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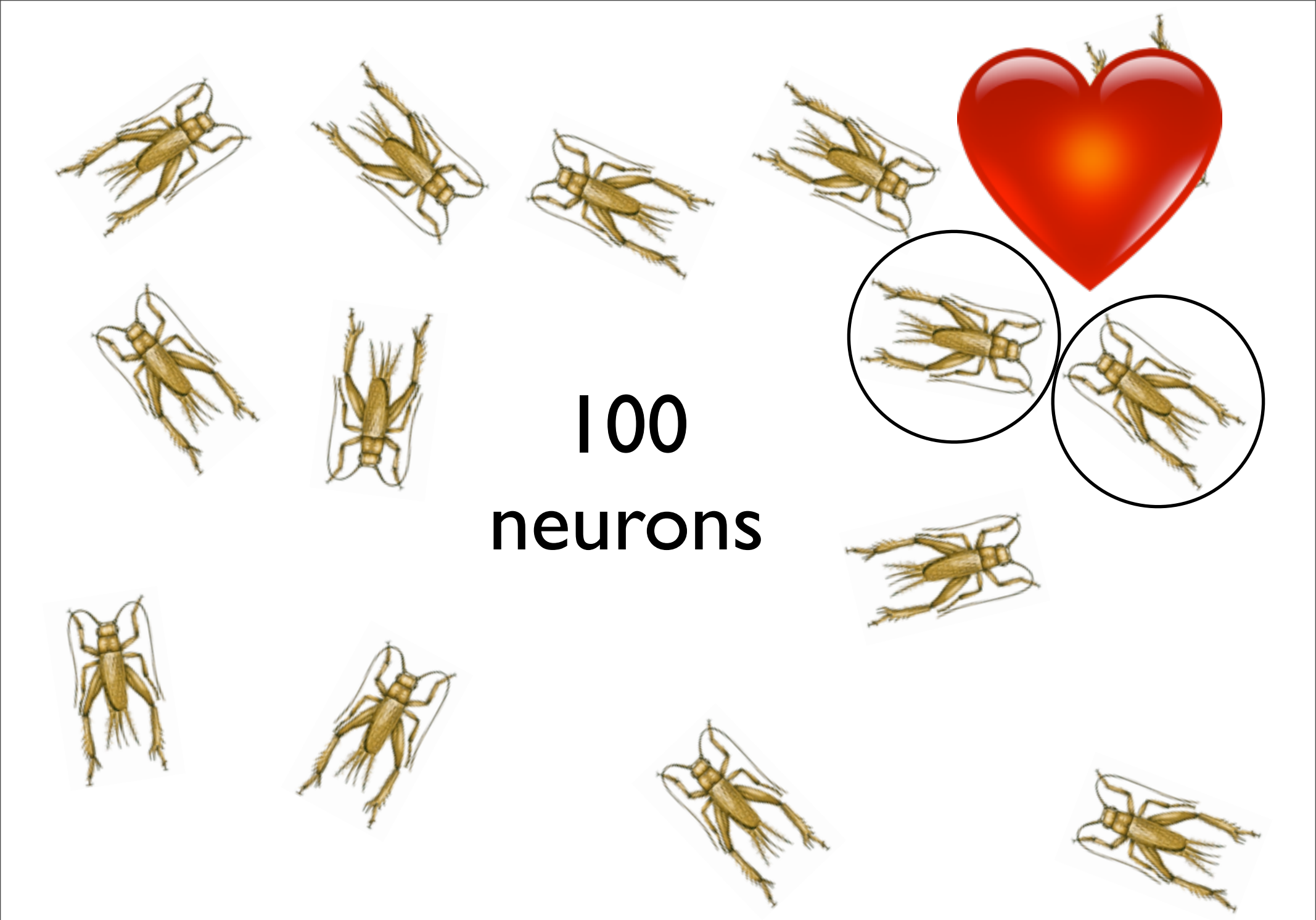

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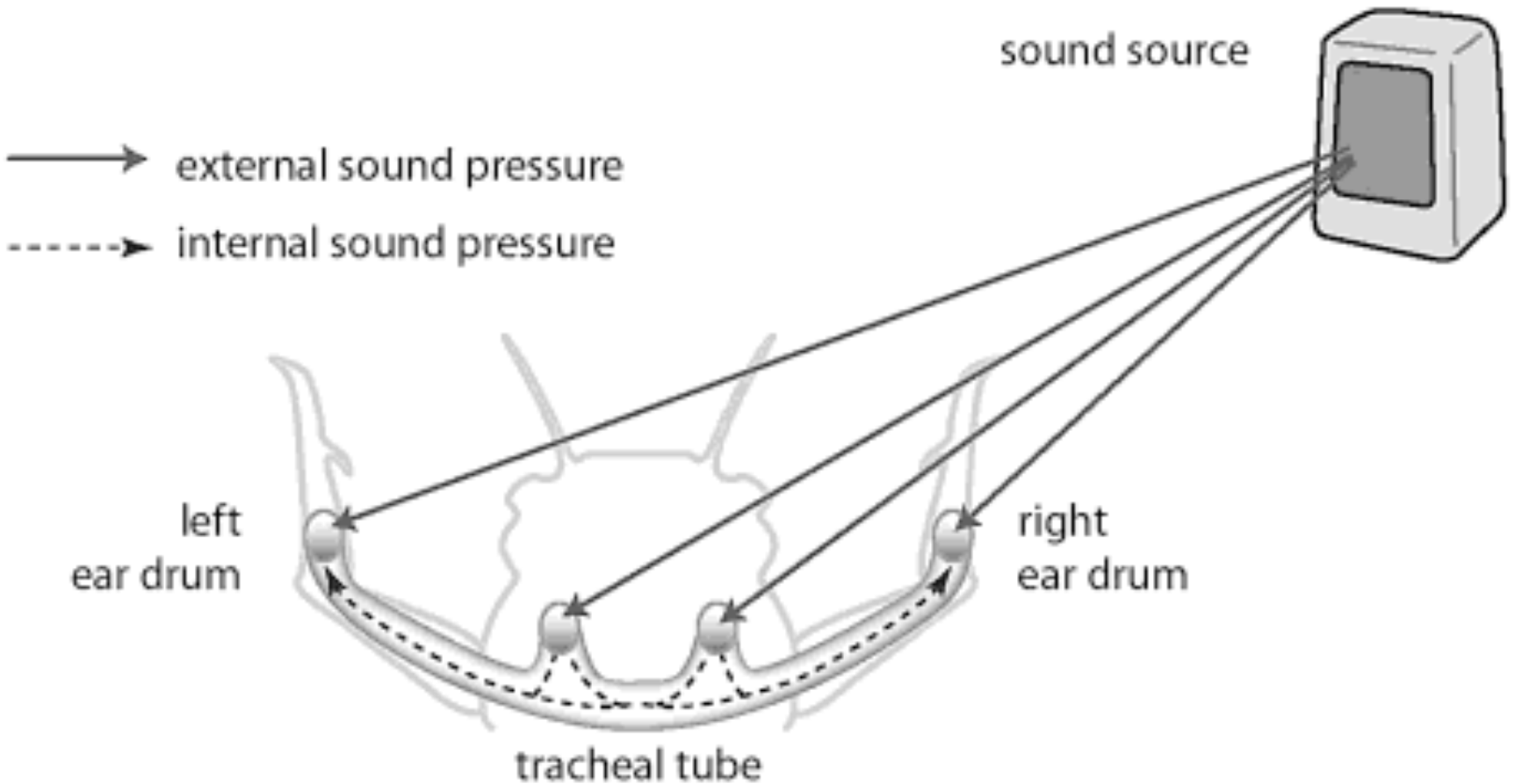
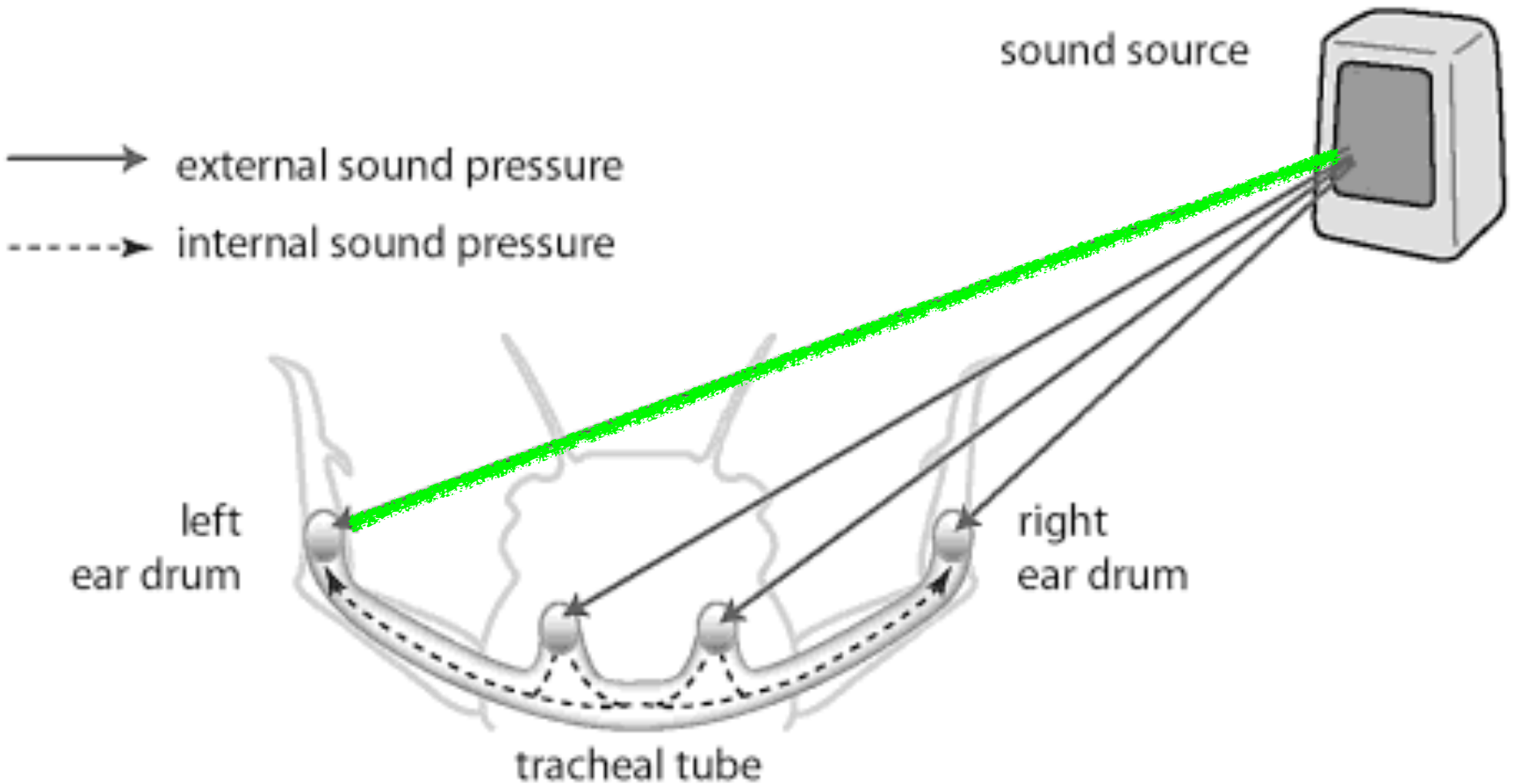


Beyond the Brain: How Body and Environment Shape Animal and Human Minds, Louise Barrett



