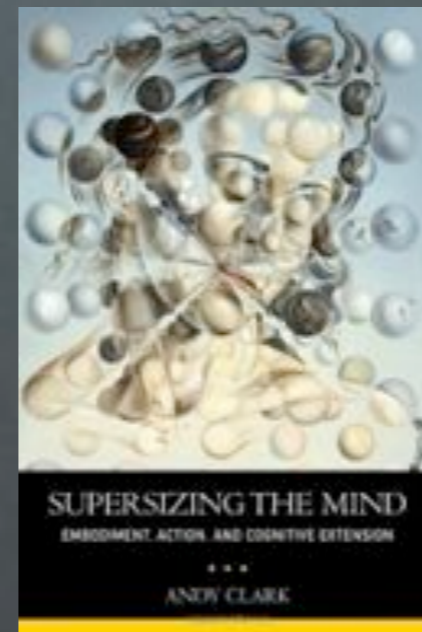
Rodney Brooks:



5. Kap. Embodied cognition; The Constitution Hypothesis



Alva Noë



Andy Clark

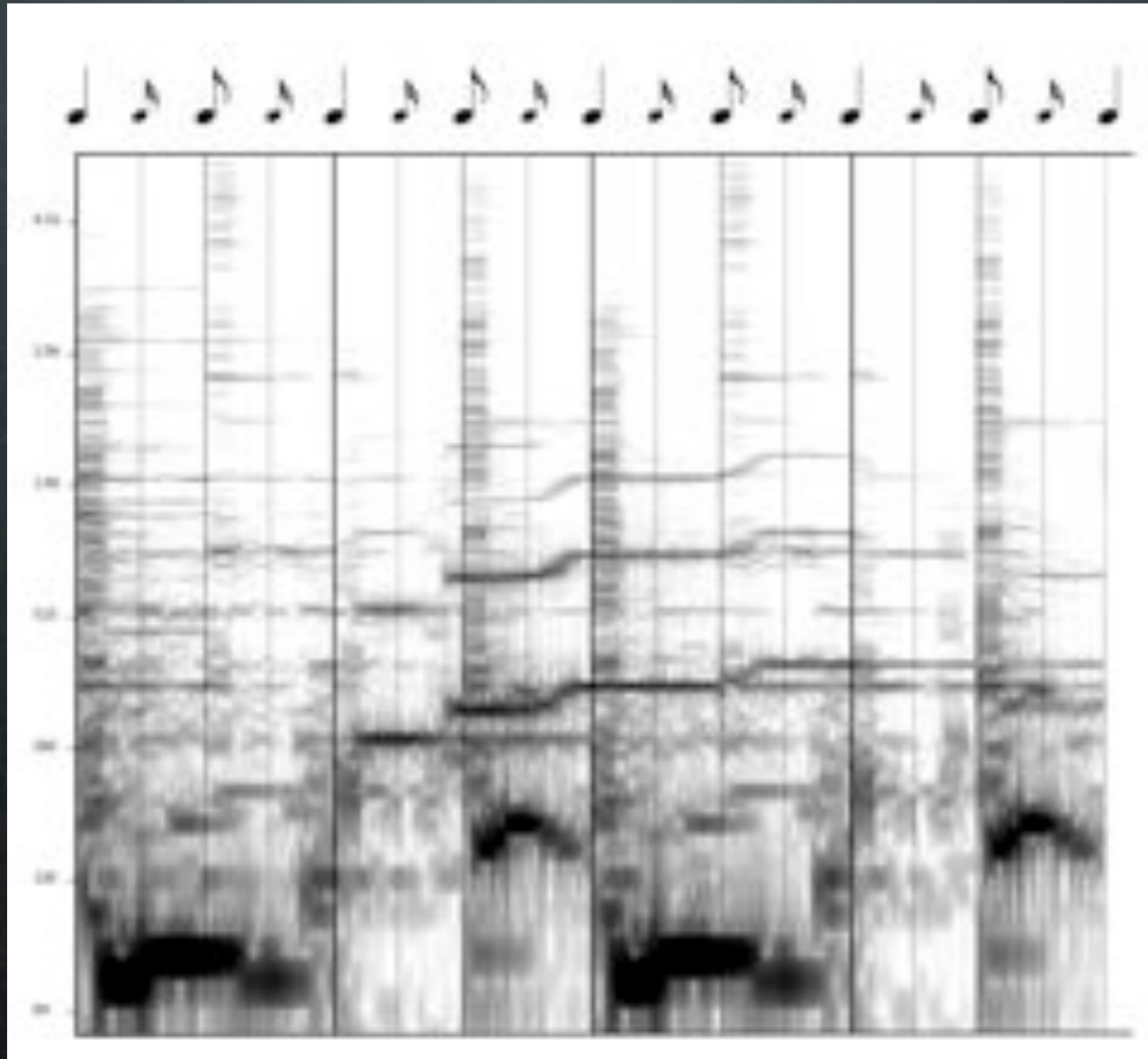


