

Targeted Search

A Review of the Literature

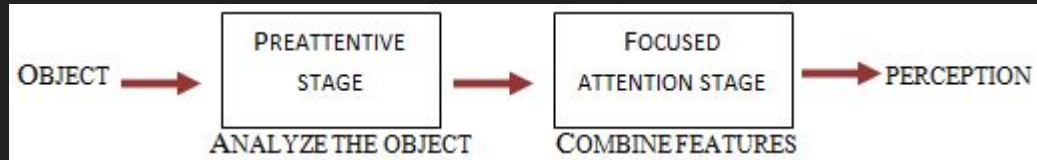
Introduction

- Two major researchers
 - Anne Treisman
 - Jeremy Wolfe
- Both primarily bottom-up

Anne Treisman - Feature Integration Theory

- Preattentive Stage
 - Free-floating features
 - Taken in automatically and in parallel
 - Not perceived as objects
- Focused Attention Stage
 - Features are “glued” together
 - Must be processed in serial; requires attention
 - Only an issue if defining features are not unique

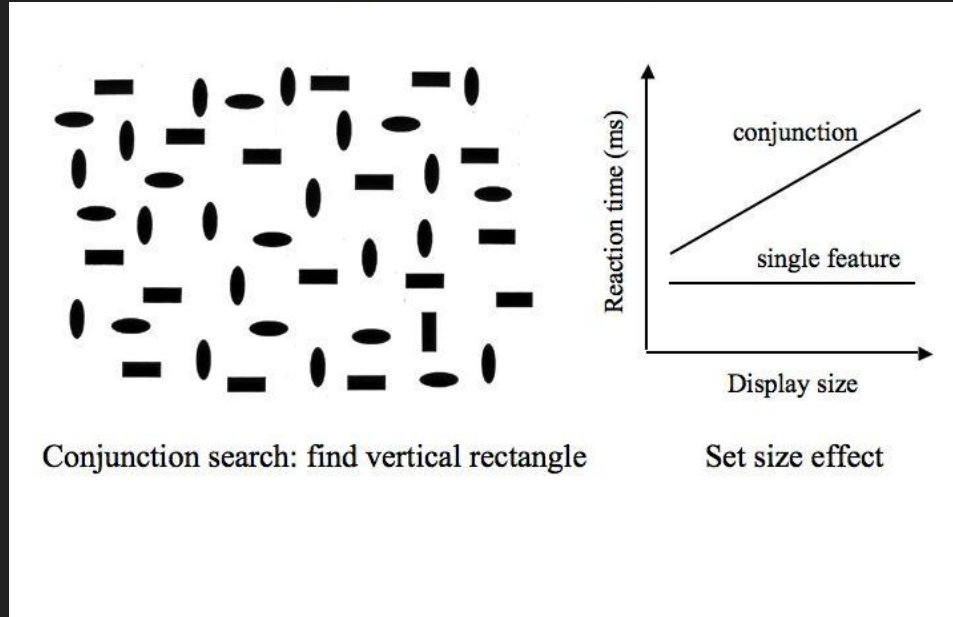
Feature Integration Theory



Feature Integration Theory

- Conjunction search
 - Find the vertical rectangle

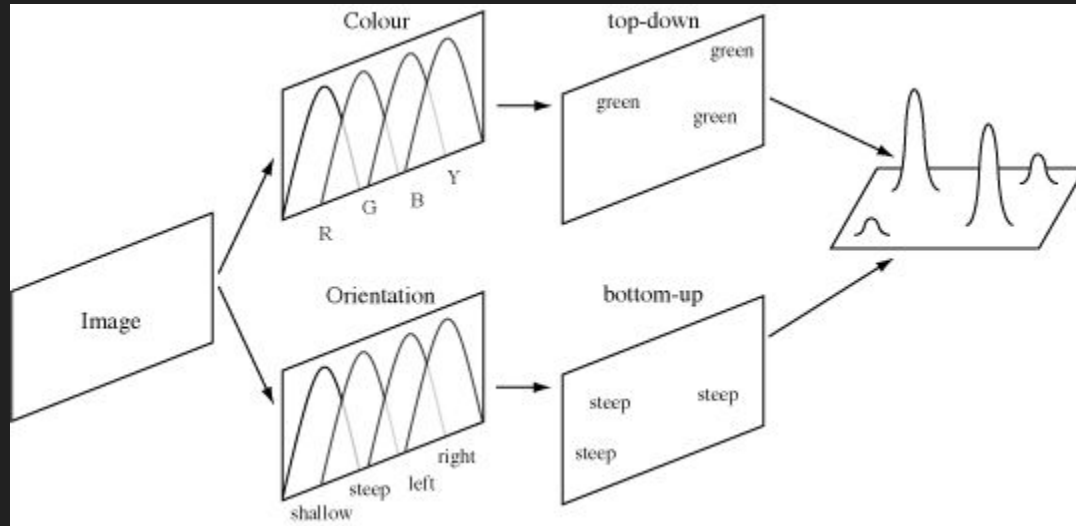
Feature Integration Theory



Jeremy Wolfe - Guided Search

- Parallel Stage
 - Input Channels
 - Color, *orientation*, etc
 - Distinct idea from Treisman's free-floating features
- Serial Stage
 - Feature Maps
 - Primarily bottom-up process
 - Top-down guidance for “highlighting” feature maps

