“Understanding the brain through the eyes”

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Understanding the brain through the eyes

What we see and how we see can be used to help us understand how the brain works. Illusions are not just visual tricks, but illustrate the deep principles which our brains use to construct reality. In this talk, with the use of many examples, I will show how the study of illusions provides important lessons for psychologists trying to understand all aspects of mind, brain and behaviour.

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About me

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Outline

Perception as a model for psychology in general
- The mind is created by the machinery of the brain
- Meaning is the combination of expectations and inputs
- Mental quirks almost always serve a purpose
Finding! Perception is a hard problem which we experience as easy
Principle #1: The mind is created by the machinery of the brain
"So... what does the thinking?"

Figure 2-2. The distribution of different photoreceptors on the retina

Osterberg, 1935

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It is possible to test the limits of this filling in process for yourself. All you have to do is find a complex scene and see how your mind responds when you fix your blind spot on it. For example, here's a fixation cross and text across the area where the blind spot will be. Do you see a gap? Probably not, but what is your brain putting in the blind spot to stop you noticing the blind spot? Is it the real text, or is it something enough like text for you not to notice that it isn't text?

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Finding! Even with gaps in the image, there are no gaps in the percept
Principle #2: Meaning is the combination of expectations and inputs
image or interpretation?

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drawinghowtodraw.com

"Image"

"Percept"
“Image”  “Percept”
“Scene”

“Image”

“Percept”
“Scene”

“Image”

“Percept”

See also

https://michaelbach.de/ot/sze-shepardTerrors/

See also

https://michaelbach.de/ot/sze-shepardTerrors/
Finding! All images are ambiguous
Cues

We disambiguate images by combing cues, “clues” as to the what the real scene is creating the image
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Principle #3: Mental quirks almost always serve a purpose
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Pere Borrell del Caso

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Finding! By understanding how cues are used by the brain we can control what is seen
Summary

Perception as a model for psychology in general

- The mind is created by the machinery of the brain
- Meaning is the combination of expectations and inputs
- Mental quirks almost always serve a purpose
Summary

Perception as a model for psychology in general

- We don’t have direct access to reality
- Meaning is the combination of expectations and inputs
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Summary

Perception as a model for psychology in general

- We don’t have direct access to reality

- We use cues to create interpretations (but often don’t realise how we do this)

- Mental quirks almost always serve a purpose
Summary

Perception as a model for psychology in general

- We don’t have direct access to reality

- We use cues to create interpretations (but often don’t realise how we do this)

- Investigating these mechanisms can show us the reasons why we perceive, believe and understand the way we do
END

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