Robert Rupert

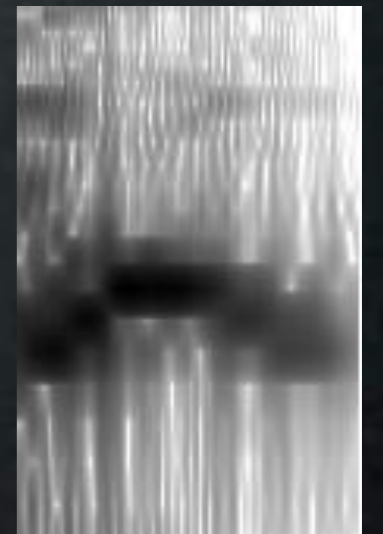
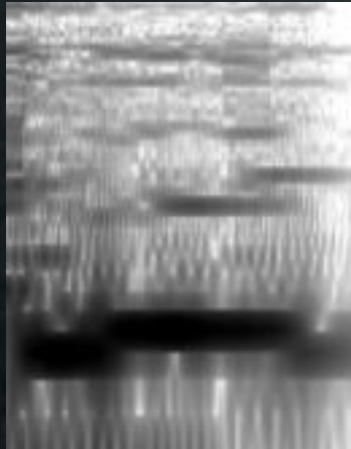
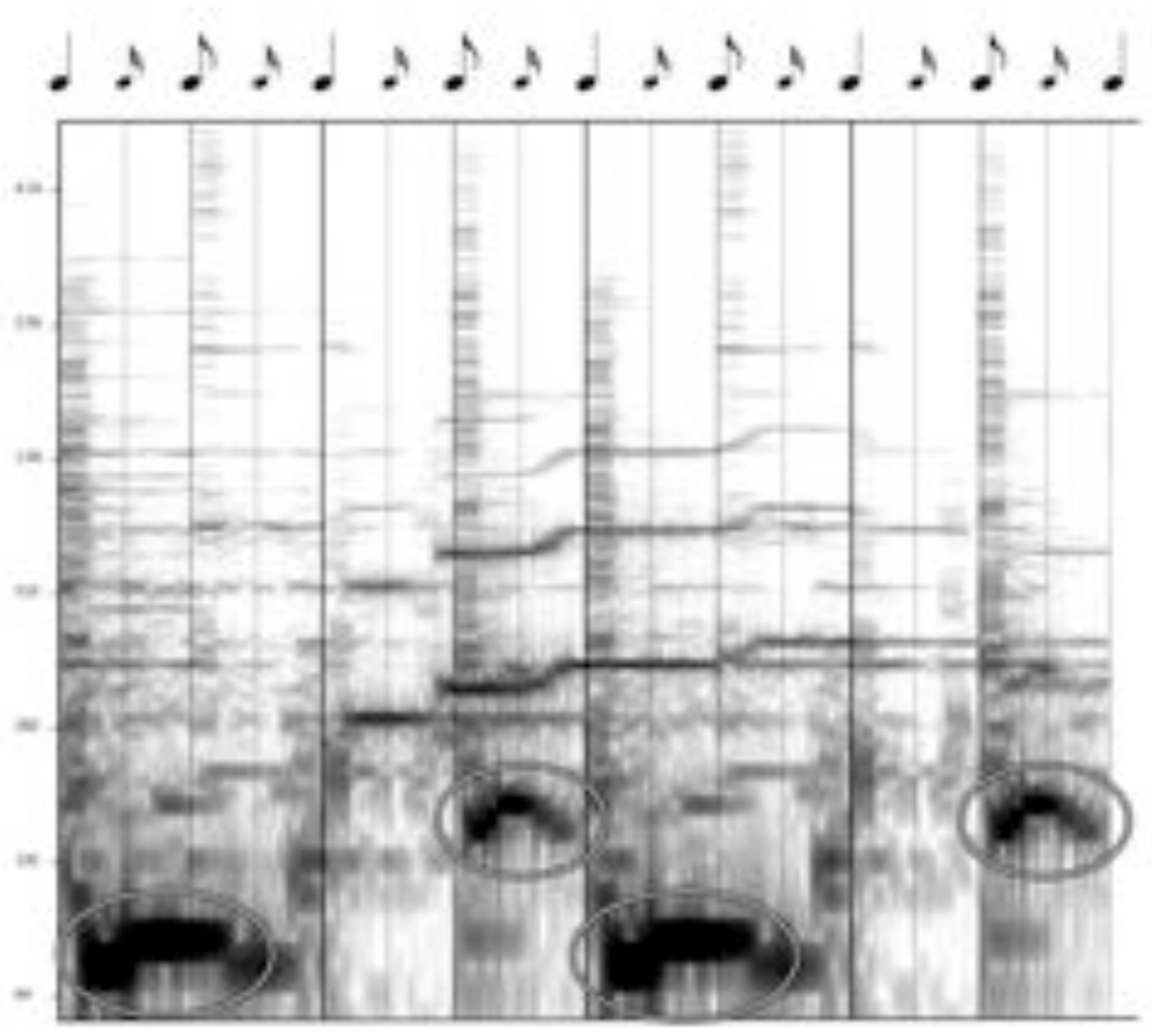
Gotye: «Hearts a Mess» (2007)