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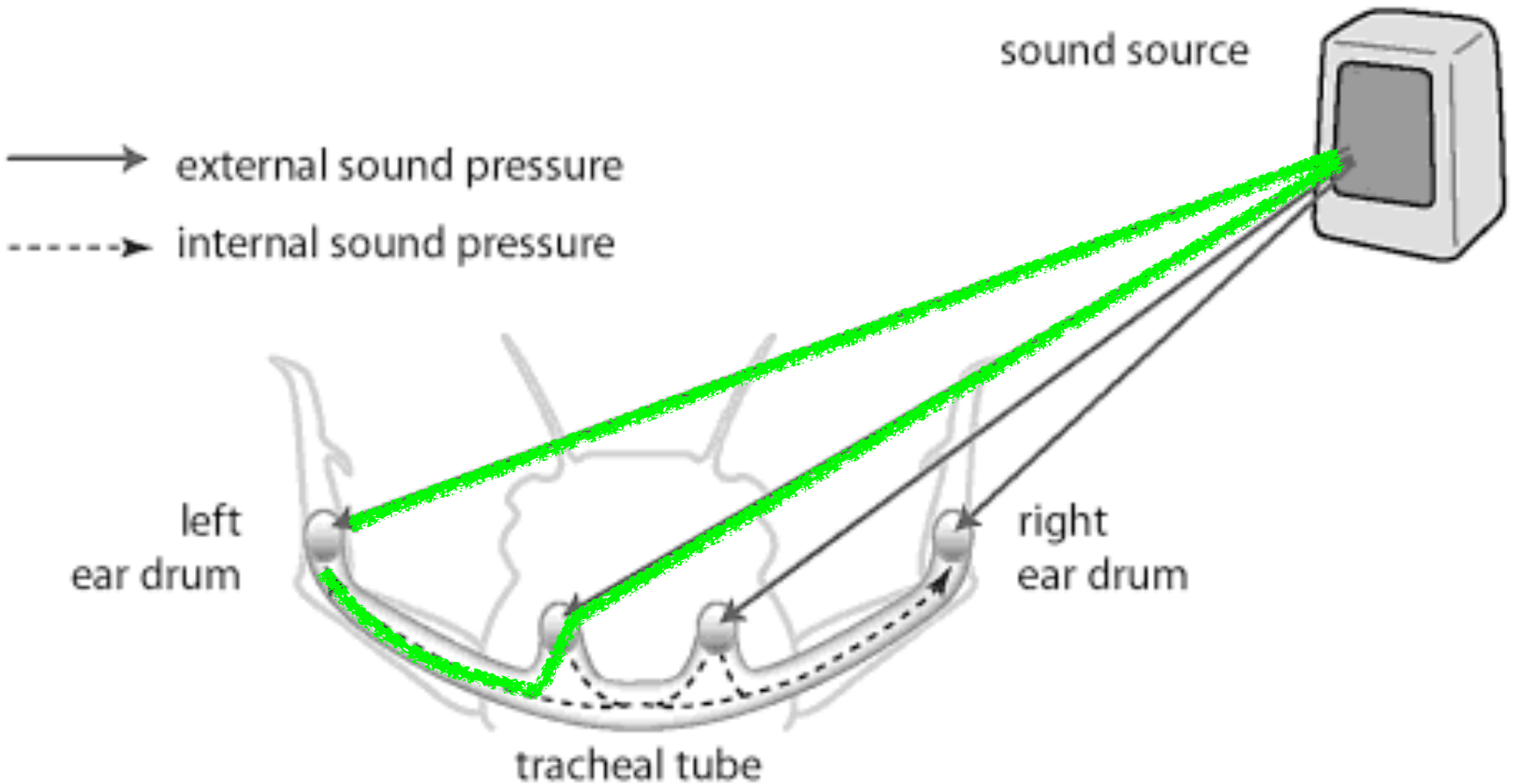

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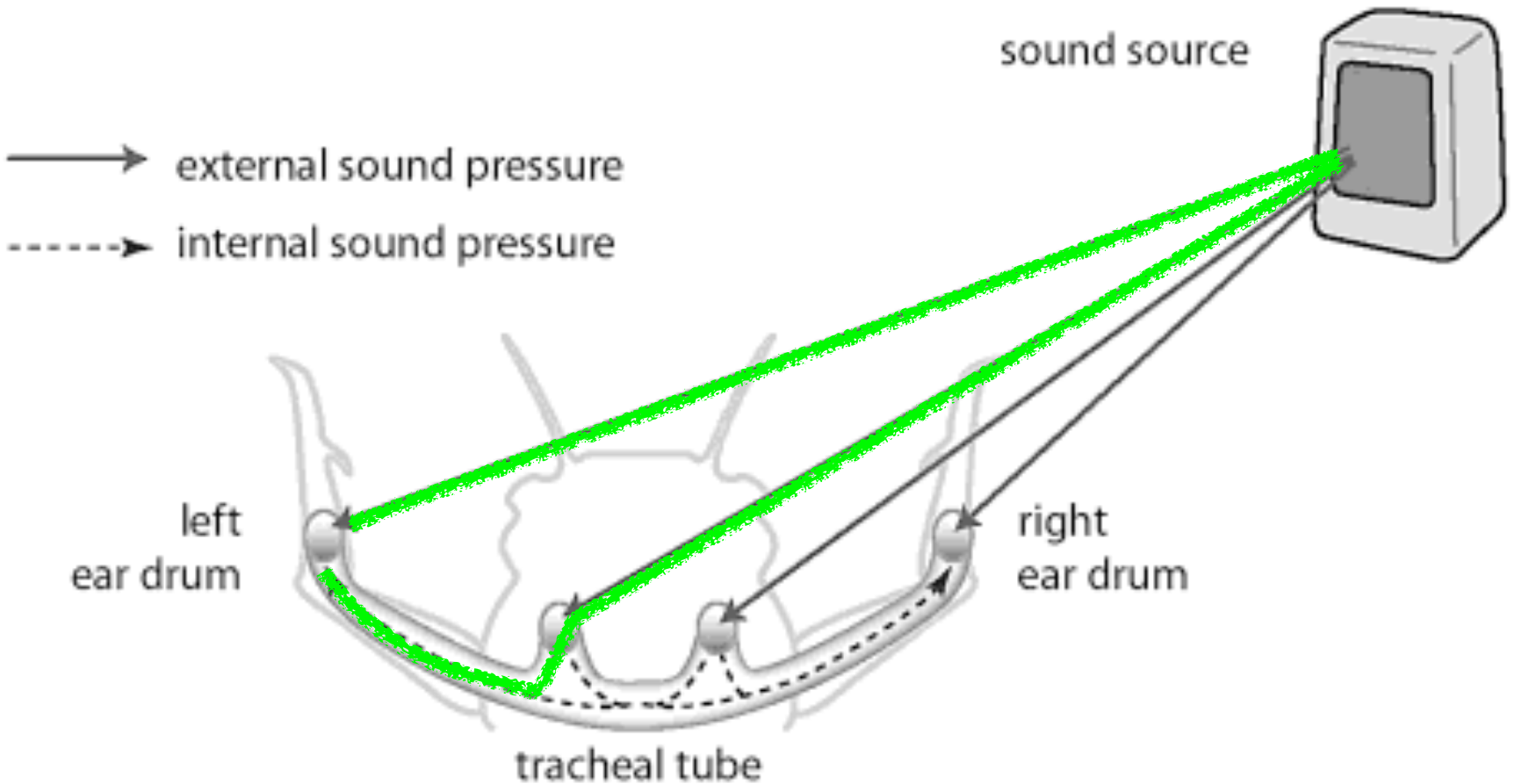

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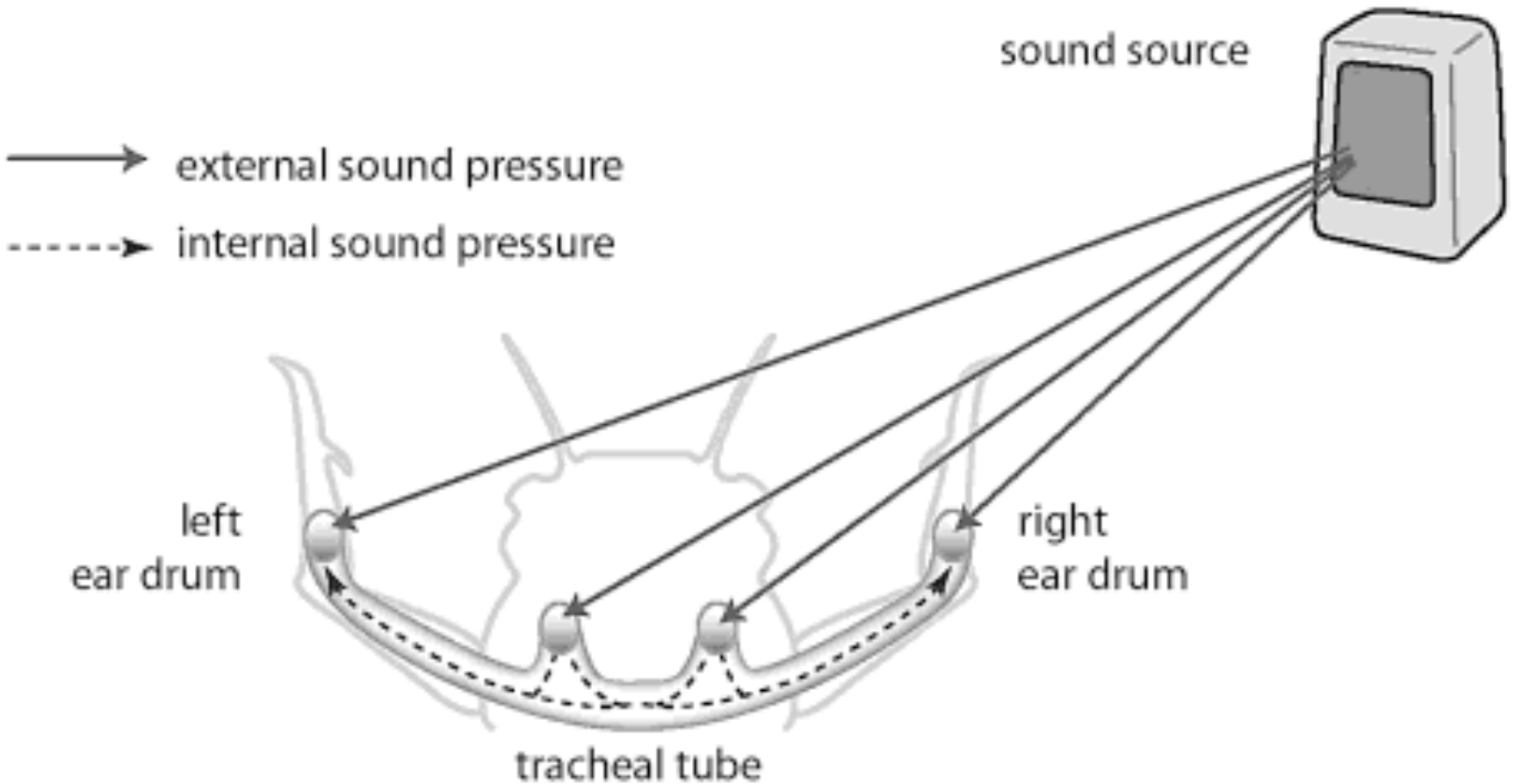

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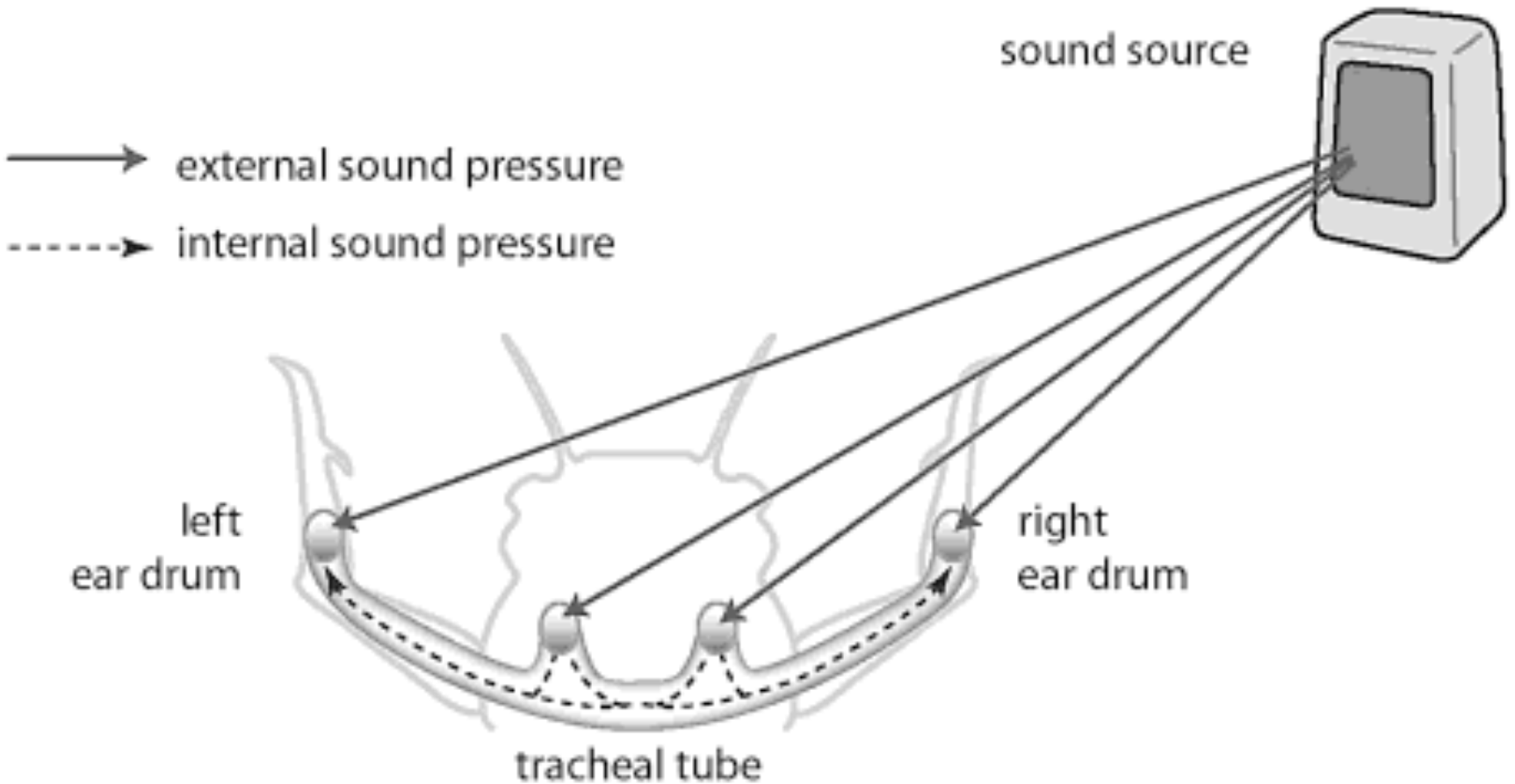