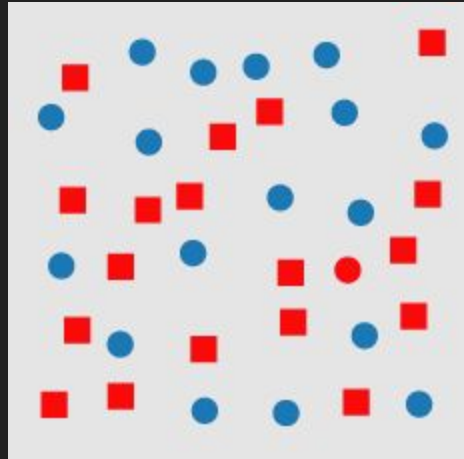
Guided Search



Guided Search

- Key difference: usage of preattentive parallel information
 - Find the red circle

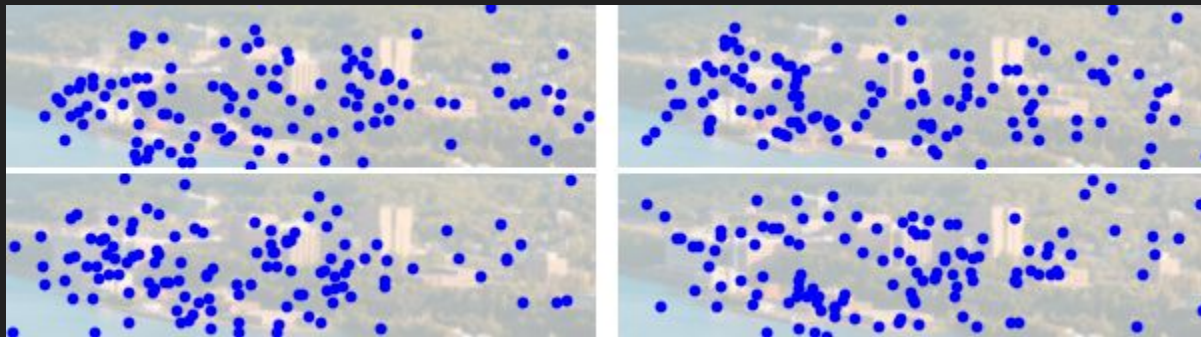
Guided Search



More Recently - DeepGaze

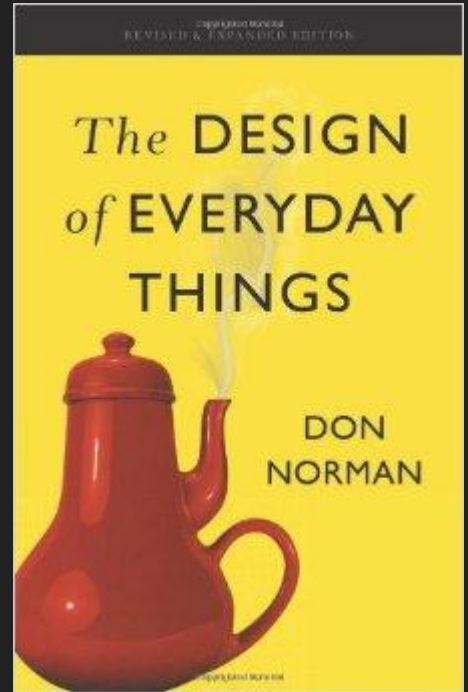
- Wolfe & Treisman
 - Bottom-up approach as the foundation
- Neural Networks
 - Attempting to simulate top-down processing
 - Prototype model of cognition
 - What is a dog?
- Public Access
 - <https://deepgaze.bethgelab.org/>

DeepGaze



Don Norman - The Design of Everyday Things

- You are not the user
 - Norman Doors
- On Human Error
- Design Constraints
- Design should be intuitive
 - Complexity versus Confusion

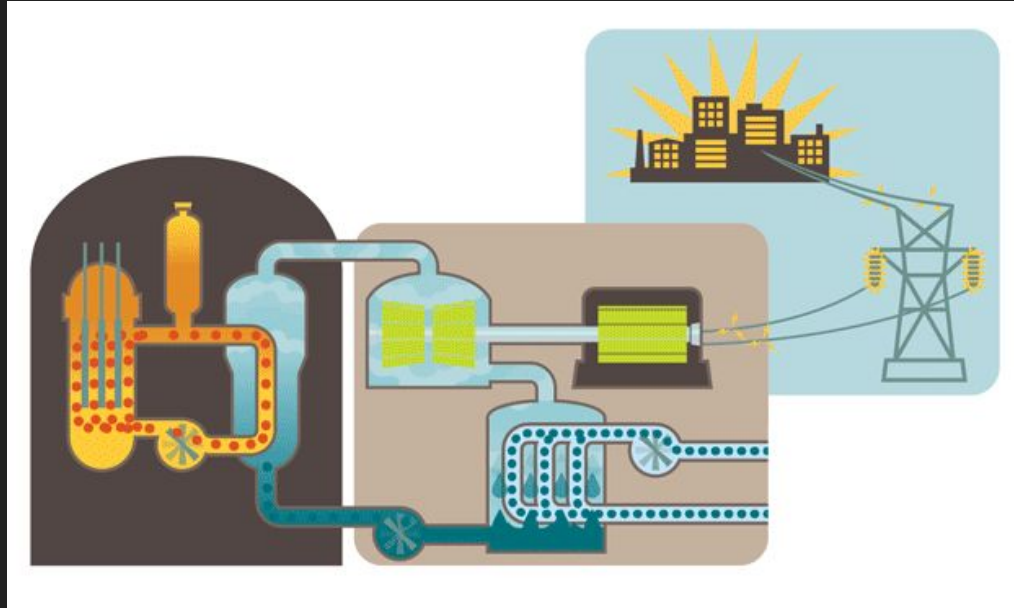


Three Mile Island - A Case Study of Bad UI Design

Level 5 (out of 7) nuclear accident

- Perfect example of bad design
 - First two minutes - 500 individual warnings
 - All stemmed from one simple problem
 - Major problem was not made immediately and easily apparent

Three Mile Island - Animation of the Failure



References

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