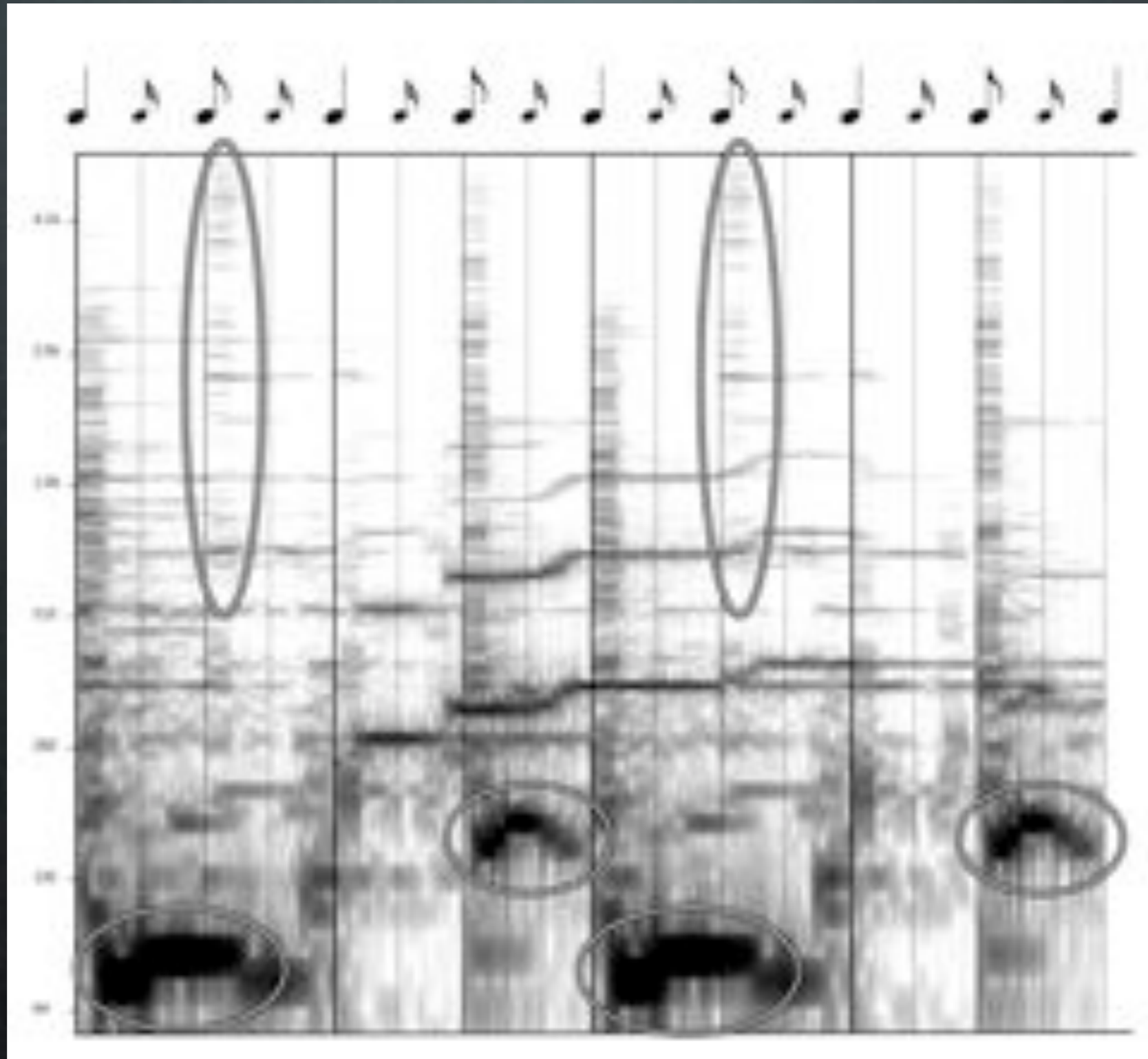
Gotye: «Hearts a Mess» (2007)