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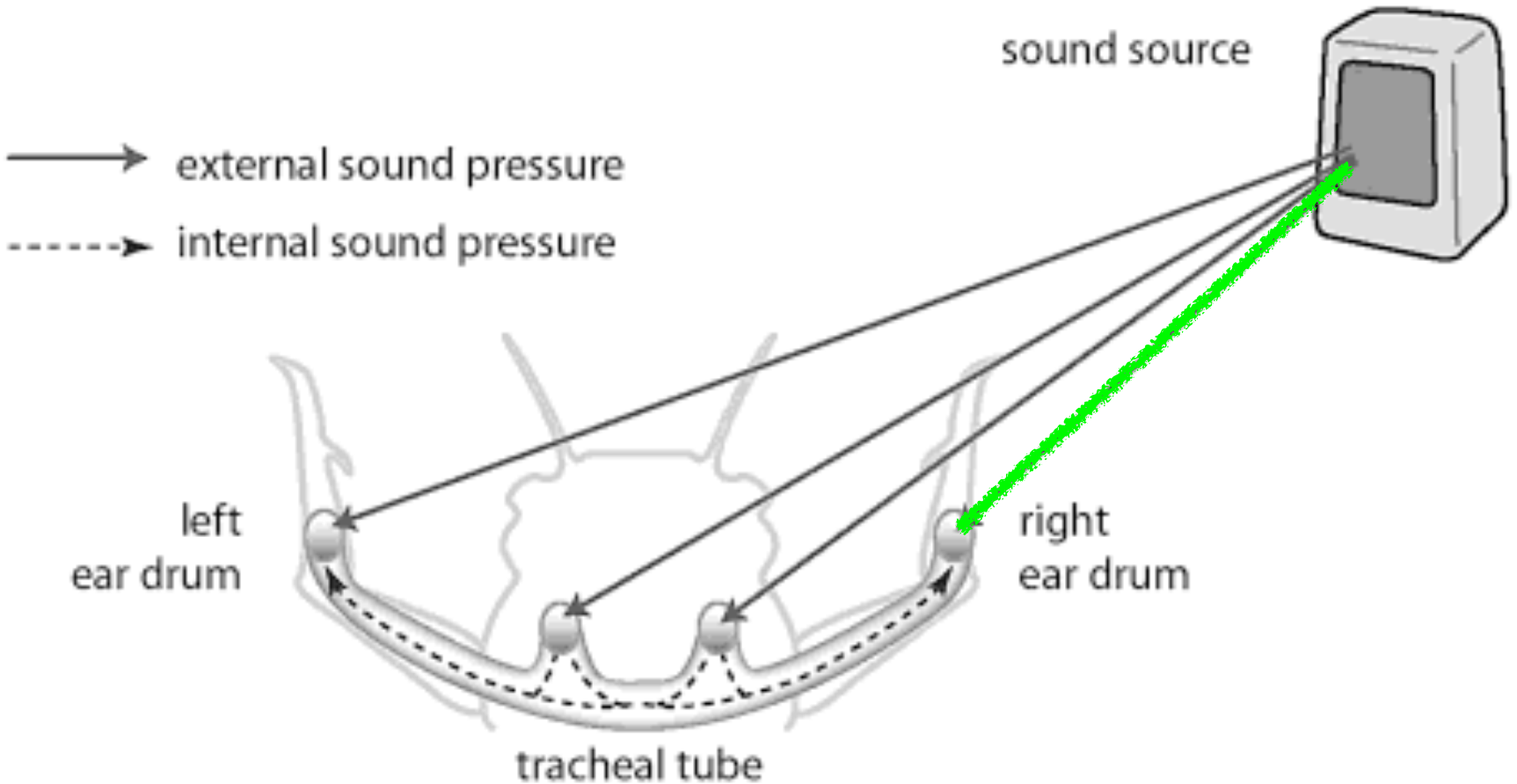

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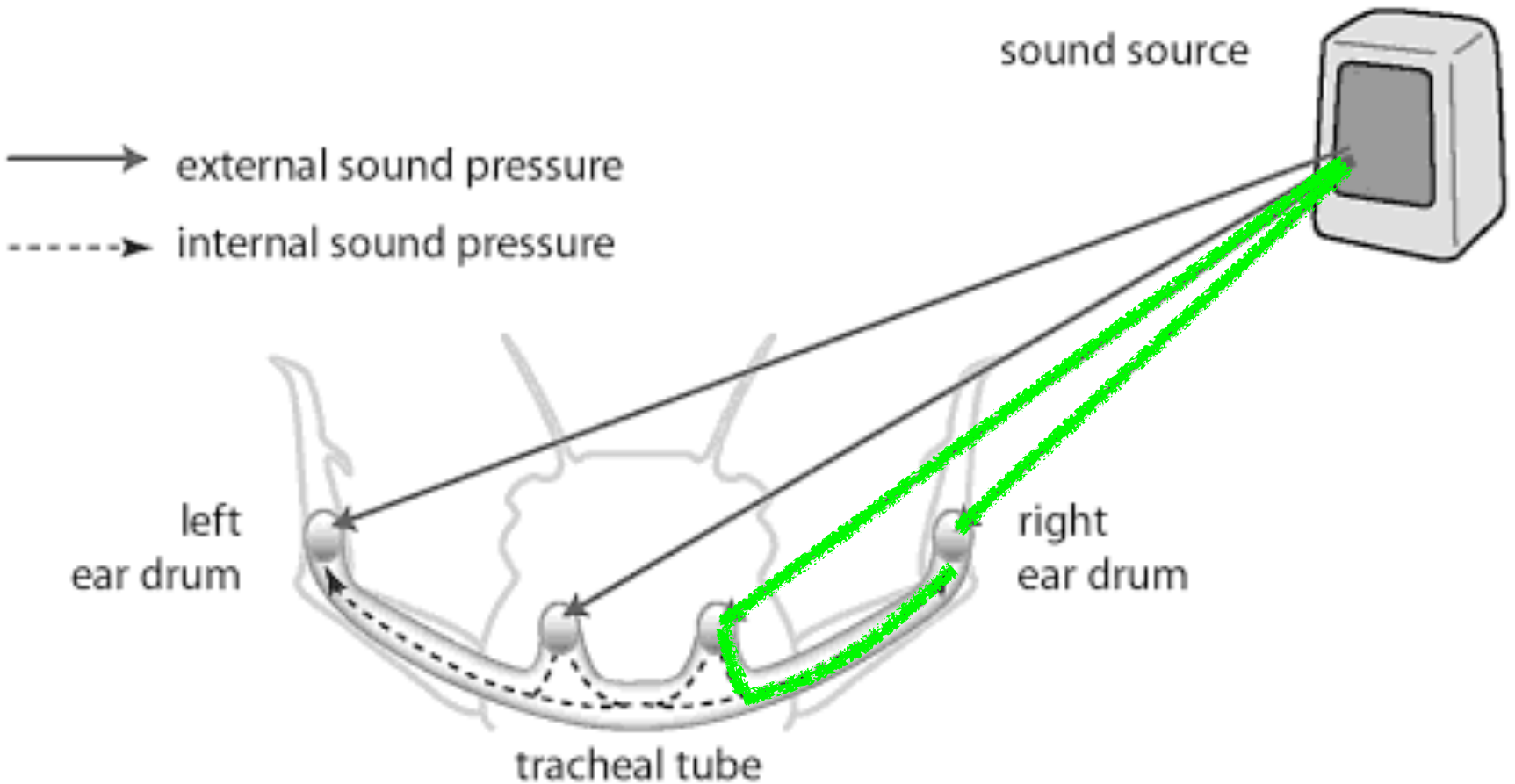

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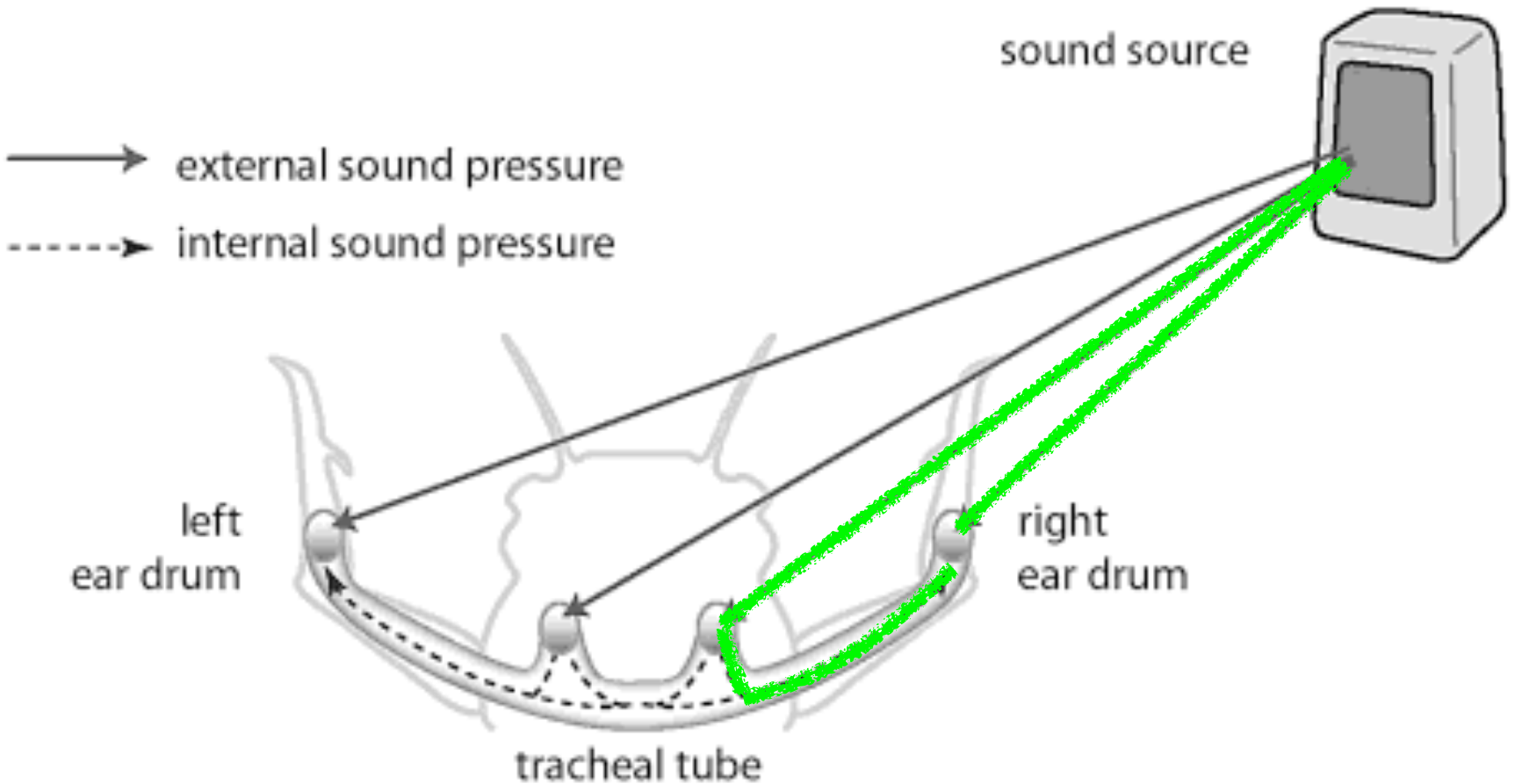

