

Introduction

Citation for published version (APA):

Bouwhuis, D. G., Buffart, H., & Leeuwenberg, E. L. J. (1985). Introduction. *Acta psychologica*, 59(1), 1-2.
[https://doi.org/10.1016/0001-6918\(85\)90038-1](https://doi.org/10.1016/0001-6918(85)90038-1)

DOI:

[10.1016/0001-6918\(85\)90038-1](https://doi.org/10.1016/0001-6918(85)90038-1)

Document status and date:

Published: 01/01/1985

Document Version:

Publisher's PDF, also known as Version of Record (includes final page, issue and volume numbers)

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.tue.nl/taverne

Take down policy

If you believe that this document breaches copyright please contact us at:

openaccess@tue.nl

providing details and we will investigate your claim.

INTRODUCTION

The purpose of this special issue is to bring together recent experimental findings and newly acquired theoretical insights that shed light on an old problem in psychology: the relation between visual perception and knowledge.

Broadly, two theoretical points of view can be distinguished, one holding that perception and cognition are qualitatively different, the other stating that perception is completely governed by perceptual inference which is to be viewed as a special kind of reasoning.

This special issue features six papers that highlight the main theme using different methodology, topics and philosophy.

The introductory paper by Rock states that knowledge ordinarily does not affect stimulus bound perception. On the other hand knowledge enables recognition and interpretation to occur, and in doing so can affect perception as well.

In contrast to the main theme Kanizsa argues that seeing is an instrument for knowing and rather tries to distinguish between seeing and thinking. A number of new and fascinating visual demonstrations serve to illustrate his point.

Next, Kawamoto and Anderson present a model for the phenomenon of multistable perception. Their neural network model describes the processes of reversal, adaptation, hysteresis and, indirectly, mechanisms for disambiguation. In their model perception may be conceived as an independent module that is not affected by cognition and does not make top-down inferences.

How a single object can be perceived in different ways is also discussed by Palmer, who elaborates his symmetry theory of contextual effects. The symmetry theory is shown to hold for various objects and many arrangements, but it is also made clear that local and global axes of symmetry are important as well. Palmer's model implies that perception forms a closed system, at least within perceptual levels.

That context may be effective in a very short time of processing is demonstrated in an experiment by Leeuwenberg, Mens and Calis. They

show that a contextual pattern preceding another one can affect its interpretation in as little as 30 milliseconds. Their model rejects a rigid bottom-up approach, being based on the minimum principle that allows for alternate courses of processing, in which top-down processing cooperates.

One basic problem in the recognition of visual objects is that they can present themselves in many different sizes and under various rotations. Shepard and Farrell propose that this is possible through perceptual mechanisms embodying knowledge on transformations in Euclidean space. Their geometrical model can describe data from discrimination and mental rotation tasks in an interesting and novel way. These transformations, that subjects can apply, are not relegated explicitly, or exclusively, to the perceptual level or the cognitive domain.

Taken together, the majority of these papers cover the field of simple object perception. They represent an encouraging step in the direction of future research that will also need to concentrate on the applicability of the ideas put forward here in processes of reading, visual search, attention and recognition of complex objects.

D.G. Bouwhuis
H. Buffart
E.L.J. Leeuwenberg