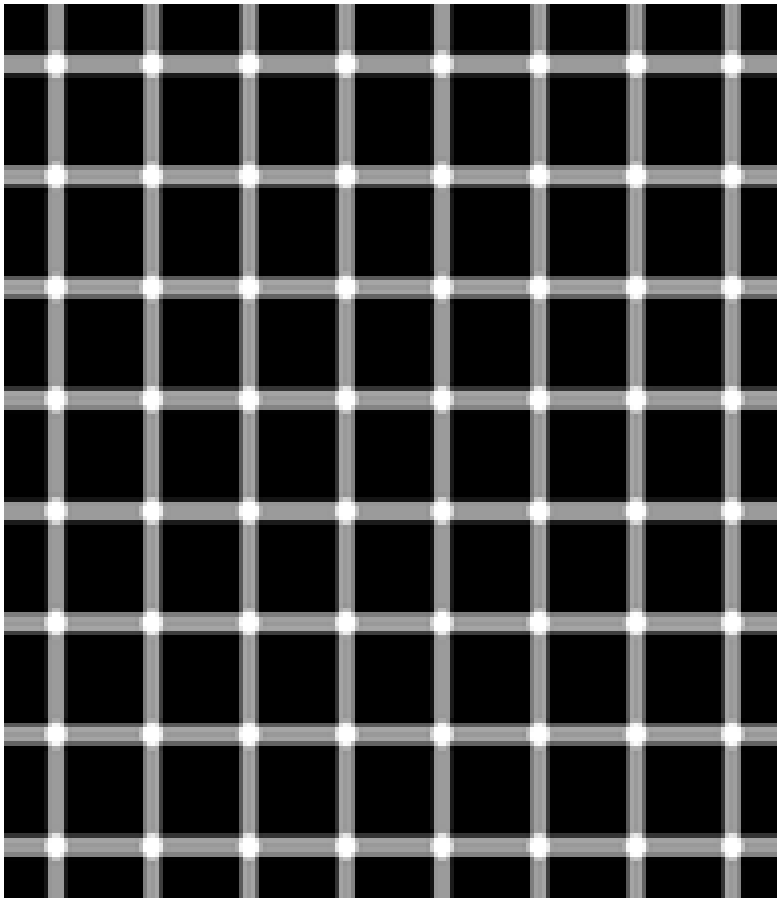
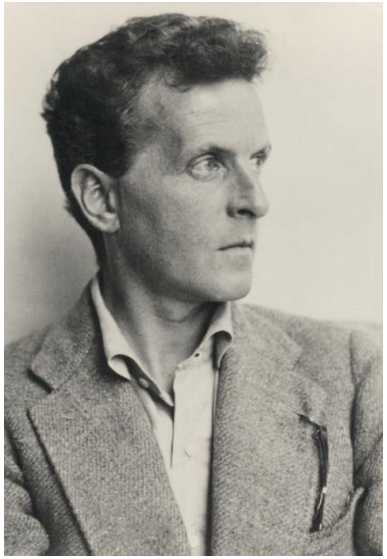


Visual Perception beyond content

Ines Hipolito

16th August 2017

Work in Progress Seminar



5. *If I say a piece of paper is pure white, and if snow were placed next to it, it would then appear grey.*

(Wittgenstein, *Remarks on Colour*).

- The piece of “pure white” paper would then **visually appear** more identical to grey, although **we know** it as white.

- What is the relation between **seeing** and **knowing**?

Suppose one knows that bananas are typically yellow: could that make grey bananas look yellower than they are? (Hansen et al. 2006)

Suppose I am really thirsty, will I see a bottle of water physically closer?
(Balcetis & Dunning 2010; see also Krpan & Schnall 2014);

Is the activation of beliefs and desires (higher-level cognitive states) capable of influencing perceptual experience?

If what we **know** can affect what we **see**, then a revolution in our understanding of perception is in order.

Not only a “modular” perspective on vision is over, but also the very distinction between perception and cognition itself.

“that people tend to see what they want to see” (Radel & Clément-Guillotin 2012, p. 233).

“the postulation of the existence of visual processes being functionally encapsulated…cannot be justified anymore” (Vetter & Newen 2014, p. 73).

This sort of evidence led

“[a]ll this makes the lines between perception and cognition fuzzy, perhaps even vanishing”

and to deny that there is “any real distinction between perception and belief” (Clark 2013, p. 190).

“Cognitive penetrability” of perceptual experience

- In contrast to the traditional “modular” understanding of perception, according to which visual processing is encapsulated from higher-level cognition (cognitively impenetrable),

- alleges that states such as **beliefs, desires, emotions, motivations, or intentions** exert direct, top-down influences on what we see.

Firestone, C., & Scholl, B. J. (2016). Cognition does not affect perception: Evaluating the evidence for" top-down" effects. *Behavioral and brain sciences*, 39.

Top down effects

- **‘Low-level theorists’** argue that perceptual experience is reducible to the experience of low-level properties (brightness, shape and texture)

- They are an output of computations in the brain’s sensory regions within the sensory modality under consideration. (Macpherson, 2015; Broggaard and Chomanski, 2015).