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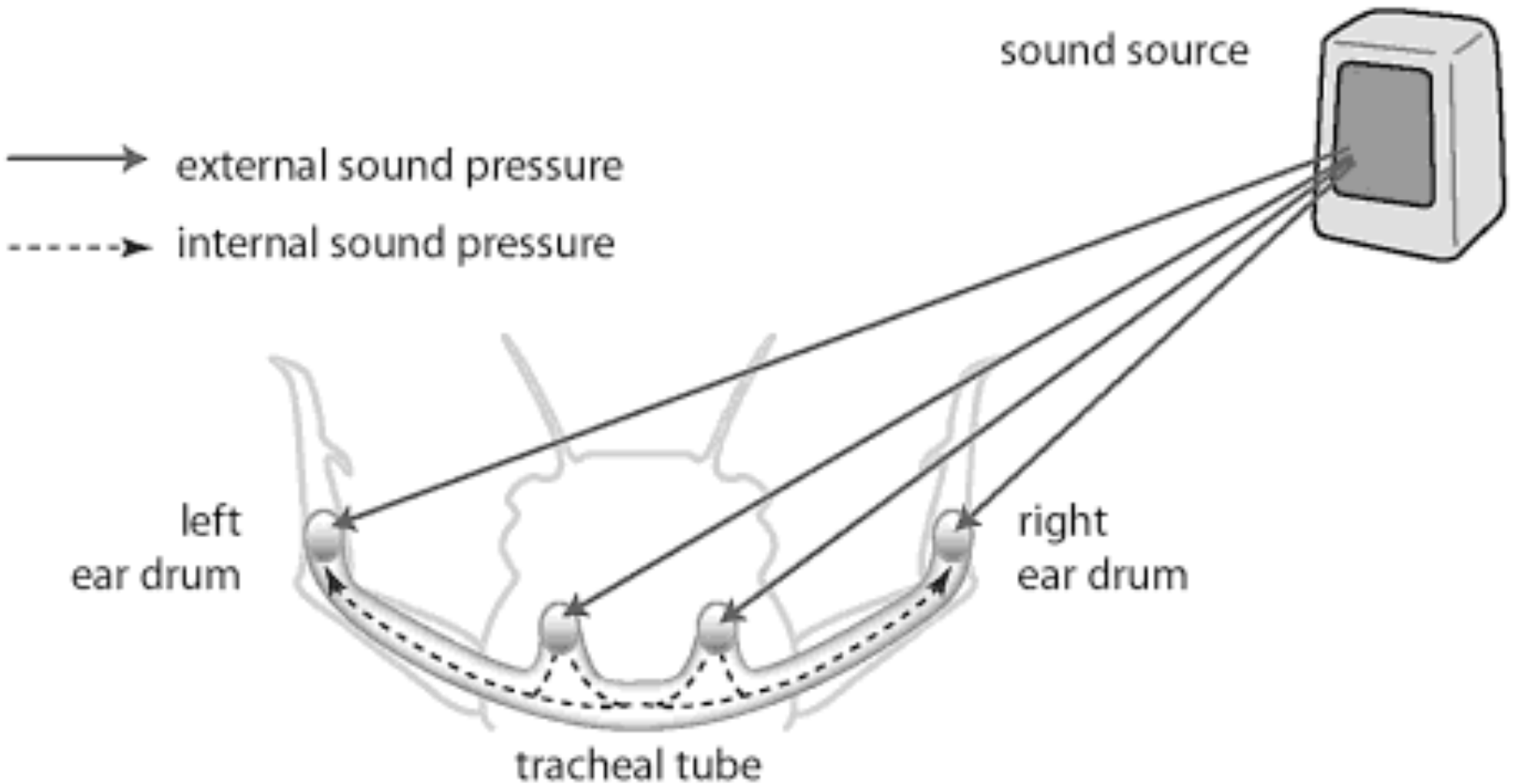

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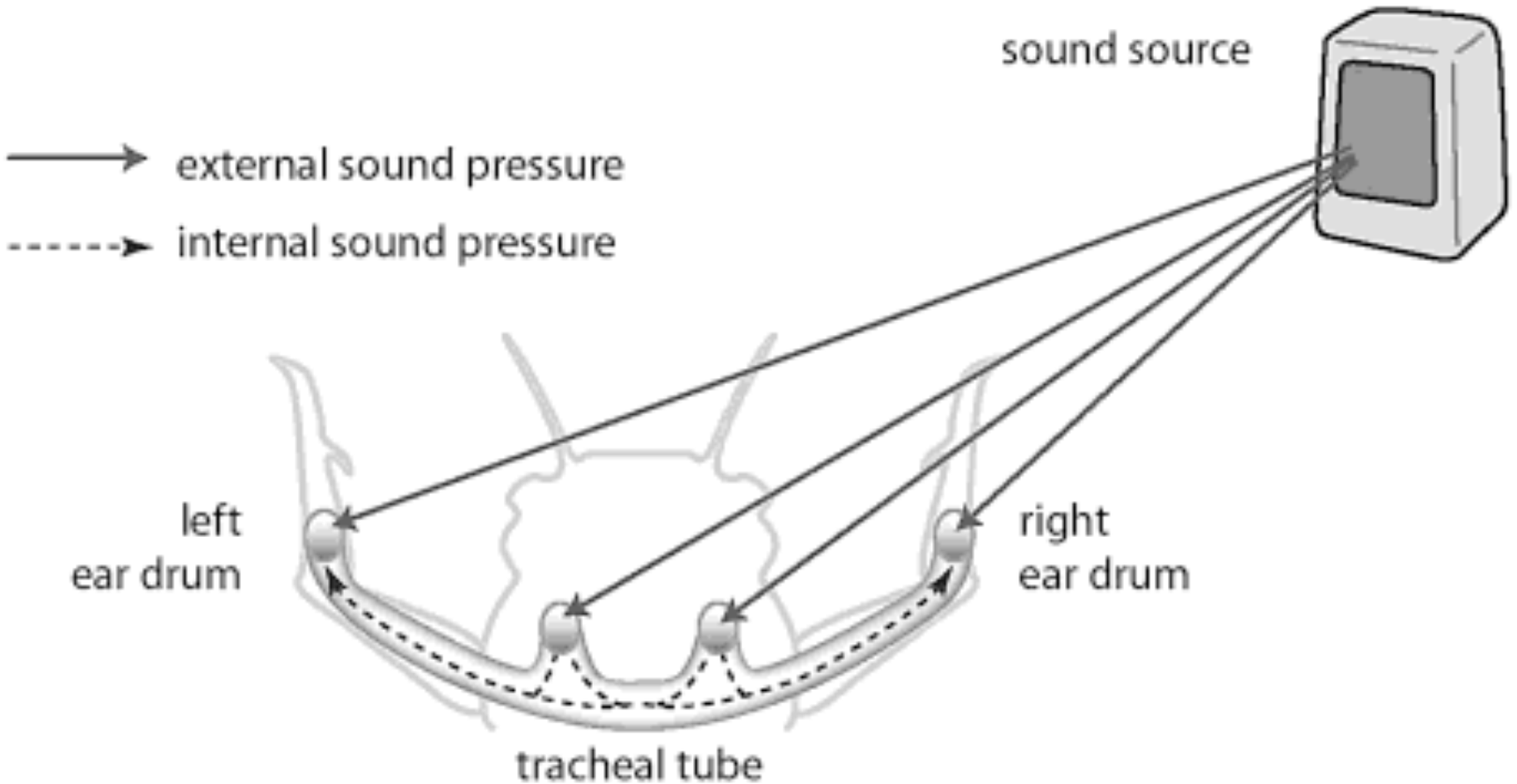
Crickets Don't Hear Irrelevant Sounds



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Cheating Decline

Acting now to let you program well
for a really long time

Brian Marick
http://www.exampler.com
@marick

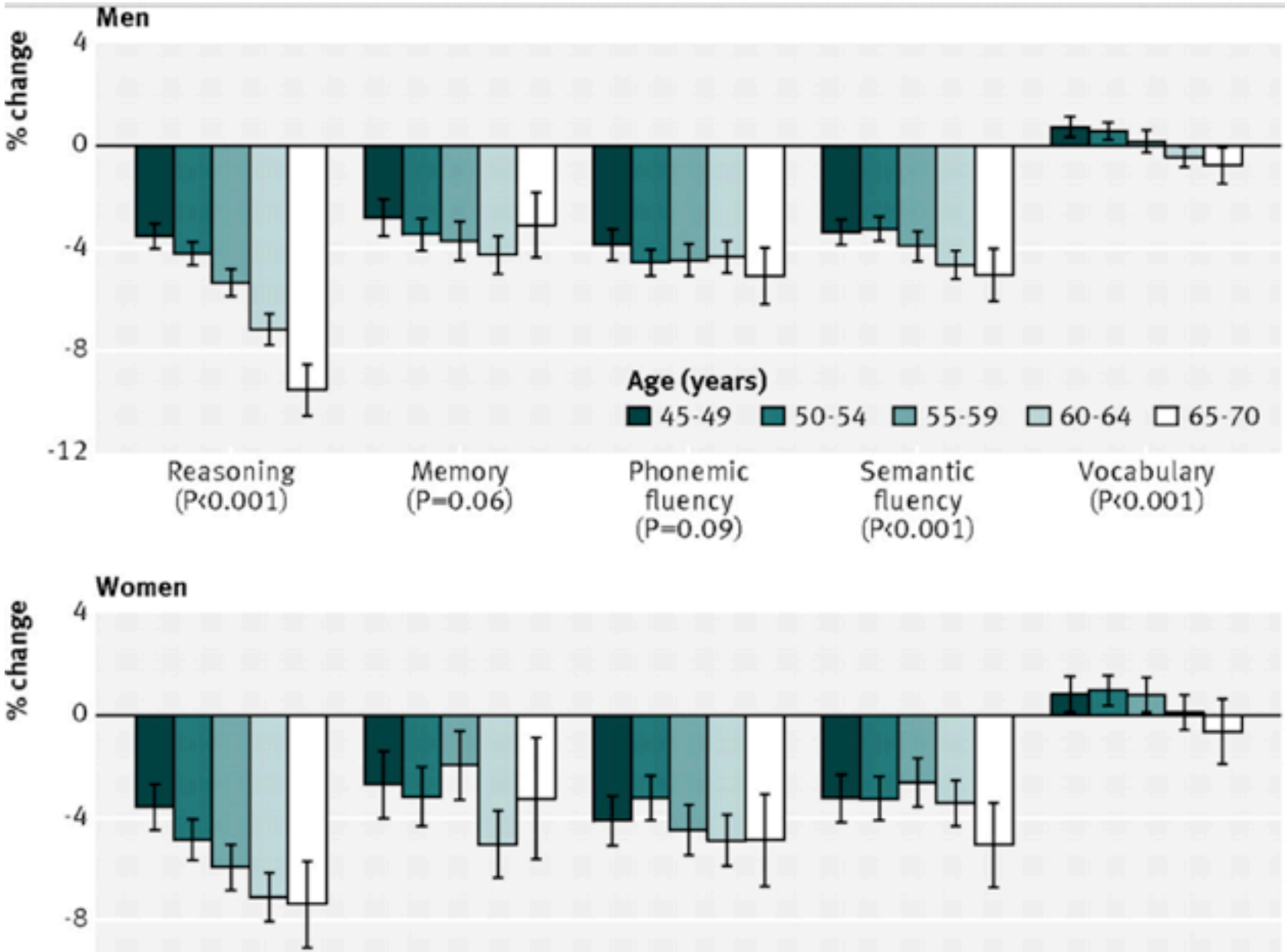
better than ☐

"Programmers age 50 are the same as ☐ programmers age 25."

worse than ☐

A Fact About Personal Preferences

A Fact About The World



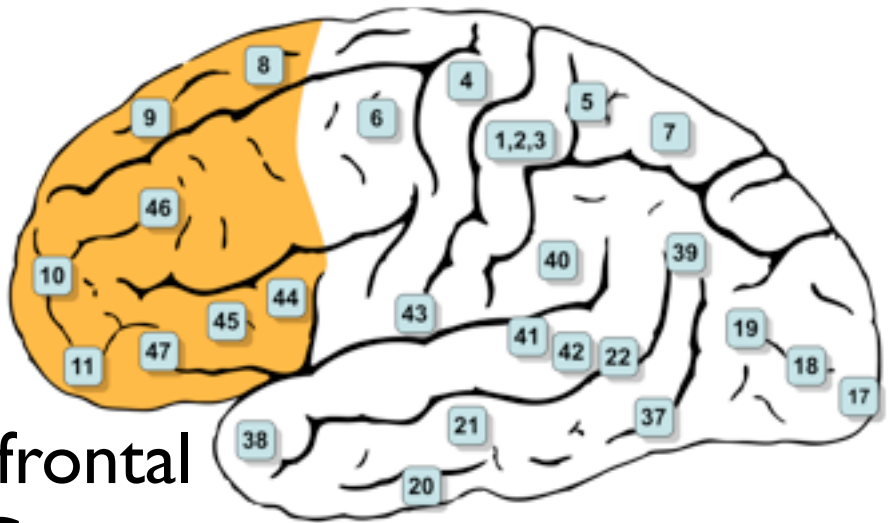
"Timing of onset of cognitive decline: results from Whitehall II prospective cohort study." *BMJ* 2012;344:d7622

better than ☐

"Programmers age 50 are the same as ☐ programmers age 25."

