

Cognition and Perception

How Do Psychology and Neural Science Inform Philosophy?

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Preface

The theory regarding the issue of the cognitive penetrability of perception and its philosophical ramifications presented in this book has been gradually evolving over about nine years. Being a member of the Fuzzy Guys Club (a term that Peter Achinstein, my professor at The Johns Hopkins University, reserved for those among us who subscribed to Hanson's, Kuhn's, and Feyerabend's view that perception is theory-laden), and also being very much impressed by Paul Churchland's arguments to the same effect based on neuroscientific findings, I decided to use my strong background in psychology and show once and for all that Churchland is right. Recent neuroscientific findings prove beyond any reasonable doubt that higher cognitive centers in the brain send information in a top-down manner, through reentrant neuronal connections, to the lower or more peripheral levels of the brain and, hence, modulate perceptual processing. Since these cognitive centers are the loci of our theories and conceptual frameworks, perception is theory-laden and/or cognitively penetrable. My conviction that Churchland's views will triumph was further reinforced by the fact that the theory of Churchland's main rival, namely Jerry Fodor's modularity theory of perception, seemed to be contradicted to some extent by empirical findings about, say, perceptual learning and the relative plasticity of the brain. All the scientific evidence pointed to the likelihood that Fodorian modules exist only in Fodor's mind and certainly not in the brain.

I spent three full years studying the relevant psychological and neuroscientific evidence with a view both to establishing the truth of Churchland's views and to shedding further light on the mechanisms that allow the cognitive penetration of perception. To my dismay, I discovered that I was very wrong. Although Churchland was right that what we see (that is, the final product of vision) depends on our conceptual frameworks, there is a substantial part of visual processing that is cognitively

impenetrable. So I decided to change camps. If there is a part of vision that is cognitively impenetrable, I have to tell the world (or, rather, the philosophers) about it. Of course, I had not discovered the wheel; many psychologists, most notably Zenon Pylyshyn, have been arguing all along for the same thing, to wit that there is a cognitively impenetrable part of visual processing (Pylyshyn has called it “early vision”).

Fortunately for my publishing plans, Pylyshyn had demolished the thesis of the continuity of perception and cognition, another term for the cognitive penetrability of perception, on psychological and methodological grounds. In my mind I had undermined the continuity of perception and cognition on neuroscientific grounds, and more specifically using evidence based on brain scanning techniques. This is not to say, of course, that no researchers had used such techniques from various research perspectives to raise the point that what we perceive does not depend on our conceptual frameworks. But philosophers are supposed to put all things together, and I hoped (and still hope) that I had synthesized the vast amount of evidence under the same roof. Furthermore, Pylyshyn and the other similarly minded psychologists and neuroscientists did not use their findings to attack or discuss philosophical problems. This is where philosophers are supposed to step in, and so I decided to do just that. I thought that traditional philosophical issues, including problems related to nonconceptual and phenomenal content, reference, and realism, could benefit from the views that I had formed while examining the issue of the cognitive penetrability of perception.

The first products of my research were two papers on the theory-ladenness of perception and on the Churchland-Fodor debate that were published in the journals *Cognitive Science* and *Philosophy of Science* in 2001. A short version of the second paper was presented by the chairperson of the relevant session, for I was not able to attend the conference, at the biannual conference of the Philosophy of Science Association in Vancouver in November 2000. I was informed by the reader that all the big names were present when my paper was read, and that a lively discussion followed the presentation of the paper. William Bechtel, one of the attendants, commented that the important term in unraveling the mysteries of the interface between perception and cognition was ‘attention’. I took him very seriously and spent two more years trying to understand the role of attention in mediating the interaction between perception and cognition. The results include, in addition to this book, a book that I edited in 2005 (*Cognitive Penetrability of Perception: Attention, Action, Planning, and Bottom-Up Constraints*), a series of publications in various conference proceedings,

and papers published in *Behavioral and Brain Science* in 2004 and in *Philosophical Psychology, Mind and Language*, and *Philosophy and Phenomenological Research* in 2006. I collaborated on the last two papers with my good friend and old colleague Vincent Muller, whose knowledge of the philosophy of language proved invaluable.

Although the present book relies on the ideas developed in the aforementioned publications, it goes much beyond them both with respect to the empirical evidence adduced and discussed and with respect to the ideas elaborated, the theses expounded, and the issues examined. There are, in addition, some modifications of earlier arguments—a good thing, because, notwithstanding their validity, they were based on wrong premises.

It is time now to acknowledge the contribution of all those who helped me see this book through. First, I would like to thank the Department of Psychology, the School of Social Sciences and Sciences of Education, and the Rector's Council of the University of Cyprus for granting me a sabbatical for the spring semester of 2005–06, which I desperately needed to finish the manuscript. At the same time, I was honored by the Center for Philosophy of Science at the University of Pittsburgh to be elected as a visiting fellow. That gave me the opportunity to spend the spring semester ('spring' being a euphemism for the bitter cold weather in Pittsburgh during that time) at the Center. I do not exaggerate when I say that I cannot think of a better and more stimulating academic environment for philosophers of science than that provided by the Center. Therefore, I wish to express my gratitude to the members of the committee who elected me as a Fellow; to the Chairperson of the Center, Professor John Norton, for being largely responsible for the excellent academic environment that prevailed at the Center; and to all the staff there, especially Karen, for making me feel comfortable and welcome. Special thanks to the other fellows during the spring semester of 2005–06, who, with their helpful comments during our weekly meetings, helped me to better my ideas on various topics and made very helpful suggestions regarding some of my papers: Gabriele de Anna, Carla Fehr, Malcolm Forster, Lilly Gurova, Nikolay Milkov, and Wang Wei.

Special mention should be made of Professor Peter Machamer, who spent many hours with me discussing the first draft of the book and helping me to improve it. I would also like to thank Peter for giving me the opportunity to present some of the topics of the book in his graduate seminar in the Department of Philosophy and History of Science at the University of Pittsburgh, and, most important, for his constant and enthusiastic support during the five years I have known him.

I would also like to thank Vincent Muller for collaborating with me on two papers, and the audiences at the various conferences at which I presented papers. Marios Avramides, a colleague in the Department of Psychology at the University of Cyprus who specializes in visual attention and spatial representations, read drafts of the first and second chapters of this book. His enthusiastic reaction was a great motive for me to continue writing the book, and so special thanks are due to him.

Finally, I would like to thank the publishers and editors of the journals in which I published the papers parts of which are included in this book for allowing me to reproduce material. The original publications are listed here.

A. Raftopoulos, "Is perception informationally encapsulated? The issue of the theory-ladenness of perception," *Cognitive Science* 25 (2001): 423–451, published by the Cognitive Science Society

A. Raftopoulos, "Reentrant pathways and the theory-ladenness of observation," *Philosophy of Science* 68 (2001): 187–200, published by the University of Chicago Press.

A. Raftopoulos, "Two types of object representations in the brain, one nondescriptive process of reference fixing," *Behavioral and Brain Science* 27 (2004), no. 1: 47–48, published by the Cambridge University Press

A. Raftopoulos, "Defending realism on the proper ground," *Philosophical Psychology* 19 (2006), no. 1: 1–31, published by Routledge

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A. Raftopoulos, "Perceptual Systems and Realism," *Synthese* 164 (2008), no. 1: 61–91, published by Springer

None of these things would have mattered had I not had permission from my wife Ali and my cats Thomas and Zogia to be away from home for so long during my sabbatical and to be traveling around the world presenting my work, and their continuous support. This book is for them, with my everlasting gratitude.