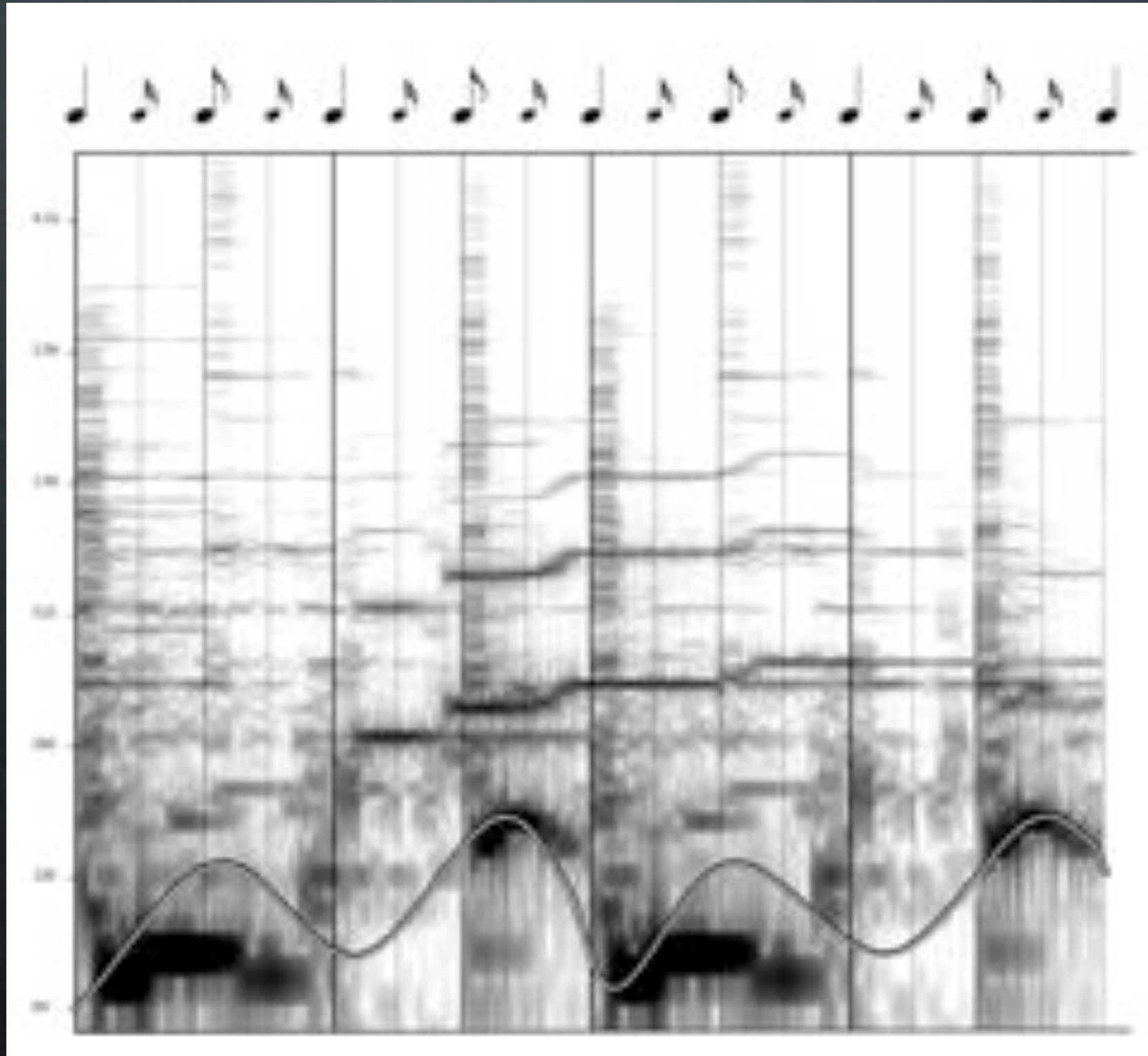
Gotye: «Hearts a Mess» (2007)



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