worse than ☑

Aerobic Exercise: A Good Thing



Prefrontal Cortex

Gray's Anatomy

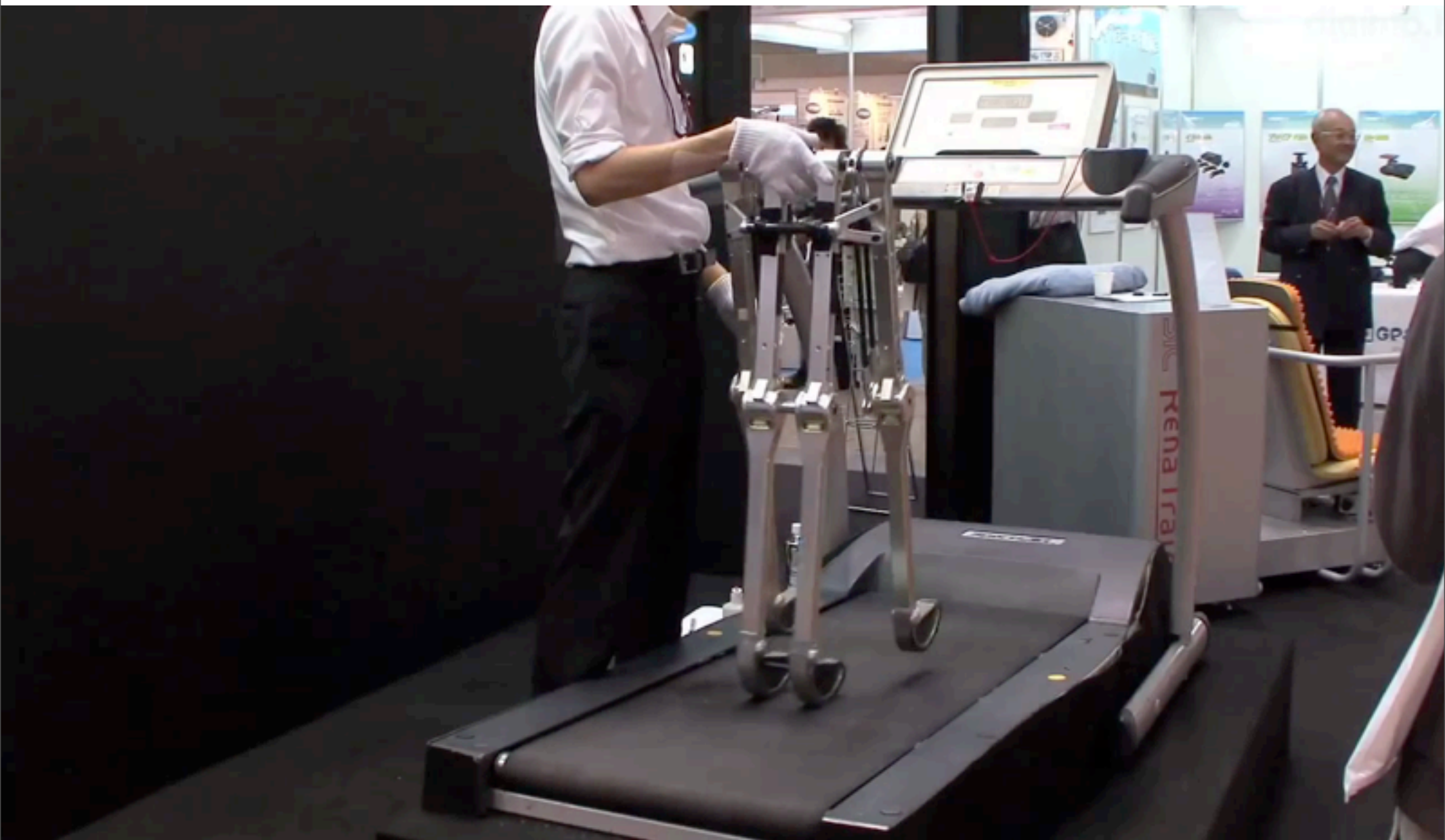
Five Principles for Thinking Less (Expensively) And Accomplishing More

Brian Marick
http://www.exampler.com
@marick

The Ability to Think Is Expensive

~12 watts

- 20% of resting metabolism
- 2% of body mass



13 hours

DigInfo TV http://www.diginfo.tv/

Effortful

- Add 123 + 82
- Prepare a keynote
- Park a car in a narrow space
- Count the 30 sheep

Automatic

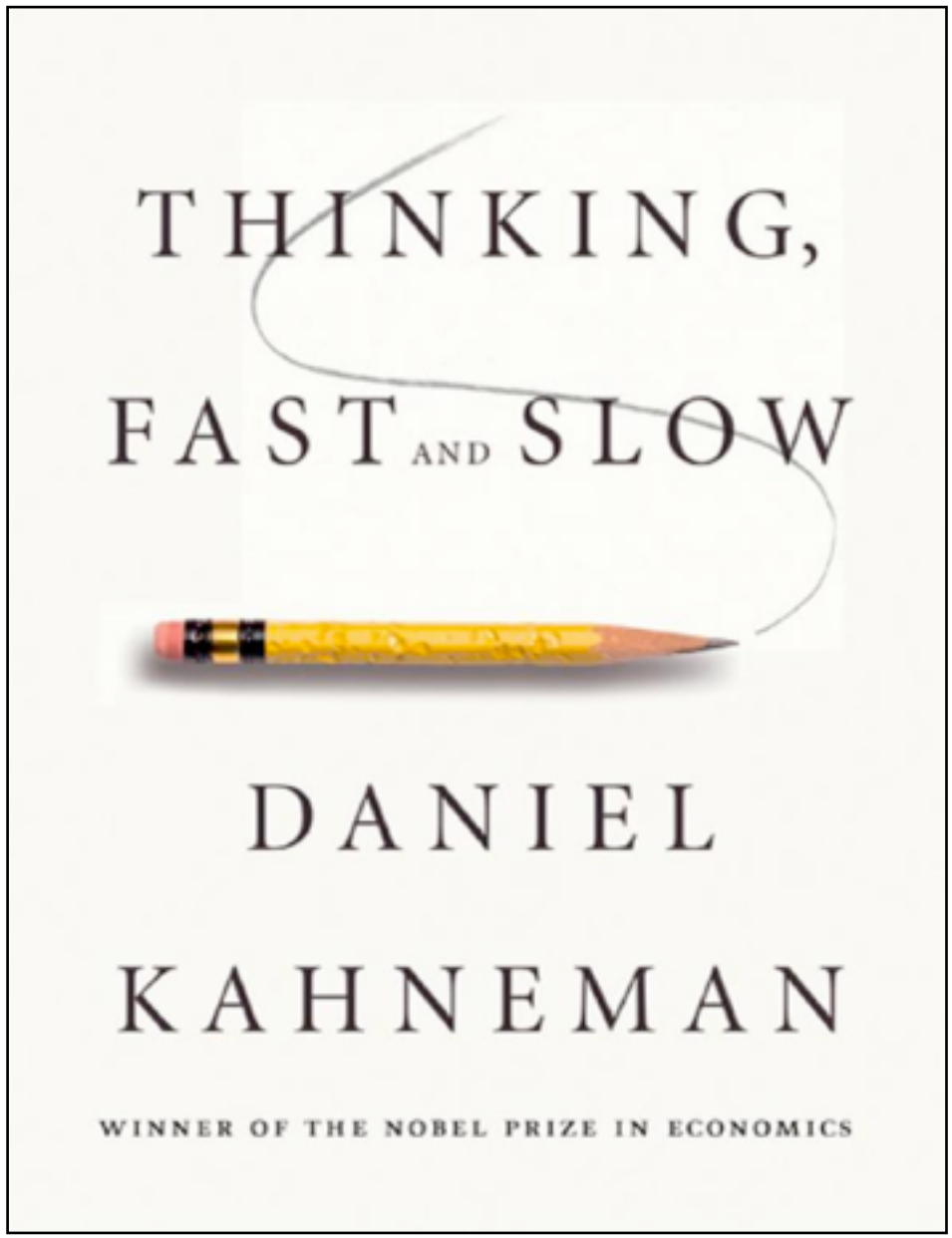
- Add 2 + 2
- Recognize a word you know
- Drive a car on an empty road
- Notice the green sheep

Effortful

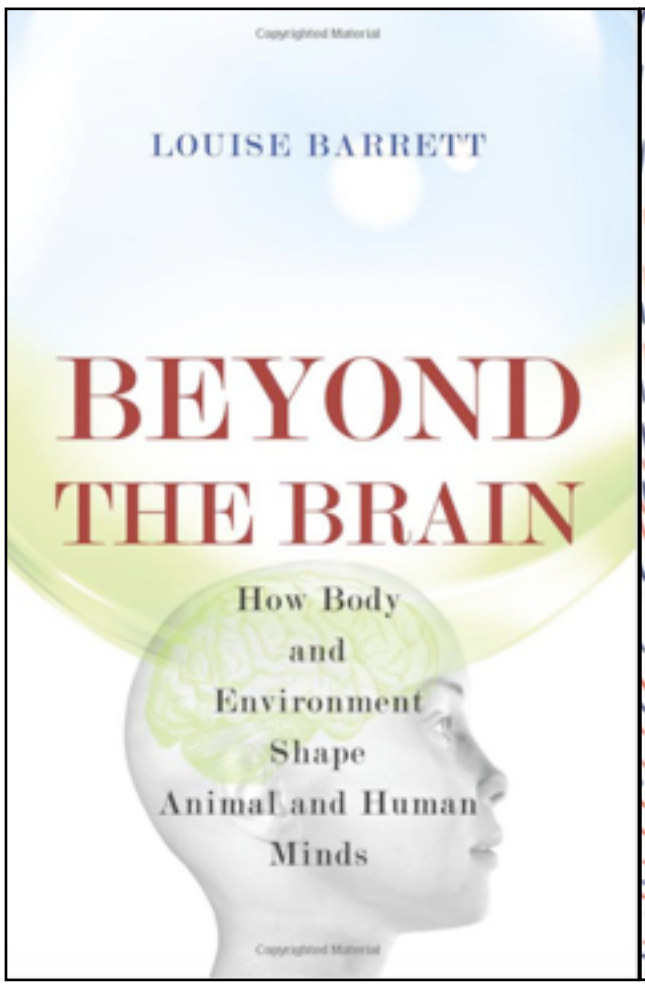
- Tiring
- Lazy
- Serial
- Buggy as hell

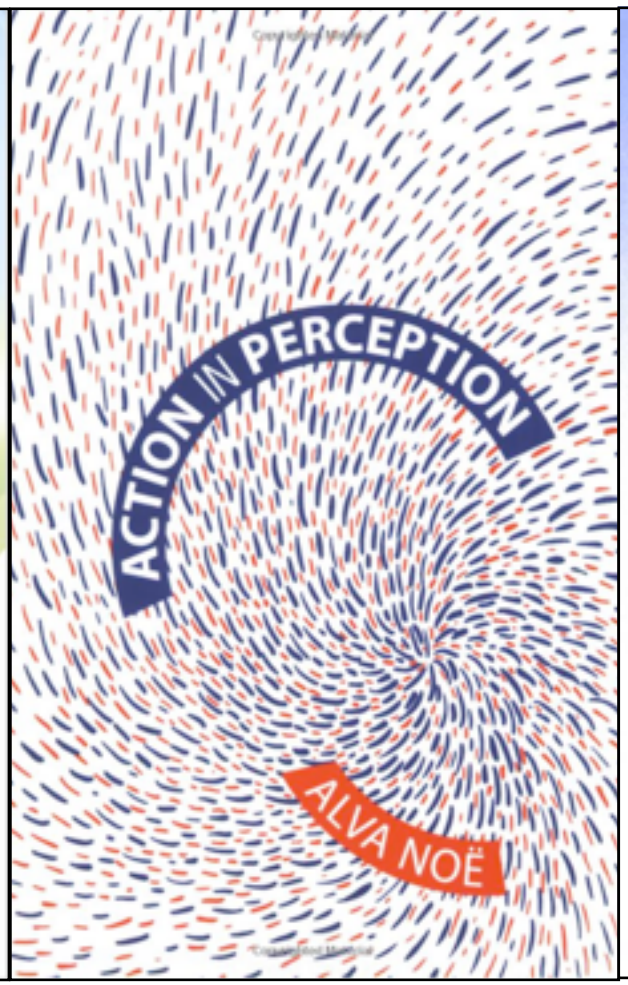
Automatic

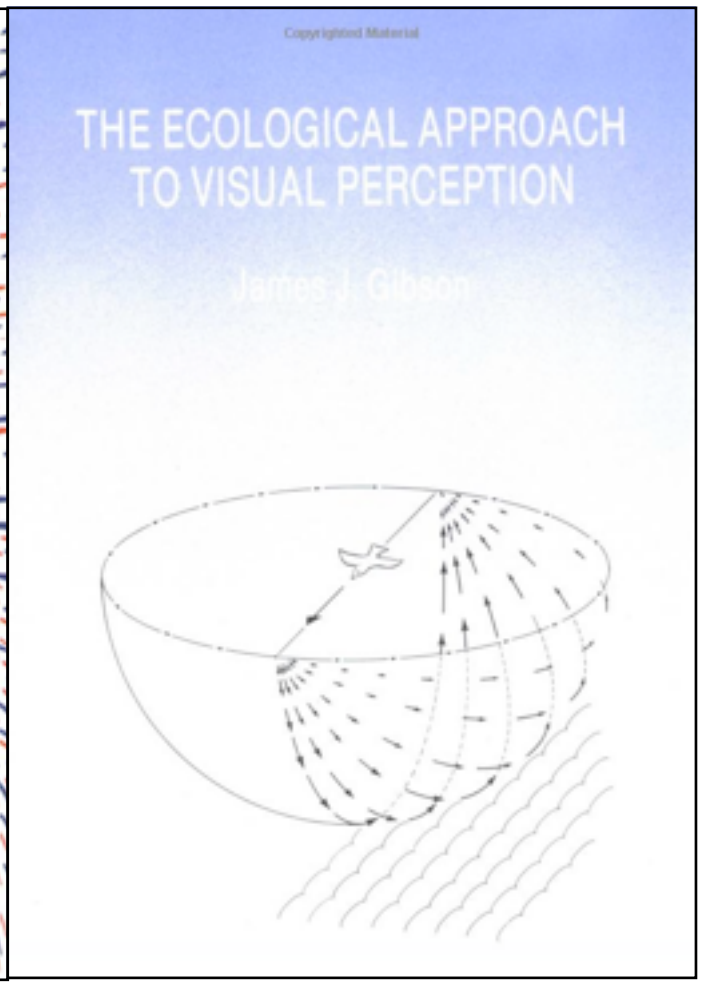
- Not tiring
- Always on
- Parallel
- Mostly accurate
  (at specialized tasks)


