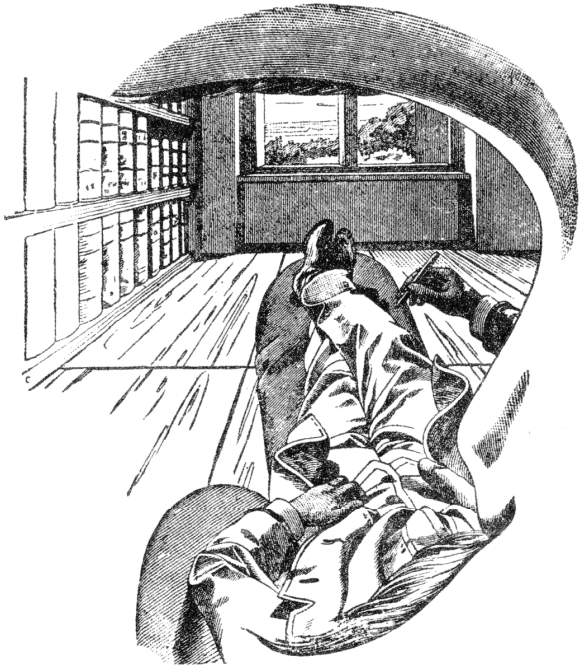

Klaus Harnack

Grounded Cognition and Implementation Intentions

Steinbeis-Beratungszentrum
Wirtschaftsmediation

Steinbeis-Edition

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Preface

Ernst Mach (1938-1919), one of the greatest masterminds of the 20th century and one of the last overarching generalists suits to exemplify the major notion of this book. In order to develop a small epistemological ontology, he philosophically merged the physical and mental world via the starting point of our senses. The cover picture of this book depicts his drawing Innenperspektive [internal perspective] out of his book *"Die Analyse der Empfindungen und das Verhältnis des Physischen zum Psychischen"* [The Analysis of Sensations and the Relation of the Physical to the Psychical] (1886). The drawing shows an imaginary view from an internal perspective out of the left eye, framed by outer eyehole and the tip of the nose. Mach as a representative of philosophical and psychological positivism, tried to emphasize that our view to the world is always in reference to our body or as he expressed it: "the world consists only of our sensations." He confirms the assumption that the body and the environment is the origin for all physical and psychic phenomena and claims that a differentiation between the ego and the world is untenable.

"On a bright summer day in the open air, the world with my ego suddenly appeared to me as one coherent mass of sensations, only more strongly coherent in the ego."

The present book aligns with Mach's idea and the major purpose of this book is to support the view that cognition constitutes a complex process in the interaction of the brain, the body and the environment.

My interest in grounded and embodied views of cognition started when I studied as an undergraduate at the University of Osnabrück. My bachelor thesis *"Does the body position contribute to the comprehension of language? An embodied approach towards language comprehension."* represented my first experimental attempt to capture the interdependency of the body and the cognitive system. After finishing the research master program in psychology at the University of Amsterdam, I had the opportunity to join the Peter Gollwitzer's research group for Social Psychology and Motivation in Konstanz. Due to his focus on implementation intentions, a conjunction of grounded and embodied views of cognition and the self-regulating strategy of implementation intentions seemed like a great challenge.

This book represents my dissertation „Grounded Cognition and Implementation Intentions“ and was researched and written during 2011 and 2014 at the University of Konstanz, under the supervision of Peter Gollwitzer. Peter Gollwitzer, Wolfgang Gaissmeier, and Hans Christian Röhl were part of the board of examiners and were present at the oral defense on December 16th, 2014 in Konstanz.

Klaus Harnack
Münster, April 2015

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A special thanks to my family. I am grateful to my children Klara and Irma who without a word of protest accepted the recesses in our playing time. The same applies to my friends who supported me greatly in the writing of this thesis. Finally, I would like to thank my wife Anne who supported me even when I was immersed in data-matrices and theoretical constructs. You grounded me in times of absent gravity.

Abstract

The present research examined the relation between grounded cognition theory (Barsalou, 2008, 2010; Wilson, 2002) and specific if-then plans (implementation intentions, Gollwitzer, 1993, 1999, 2014) for the control of intentional actions. Both constructs are systematically combined in order to further deepen the understanding of implementation intentions and to possibly foster the effectiveness of this self-regulating approach. It was hypothesized that if the wording, encoding, and implementation of implementation intentions are enriched with grounded features, the actual enactment of the planned action can be modified, supported, and possibly enhanced. Five experiments support the assumption that the implications of grounded cognition theory can be used (Studies 1-2) and utilized for each of the three structural components of implementation intentions (Studies 3-5). Study 1 shows that the posture of the body influences moral behavior and that grounded strategies can be used in implementation intentions. Study 2 successfully tested the possibility to combine a regular behavioral strategy with a grounded strategy, which was induced via proprioceptive feedback. Study 3 demonstrates that unconscious activation of facial muscles was sufficient to trigger predefined behavior. Study 4 shows that the strength of the link between the if- and the then-component can be modified by grounded features. Study 5 demonstrates how proprioceptive experience modifies the effectiveness of the predefined strategies in the then-component of implementation intentions. Finally, the implications of the present findings are discussed and possible future avenues for research and practical applications to improve self-regulation by grounded implementation intentions are illustrated.

Keywords: Grounded Cognition, Embodiment, Self-regulation, Implementation Intentions

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1 Introduction

Many years ago, my Latin teacher proved to be a living example for the use of grounded cognition. While explaining the Latin adjective "atrox" to the class, he waved his arms, stamped his foot on the floor and impressed me with his cruel facial expressions and his animated body language. Since "atrox" means "cruel" or "harsh," one of the reasons why this piece of vocabulary stayed in my memory might be due to the way it was taught. In addition to the simple translation of the word, which would only match the Latin "atrox" with the English word "cruel," my teacher additionally used motoric and emotional dimensions to depict the meaning of the word. The symbol "atrox" therefore received additional grounding on perceptual and motoric levels.

The present line of research can be illustrated based on this anecdote of the use of grounded cognition. It combines and integrates the implications of grounded cognition theory with the self-regulating strategy of planning by implementation intentions. Imagine the situation of an open office in which several people work, talk, and make phone calls. If for instance a person has problems to focus their attention while others make phone calls, developing a self-regulating strategy to cope with these distractions might be useful. One possible way to employ a self-regulating strategy is to form a plan which might look like the following: *If I hear somebody on the phone, then I will remain untouched by the distraction and tell myself: "Simply ignore it!"* Following the Latin teacher example, the plan could receive additional grounding if the situational cue defined in the if-component of the plan, namely experiencing a distraction, is additionally imagined and simulated while the plan is internalized. One possible way to enhance the effectiveness of the self-regulating strategy itself is to internalize the plan in a grounded supporting manner, for instance by writing down the plan several times, very softly and barely pressing the pen on the paper to symbolically emphasize the plan of being untouched by the distraction. This additional coding of the distracting situation together with the symbolic pre-enactment of the self-regulating strategy could help to successfully detect the predefined situation for which the self-regulating counter-strategy was designed and to effectively translate the goal to be untouched by the distraction into actual goal-directing behavior (see Study 5).