- “**Perceptual experience is sometimes cognitively penetrated**” (Pylyshyn, 1984, 1999: Raftopoulos, 2009: Lyons, 2011: Siegel, 2012: Strokes, 2013: Briscoe, 2015; Brogaard and Gratzia, forthcoming/2017)” (Brogaard and Chomanski, 2015)

Top down effects

- **‘high-level theorists’** argue that we have perceptual experiences of high-level properties.

- processed in brain regions beyond the visual cortex.

- E.g. post-perceptual processes, being/meaning something; mental/moral/aesthetic properties (functional properties, causal relations, etc.).

(Gross, 2017; Stokes, Marchi, 2017; 2017; Newen and Vetter, 2017; Teufel and Nanay, 2017; Varga, 2017)

- “**High-level properties are presented in perceptual experience** (see, e.g. Searle, 1983; Peacocke, 1992; McDowell, 1994; Siewert, 1998; Johnston, 2004, 2006; Bayne, 2009; Fish, 2009, 2013; Masrour, 2011; Nanay, 2011; Siegel, 2006, 2012).

- It is often implicitly assumed that **the two phenomena are two sides of the same coin** (see, e.g.,Crutchfield, 2012)” (Brogaard and Chomanski, 2015)

Should we accept the "Cognitive penetrability" thesis?

1. Distinction between perceptual experience and visual processes;

2. Causal relation between perception and cognition;

3. Context sensitivity of situated objects in the visual field.

1.
Phenomenology of perception vs. Visual processes

- "Cognitive penetrability" of perceptual experience suggests

- **top-down influences** can alter the way we experience the visual field– the **phenomenal character of perceptual experience**.

- **top-down influences lower level visual processes**.

- These two questions are clearly very different.

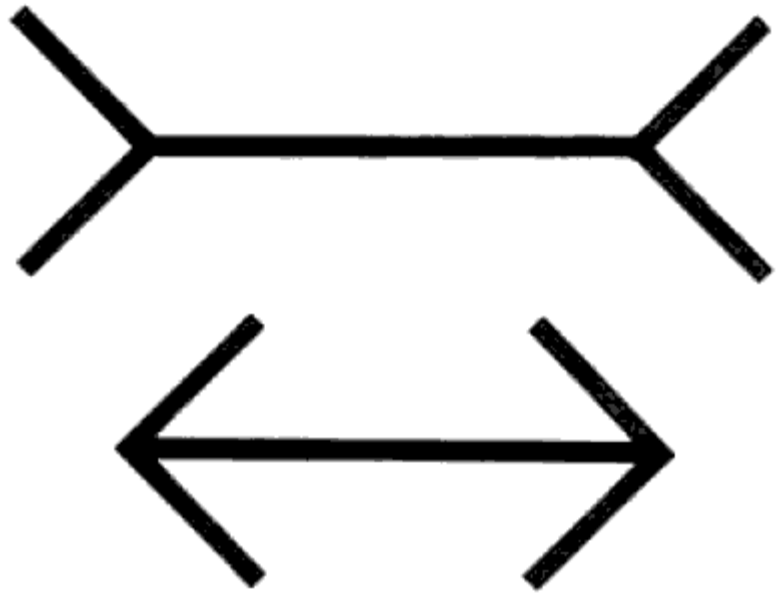
2 –
Causal relation between Perception and cognition

- difference between, on the one hand, **seeing** a red apple and, on the other hand**, thinking about, remembering, or desiring** a red apple.

- A good way to look at the distinction between perception and cognition is to **visually experience** the world in a way you **know it not** to be.

2 –

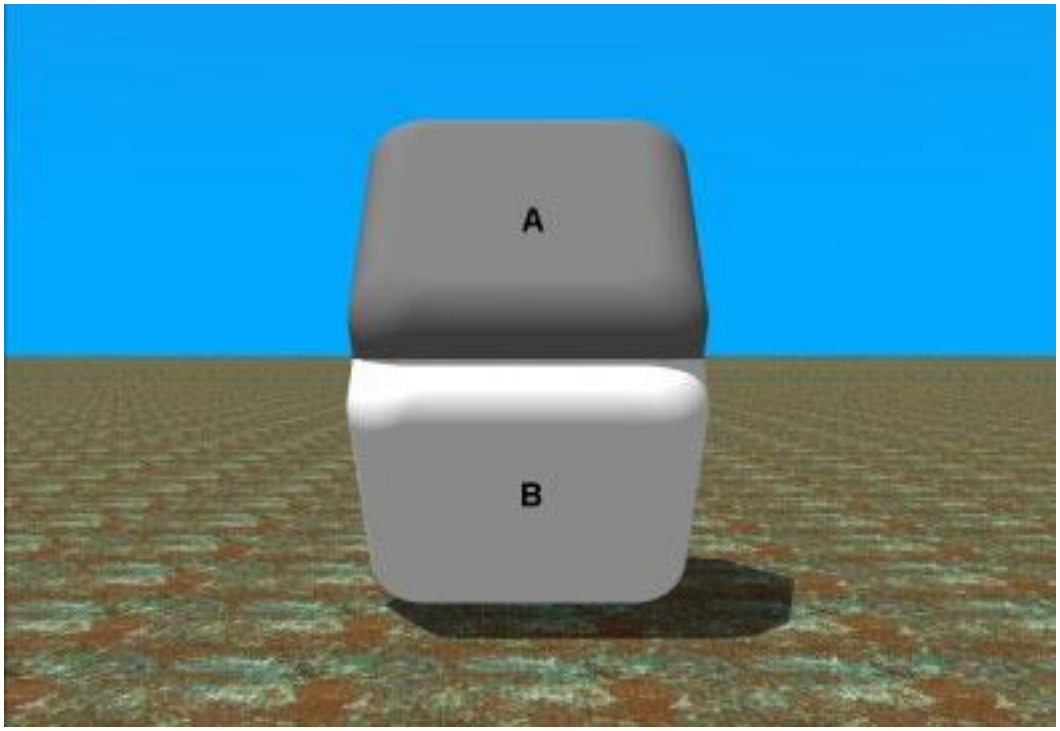
Causal relation between Perception and cognition