THINKING,
FAST AND SLOW
DANIEL
KAHNEMAN
WINNER OF THE NOBEL PRIZE IN ECONOMICS

Ecological/Embodied Cognition







Principles

1. Constrain possible perceptions
2. Make perceptions one-to-one with actions
3. Convert goals to achieve into invariants to maintain
4. Convert effortful calculation into automatic perception
5. Make changes to simplify perception

The Outfielder Problem

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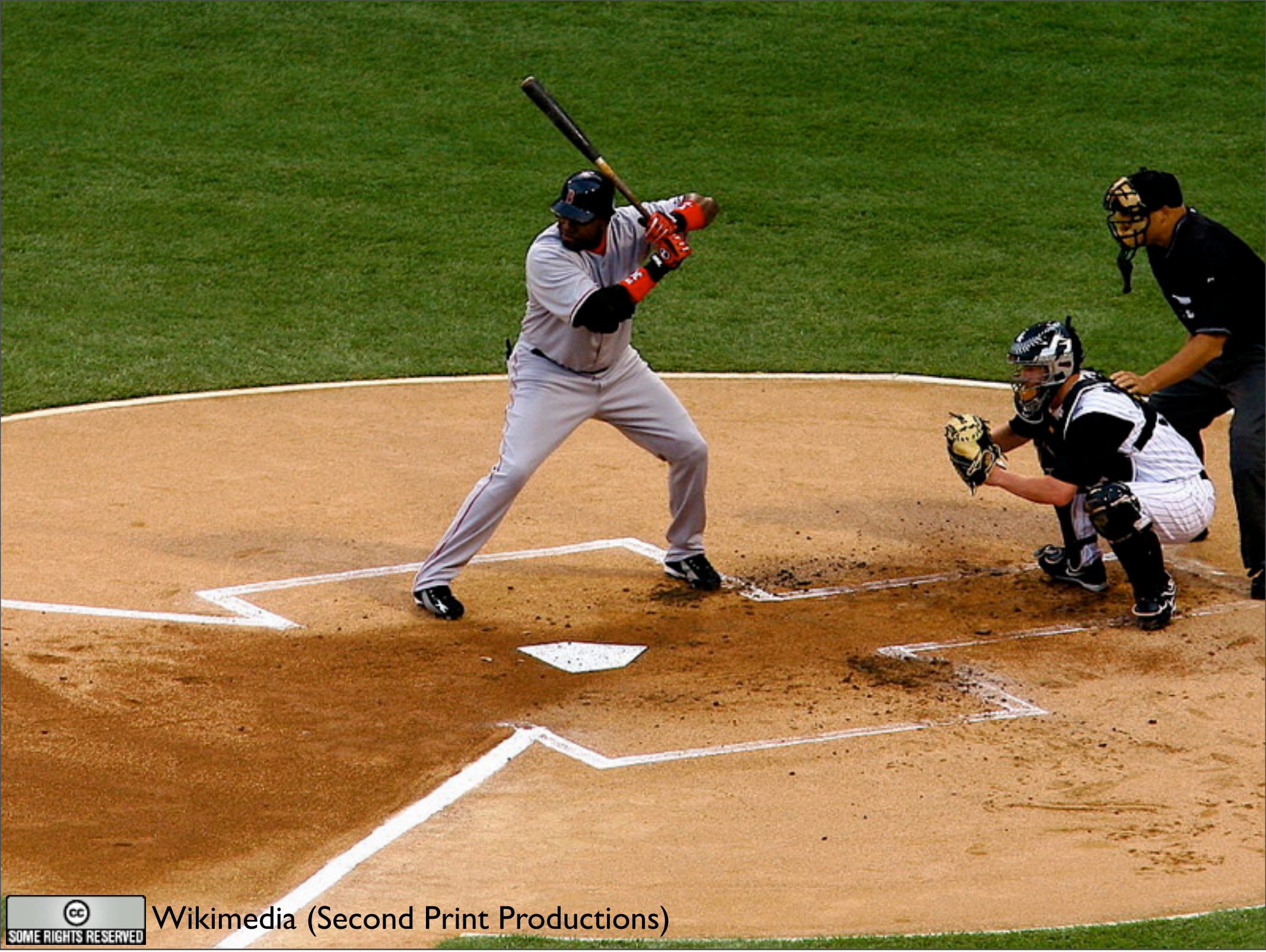

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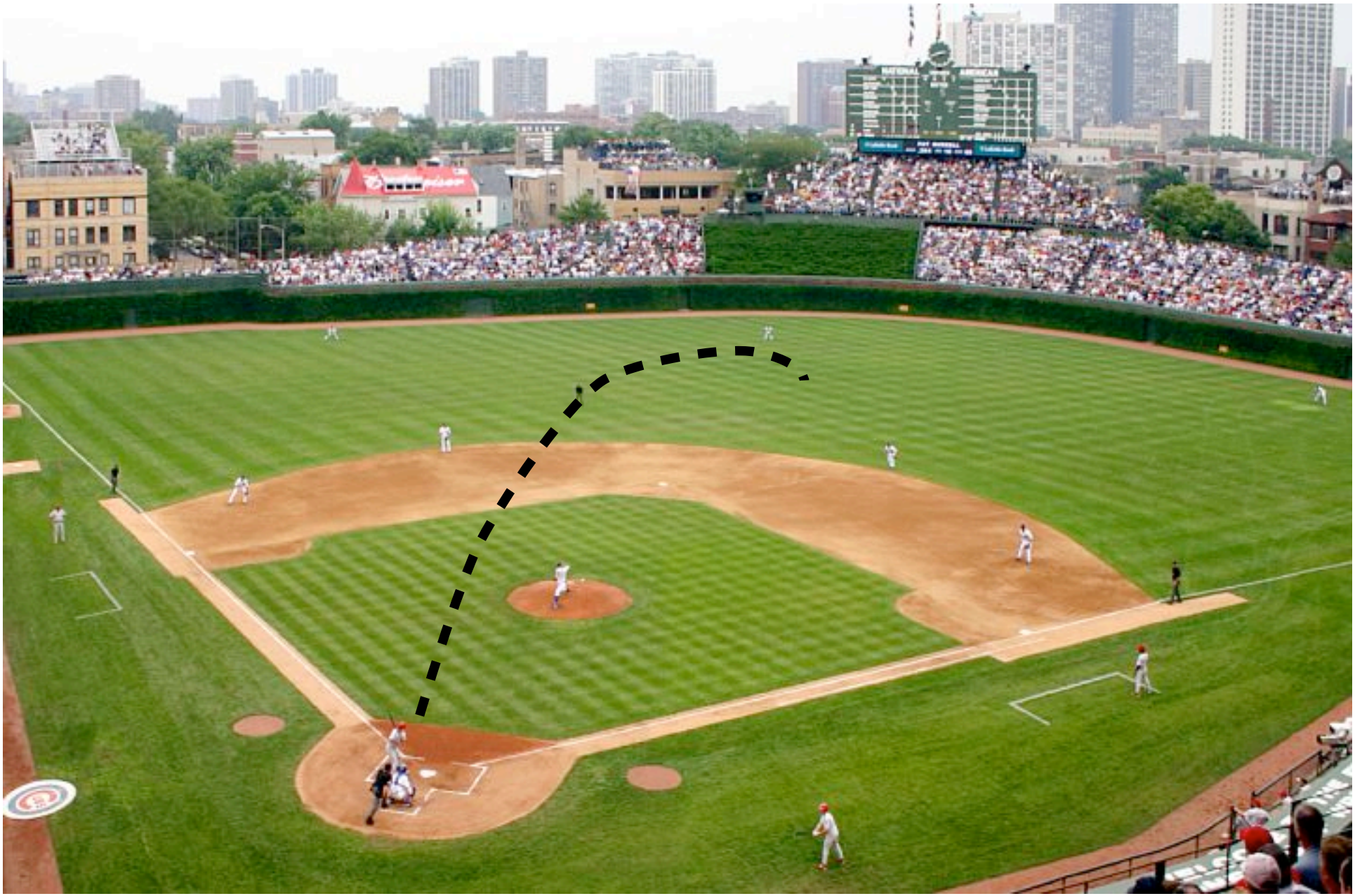

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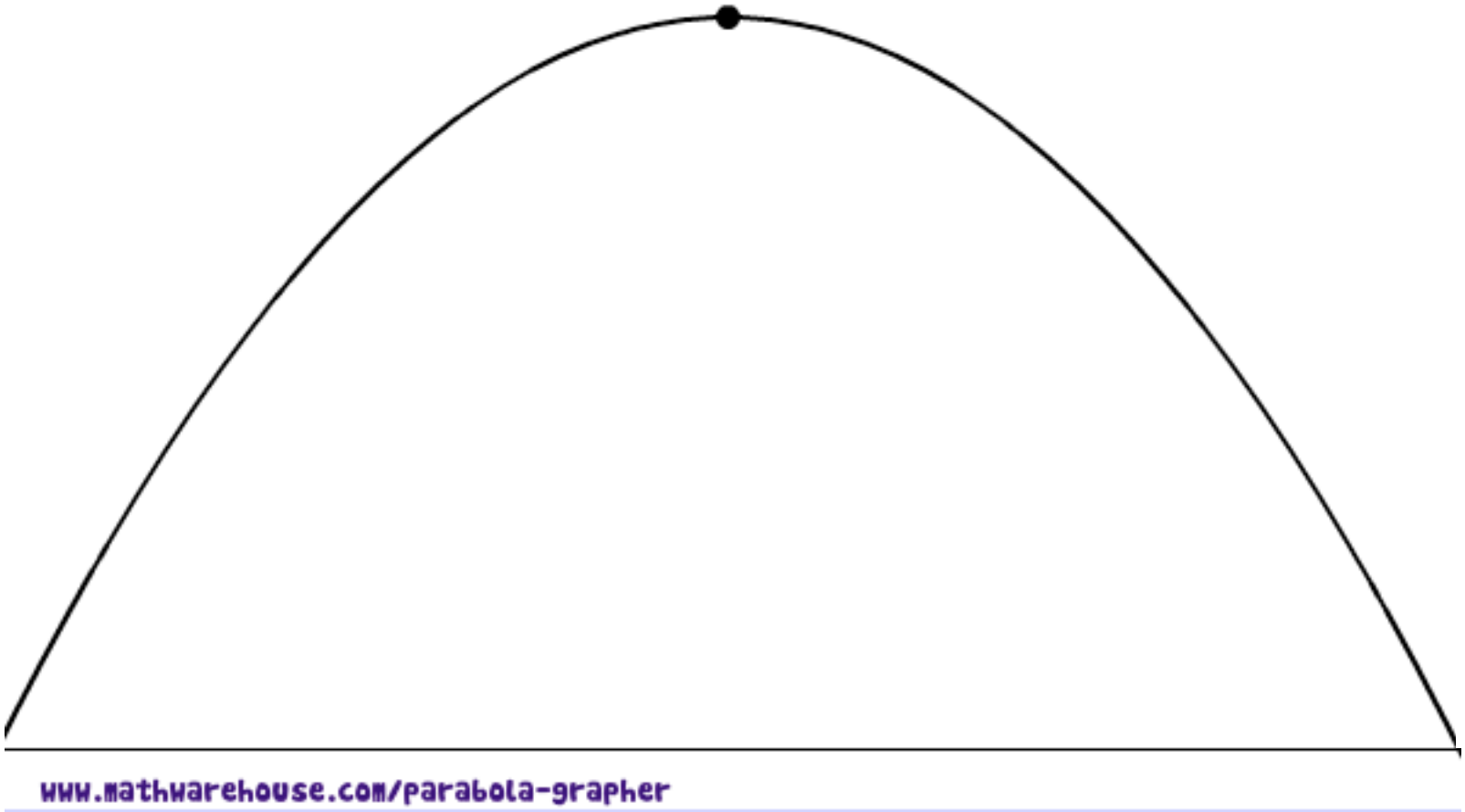

