

CSE 564: Visualization

The Semiology of Graphics

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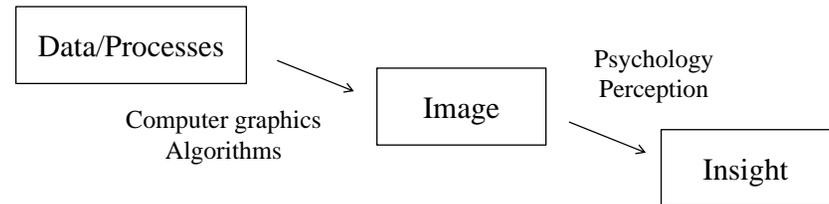
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Overview

Formal theory linking perception to visualization

Established by Jacques Bertin (1967)

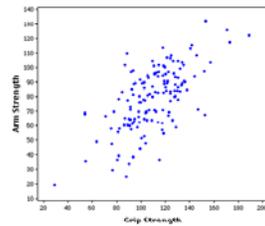
- he called it 'Image Theory'
- original book in French (*Sémiologie Graphique*) translated into English by W. Berg (1983)
- not formally linked to vision research more based on intuition
- but has been shown later by M. Green to be quite accurate



Visual Variables

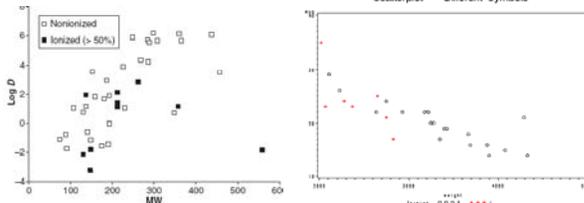
Two planar variables

- spatial dimensions
- map (arm, grip) to (x,y)



Six retinal variables

- size
- color
- shape
- orientation
- texture
- brightness



Retinal variables allow for one more variable to be encoded

- more than three variables will hamper efficient visual search
- recall low decoding speed of conjunctions

Levels of Organization

Visual variables differ in what data properties they can convey

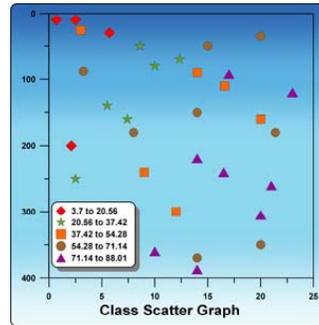
	Associative	Selective	Ordered	Quantitative
Planar	yes	yes	yes	yes
Size		yes	yes	yes
Brightness		yes	yes	
Texture	yes	yes	yes	
Color	yes	yes		
Orientation	yes	yes		
Shape	yes			

Associative vs. Selective

Both are nominal qualities

Associative

- lowest organizational level
- enables visual grouping of all elements of a variable



Selective

- next lowest level
- enables viewer to isolate encoded data and ignore others

