

KOGW-PM-KNP: Exercise 1

Questions - Runeson's Planimeter

June 29, 2016

1. Explain, in your own words, the difference between perception and cognition, using the concept of a "smart" mechanism [1]? Begin with a basic description of how the planimeter works [1]. Include an example of a discovered smart mechanism [1].
 - The planimeter acts as a transducer between intention (wanting to know the area of an irregular shape) and a physically "complex" variable (the area) without direct knowledge of the underlying mathematical principles of its construction.
 - No calculations are explicitly made, rather the mechanics of the device produces the desired output via correct use of the instrument. In a similar way, our brains can access complex variables of the physical environment (e.g. color, sound, temperature) without us needing to calculate anything. This is perception as Runeson describes it.
 - Tennis player watching a ball need only "know" the rate of image expansion to calculate time-to-collision, rather than compute all the myriad physical variables. P.176 Runeson Paper - Lee 1974. Allow other good examples of smart mechanisms.
2. Name two properties that Runeson identifies as definitive for smart mechanisms [2]?

Any 2 from below:

 - Stable
 - Continuous
 - Efficient / Simplicity
 - Not influenced by Cognitive effects (mood, fatigue, drugs, etc.)
3. What is the "principle of equal simplicity" [2]?

The principle of simplicity enables us to reach conclusions about the operation of a system [1] by comparing variables which quantify that function [1] (e.g. speed, simplicity, variance) p.175 Runeson Paper - Sensory Psychophysics

4. Name two areas of psychology (besides perception) in which smart mechanisms apply [2]:

Any 2 from below:

- Developmental psychology
- Learning
- Attention
- Mastery

5. Invent a smart mechanism that could improve on our everyday perception [1].

Anything that follows the vague concept of a planimeter whilst improving our perceptual abilities e.g.:

- In-built statistical evaluator, allowing for better decision making when presented with large or misleading information
- Taste buds that give a breakdown of nutritional content of food, so we can choose healthier options.