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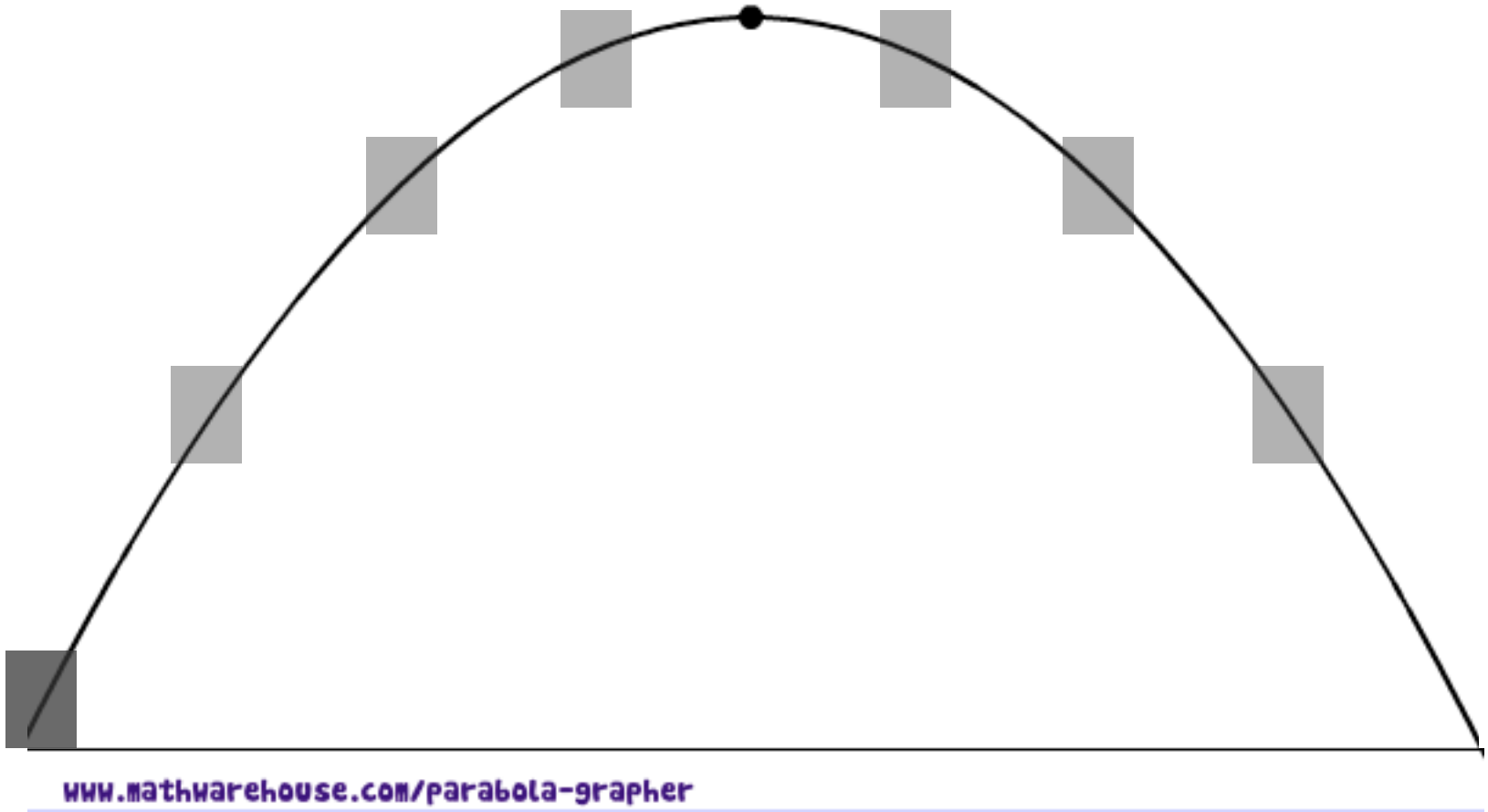

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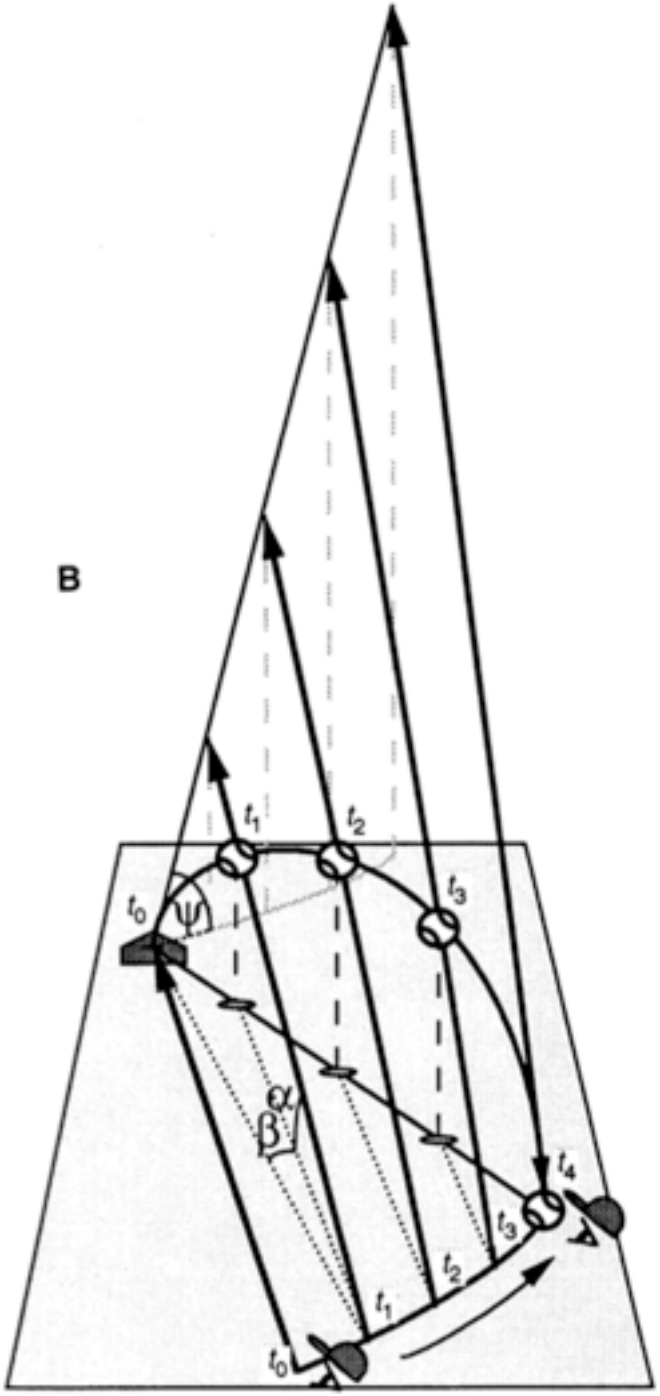

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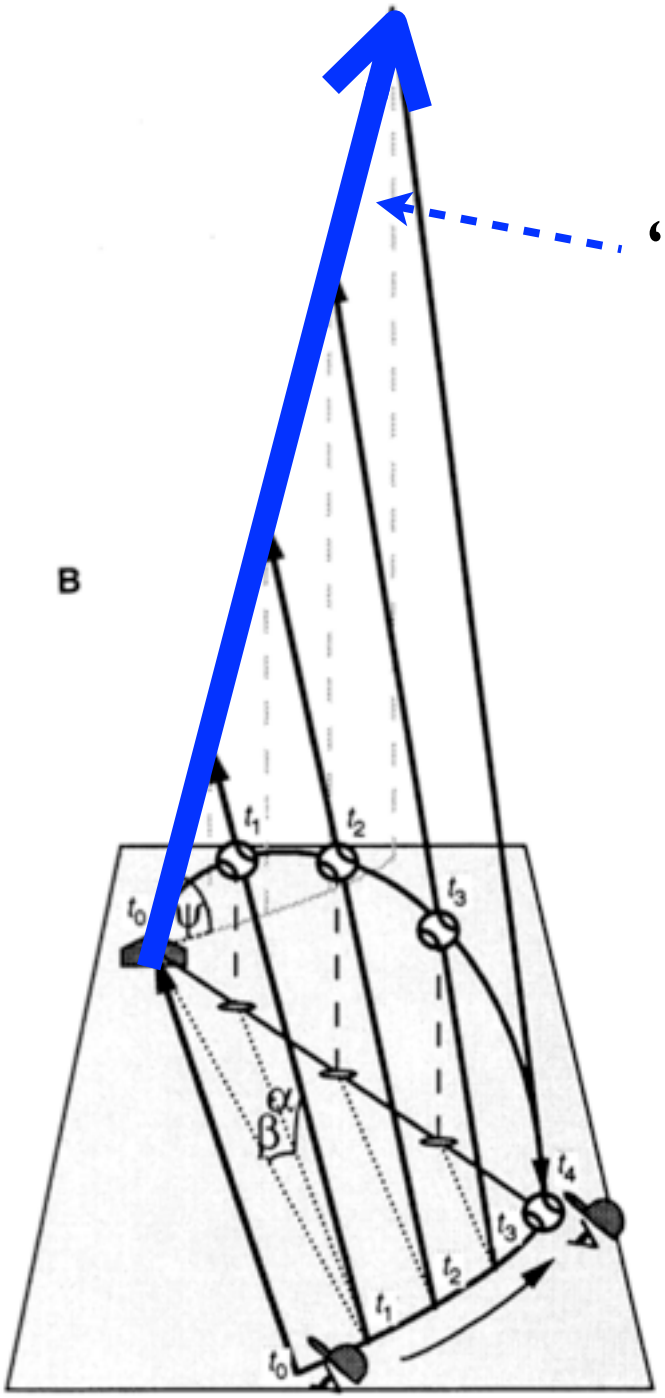

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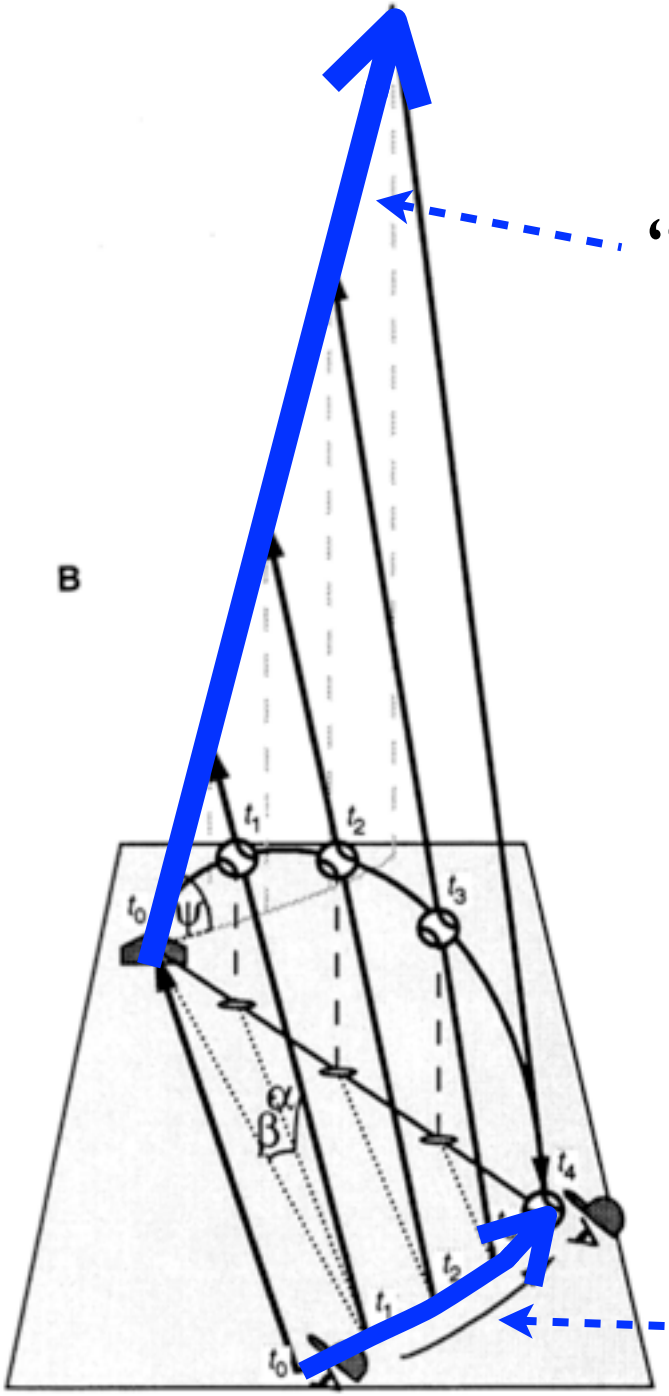

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Curve

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Disturbing the Invariant

Habitual action

Focused perception

Maintaining invariants

Federico Naveira and Inés Muzzopappa
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Why Ron Jeffries Was Right and I Was Wrong