Müller-Lyer illusion

- Two arrows (with different orientation of the arrowheads) are perceived as having different length
- Even after measuring the length of the main lines
- Our knowledge does not influence the perceptual experience

The Cornsweet illusion



Chubb Illusion

- the left inner box appears darker than the box on the right—although they're the same color (physically identical),
- they still appear different because of the context.

3 –
Context sensitivity of situated objects

- “There are natural constraints that do not imply effects of cognition or perception or top-down effects.

- Perception of an object may be influenced by the object nearby (visual experience)”.

Firestone, C., & Scholl, B. J. (2016). Cognition does not affect perception: Evaluating the evidence for" top-down" effects. *Behavioral and brain sciences*, 39.

Thought experiment

Let us imagine that we are carrying out the following experiment, in which two subjects take part. The first subject must describe fig. 1 to a second subject

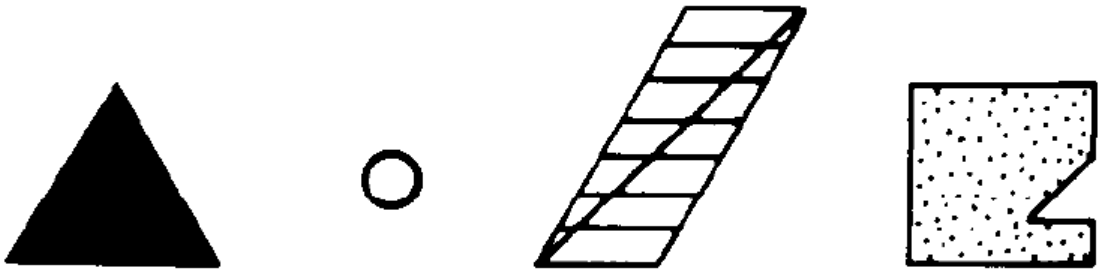


Fig. 1. Patches easily related to some mental schema, therefore easy to describe.

Kanizsa, G. (1985). Seeing and thinking. *Acta psychologica*, *59*(1), 23-33.

Thought experiment

- On the basis of these indications, the second subject will be able to draw, to a good approximation, of what his or her partner sees.

Thought experiment

- We now give the first subject the task of describing the display of the following figure:

It is most unlikely that in this case the performance of the second subject will be even remotely satisfactory.

Thought experiment

- Although there are features that differentiate the two figures, it is worth emphasizing that there is no difference between them with regard to visual aspect as such.

  – The lack of knowledge does not preclude these visual objects from being what they are: black shapes on a white background, well defined by clear contours.

Thought experiment

- Which features differentiate the two situations?

- **Second case:** Confronted with unfamiliar visual objects, we can try to interpret them, but they are meaningless.

Kanizsa, G. (1985). Seeing and thinking. *Acta psychologica*, *59*(1), 23-33.

Thought experiment

- There is no meaning, but there is **organization**: segmentation, spatial, chromatic, dimensional, topological relationships, etc.

- Which “expectations”, which “contentful representations”, or “world knowledge” must be supposed to act in seeing the stable and precise form it has?

Thought experiment: conclusions

1. There can be visual organization without meaning.

2. The formation of a visual object must occur before the object can be identified (cf. figure 2).

Conclusions

- Proving visual processes functionally encapsulated from cognition (cognitive impenetrability) wrong does not mean proving the cognitive penetrability model (of top-down properties over visual experience) right.

- There are reasons to be skeptical about the explanatory power of Cognitive Penetrability over perceptual experience.

Conclusions

- *What is the relation between seeing and knowing?*

1. Seeing is undoubtedly a form of knowledge, an instrument of knowing.

2. The problem does not seem to lie in the relationship between ***seeing*** and ***knowing***, but rather in the relation between ***seeing*** and ***thinking***.

Conclusions

3. Perhaps perception resolves its ‘problems’ without regard to inference, expectations, and knowledge?

5. Working according to autonomous principles of organization for situated basic objects (context) in the visual field.

- Thank you.