

Contributions of Gestalt Psychology to modern thinking about the brain.

A. General observations about visual processing

* “The Gestalt rules of Unification and Differentiation” (Wertheimer, Koffka)

(‘integration*’ and ‘segmentation’)

(integration is sometimes also called ‘grouping’; mainly in Psych)

proximity

similarity (‘equality’)

good continuation cf. Field, Hess and Hayes

closure cf. Kovacs and Julesz

common fate (e.g., color, motion)

‘good figure’ / ‘*praegnanz*’ cf. Leyton, Michael

“Symmetry, Causality, Mind”.

MIT Press (1992)

* The primacy of “perceptual units” over the sensory units (e.g., in vision, the “pixel soup”):
Figure/ground organization and the perceptual space as composed of “things” and “events”.

Edgar Rubin (1923)

Kanizsa, “Organization in Vision” (1976), mainly chaps. 1,2,12

Missing (big time): Michotte (the temporal dimension)

In today’s terms: the distinction is related to the question *what is the right level to analyze the system.*

* The ‘Perceptual Organization’ of a visual stimulus is not *driven* by familiarity (although they can be affected/biased by “high-level” factors): in today’s terms we say it is *stimulus driven*.
(+Kanizsa: a general distinction between “perceptual” and “thought” processes).

* The primacy of: the 3D percept over the 2D image: in the ‘general’ case, we don’t have conscious access to the retinal image, but rather to the processed version of it, which reflects a 3D representation.

Berliner pg. 13-15.

Koffka pg. 161.

Later/contemporary demo’s:

Rock and Brosgole (1964).

Burbeck 1987

Enns & Rensink, Nakayama et al., ...

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B. Concrete contributions: observations that ‘anticipated’ (or, most likely, *affected*) modern, and central, computational problems:

Effects of “induction” (e.g. Dunker 1929, induced motion)

Modern version: ‘non-linearity’

‘effects from outside the classical receptive field’

“Perceptual Identity” (Wertheimer, Ternus, for isolated items;

Wallach, for points along a ‘featureless’ line)

Modern version: ‘the correspondence problem’ (eg, Ullman 1976)

‘the aperture problem’ (eg, Hildreth 1984)

“The different qualities of ‘Figure’ and ‘Ground’” (Rubin 1923)

Modern version: ‘border ownership’ (Nakayama, von der Heydt)

Discussion question 1: If experiments show that observers cannot consciously access their ‘retinal image’, does it mean that:

- We *should not* attempt to study the retinal-image-level processes?

- We *cannot* study the retinal-image-level processes?

(indirect/implicit effects: priming, etc.)

Discussion question 1: If one of the Gestaltists were alive today, what advice would they have given to a physiologists who want to study ‘effects from outside the classical receptive field’ ?