1. Perception
2. Action
3. Invariants

openclipart.org

Perception ⇒ Action

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Perception ⇒ Action

Courtesy Michael Feathers

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Effortful

- Add 123 + 82
- Prepare a keynote
- Park a car in a narrow space

Automatic

- Add 2 + 2
- Recognize a word you know
- Drive a car on an empty road

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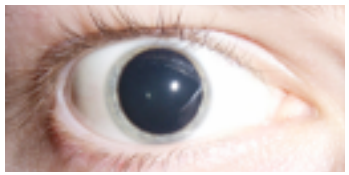
Morphy vs. Löwenthal, 1858

Effortful



Automatic

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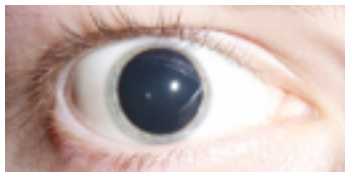
Effortful



Automatic

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The Poverty of Stimulus

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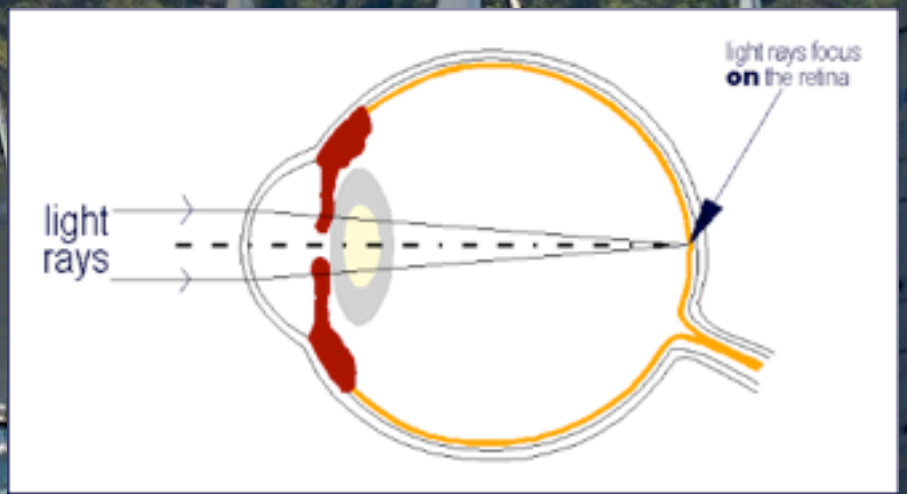
The Poverty of Stimulus



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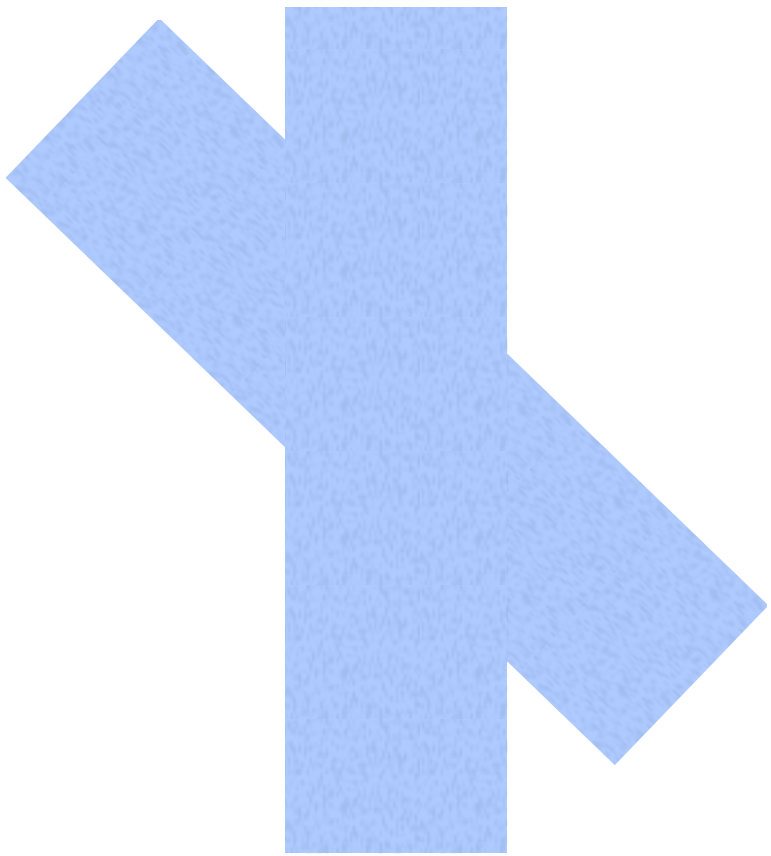
Searching for Stimulus



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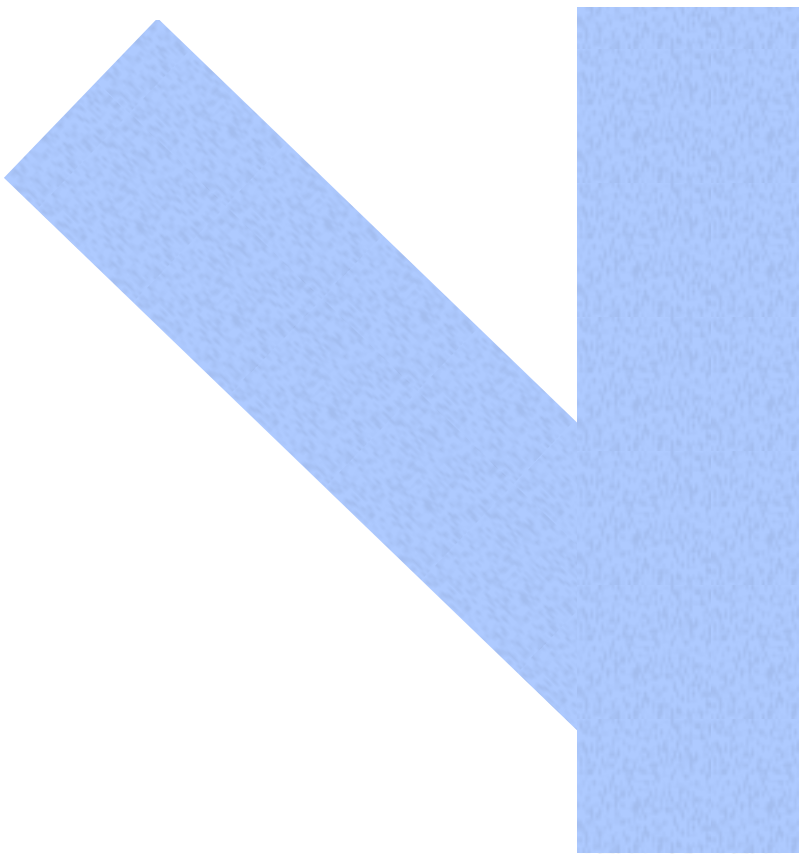

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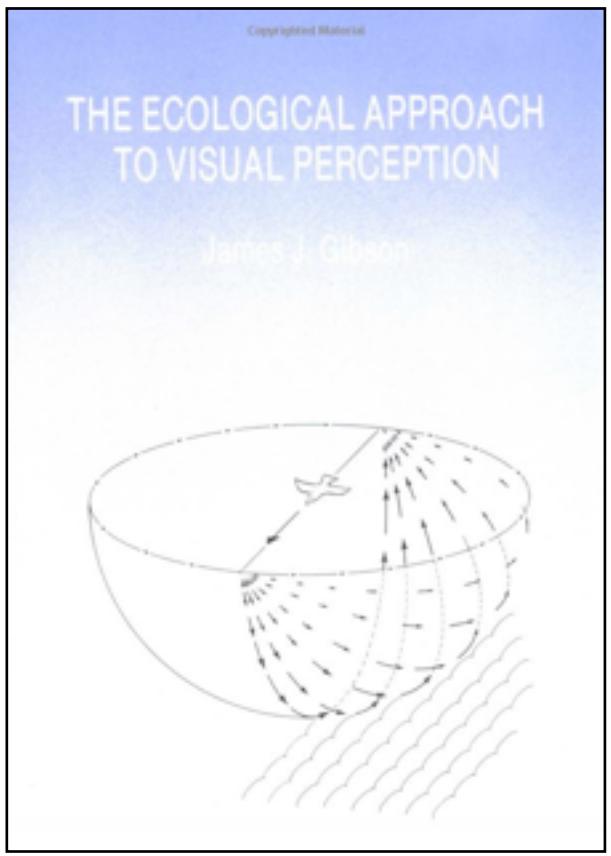

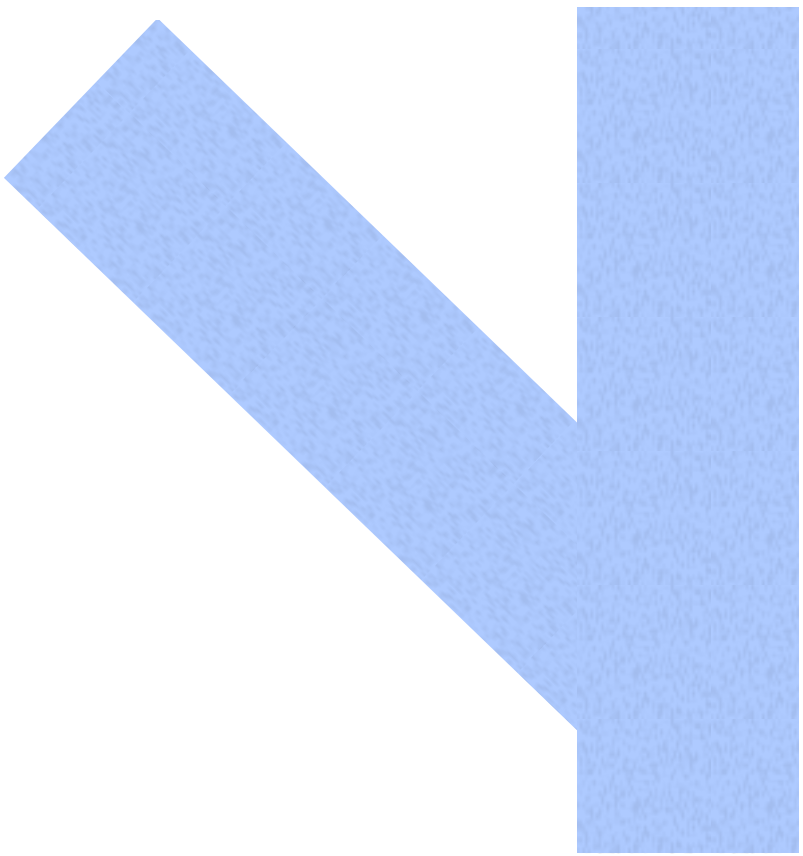

The World Is Awash in Exploitable Invariants

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PDP-11
resource
timesharing
system
RSTS-11
JEOPARDY!
J. G. BALLARD
The Crystal World
S M T W T F S
SUN
MON
TUE
WED
THU
FRI
SAT


PDP-11
resource
timesharing
system
JEOPARDY!
REFACTOR AV
REFACTOR AV
REFACTOR AV

Two Styles of TDD

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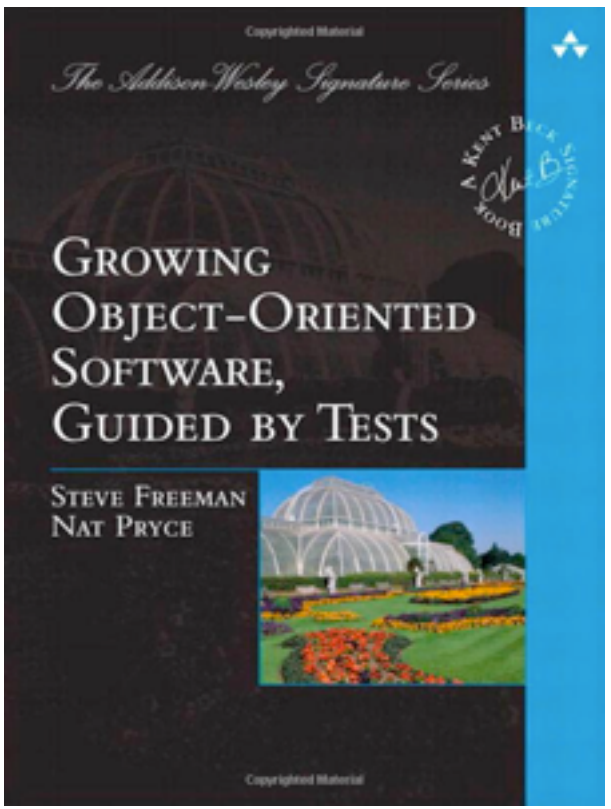
Two Styles of TDD



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http://psychsciencenotes.blogspot.co.uk
Barrett, *Beyond the Brain* (2011)
Noë, *Action in Perception* (2006)
Gibson, *The Ecological Approach to Visual Perception* (1986)

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