The Tipping Point Analogy for Musical Timing

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What is a tipping point

Video courtesy of Andy diSessa (UC Berkeley)
Physics: The point beyond which the line through the centre of gravity lies outside the base of the object.
Social: The line beyond which your parents get very cross.
Popular: The critical point in a situation, process, or system beyond which a significant and often unstoppable effect or change takes place.

First use 1959. (Merriam-Webster Dictionary)
Music: A timeless moment of suspended stillness, of stasis, beyond which a small perturbation will tip the balance and set in motion the inevitable return of the pulse.
Agenda

• Tipping Point Definition

... now for some examples
O mio babbino caro
from Gianni Schicchi
by Puccini

Mi strugo e mi tormento!

O Dio, vorrei morir!
Babbo, pietà, pietà!
Babbo, pietà, pietà!

I am anguished and tormented!
Oh God, I'd like to die!
Papa, have pity, have pity!
Papa, have pity, have pity!

(lyrics and translations from wikipedia)
Function: Prolongs expectation – creates drama; emphasizes melodic leap, exaggerates emotion cues – heightens poignancy.
Puccini: O mio babbino caro: Graph of eighth note length vs. eighth note number

- Kathleen Battle
- Maria Callas
- Kiri te Kanawa

Dio

pietà pietà

pie – tà ......
Puccini: O mio babbino caro: Graph of eighth note length vs. eighth note number

- Kathleen Battle
- Maria Callas
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Dio

πetà πetà

pie–tà ......

score time

performance time

Mi sì gai mi tennesi sol! Dio, o voi ri saprò rivolgersi.
Callas sings Puccini: O mio bambino caro: Graph of eighth note length vs. eighth note onset time

Video available at https://vimeo.com/70618222
Emotional content of music arises primarily through composer’s choreography of expectation. and performer’s
Agenda

• Tipping Point Definition
• Generating expectation/eliciting emotion
Burleske
by Richard Strauss

youtu.be/4q_zSvns0QY
Burleske
by Richard Strauss

Function: augurs inevitable change; release after prolonged suspense; augments tonal expectations; coordinates return

youtu.be/4q_zSvnsOQY
Strauss: Burleske: Graph of bar length vs. bar number

- Glenn Gould
- Martha Argerich
- Sviatoslav Richter

5 April 2013
E.Chew: PSN2: Tipping Point
Video available at https://vimeo.com/70618400
Agenda

• Tipping Point Definition
• Generating expectation/eliciting emotion
• Cathartic release/coordinating return
Schon Rosmarin
by Kreisler

1936 version, with pianist Franz Rupp

youtu.be/RTNeHzzF8i8
Kreisler plays Schon Rosmarin: Graph of crotchet note length vs. crotchet note number
Video available at https://vimeo.com/70621078
Agenda

- Tipping Point Definition
- Generating expectation/eliciting emotion
- Cathartic release/coordinating return
- Playful simulation of gravity-defying moves
Why bother
Performance pedagogy
- expressive nuance
- natural timing
- the extra edge

Ensemble musicianship
- coordination
- co-creation

Music cognition
- understanding creativity

Interactive systems
- humans and machines
Current computer models: Problematic emphasis on pulse rate persistence; need to account for design aspects of performance.
Performer creates a path (landscape of experiences) sometimes laying tracks in real-time through which to bring the listener.

Goldberg Variations kinetic sculpture at Logan Airport, Boston
ESP
with Jie Liu, Aaron Yang, Alexandre François
work done at USC MuCoaCo Lab

A literal take on the driving metaphor for expressive performance
Mapping from score to road

Brahms
hungarian dance no.5

prima

seconda
Brahms
hungarian dance no.2

Map for naïve performance

Hungarian Dance No. 2, symmetric phrasing.

Hungarian Dance No. 2 roadmap, symmetric.
Map for gestural performance

Hungarian Dance No. 2, gestures.

Hungarian Dance No. 2 roadmap, gestures.
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• Why bother
Music: A timeless moment of suspended stillness, of stasis, beyond which a small perturbation will tip the balance and set in motion the inevitable return of the pulse.
Thank you

• **Some references:**
  – Score/performance time: Chew & Callender CMMR 2013

• **Further information:**
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