Robert J. Sternberg and Richard K. Wagner have produced *Mind in context* to serve as a bridge between the work of radical constructivists, who propose that all cognition depends upon interaction with the outside world, and traditional cognitive scientists, who feel that all cognition resides in the mind. The concepts of distributed cognition and situated learning are here translated into constructs and methodologies that are more accessible to researchers and students.
Mind in context
Interactionist perspectives on human intelligence

Edited by

ROBERT J. STERNBERG
Yale University

RICHARD K. WAGNER
Florida State University
Contents

Contributors vii
Preface ix

Part I Academic tasks

1 Abilities in academic tasks 3
   Richard E. Snow
2 Novelty and intelligence 38
   Michael K. Gardner and Robert J. Sternberg
3 The effects of context on cognition: postcards from Brazil 74
   Stephen J. Ceci and Antonio Roazzi

Part II Everyday tasks

4 The role of problem interpretations in understanding the development of everyday problem solving 105
   Cynthia A. Berg and Katerina S. Calderone
5 Context counts: the case of cognitive-ability testing for job selection 133
   Richard K. Wagner
6 Leader intelligence, interpersonal stress, and task performance 152
   Fred E. Fiedler and Thomas G. Link

Part III General perspectives

7 When minds meet: interactions, coincidence, and development in domains of ability 171
   Nira Granott and Howard Gardner
8 From intelligence to knowledge construction: a sociogenetic process approach 202
   Jaan Valsiner and Man-Chi Leung
9 PRSIVL: an integrative framework for understanding mind in context 218
   Robert J. Sternberg

Name index 233
Subject index 239
Contributors

Cynthia A. Berg
Department of Psychology
University of Utah
Salt Lake City, Utah

Katerina S. Calderone
Department of Psychology
University of Utah
Salt Lake City, Utah

Steven Ceci
Department of Human Development and Family Studies
Cornell University
Ithaca, New York

Fred Fiedler
Department of Psychology
University of Washington
Seattle, Washington

Howard Gardner
Graduate School of Education
Harvard University
Cambridge, Massachusetts

Michael K. Gardner
Department of Education Psychology
University of Utah
Salt Lake City, Utah 84112

Nira Granott
The Media Laboratory
Massachusetts Institute of Technology
Cambridge, Massachusetts

Man-Chi Leung
Department of Psychology
University of North Carolina
Chapel Hill, North Carolina

Thomas Link
Department of Psychology
University of Washington
Seattle, Washington

Antonio Roazzi
Department of Psychology
Federal University of Pernambuco
Brazil

Richard E. Snow
School of Education
Stanford University
Stanford, California

Robert J. Sternberg
Department of Psychology
Yale University
New Haven, Connecticut

Jaan Valsiner
Department of Psychology
University of North Carolina
Chapel Hill, North Carolina

Richard K. Wagner
Department of Psychology
Florida State University
Tallahassee, Florida
Preface

A college student arrives for a math test. At the signal, she and her classmates whip out their calculators and start solving problems. To the student’s horror, she discovers that the batteries of her calculator are either dead or on strike. The calculator doesn’t work. The result: a low grade on the test. Another student, whose pencil has mysteriously disappeared, loses time trying to corral another, and also performs well below her ability.

A successful businessman decides that the country needs his common-sense approach to management. He runs for political office, determined to show that he can run any business, including that of the country. But he makes big mistakes: The trusted and, he thought, true strategies that always worked for him in business fail in politics. He loses the election . . . dismally.

A boy with middling to poor grades in math and science becomes, years later, a great physicist. His professional success, he tells people, is in spite of, not because of, his academic preparation. He also credits his various assistants, most of whom were “straight-A” students in school.

What these stories have in common is the theme of this book: mind in context. Although traditional views of abilities have tended to view them as inherent and internal properties of the organism, the views propounded in this book have in common their ascription of abilities to the interaction between minds and the contexts in which they are to be found. The bright student without her pencil or calculator can no longer demonstrate the same competence as she could with them. But, you may say, she still has the competence; she’s just unable to show it. Before calculators or computers were even invented, many may have “had” the competence to use them well; whether they would have or not is clearly a moot point. Indeed, one could even argue that the nature of what it means to be competent in mathematics has changed with the invention of these devices. The computational abilities which were once so important in school mathematics are quickly diminishing in importance, much as has the ability to ride a horse in order to transport oneself quickly. Even politicians, who scarcely rate as the most sophisticated theorists of abilities that the world has produced, have come to recognize how technology has changed and upended the skills needed for survival. For example, in a rapidly changing world, flexibility and the ability to cope with novelty are more important to survival than in a world that is relatively more stable and static.

ix
Preface

The interactionist perspective is not, of course, a new one. Both Piaget (1972) and Vygotsky (1978) were interactionists. Vygotsky, especially, recognized the extent to which the development of abilities depends on context. Even fervent hereditarians have recognized that when genotypes are expressed phenotypically, there is a reaction range that potentially limits the extent to which a genotype is able to be expressed in the environment. Thus, the work reported here is a culmination of a long tradition. At the same time, it is a departure from psychometric and cognitive approaches to intelligence that view abilities as “in the head,” and it is a departure from radical–contextualist approaches that view abilities as wholly in the contexts in which people live (see Sternberg, 1982, 1990). The views expressed in the chapters of this book differ, but they have in common the world view of abilities at the intersection between mind and context.

The book is divided into three main parts, each representing a somewhat different emphasis. The chapters of Part I deal primarily, although not exclusively, with performances in academic and test-like tasks. The chapters of Part II focus primarily on tasks encountered outside the academy – in everyday settings. And the chapters in Part III present overviews and general frameworks within which the earlier chapters can be placed. The final chapter specifically refers back to the earlier chapters in an attempt to place them within a unifying framework.

In Chapter 1, which opens Part I, Richard Snow explicitly applies the interactionist perspective to academic tasks. He considers a number of different frameworks for expressing the interactionist perspective, and ends up proposing a framework that is process-based. One of the most interesting aspects of his framework is his use of Gibson’s (1979) concept of situational affordances in the domain of abilities and not just of visual perception.

In Chapter 2, Michael Gardner considers the role of novelty, primarily of tasks, in the interactionist perspective on intelligence. In this view, the abilities one manifests depend largely upon the tasks life presents. A person who is constantly faced with tasks that are far outside his or her zone of comfort with respect to task familiarity may appear less able than someone who is constantly faced with familiar tasks. The latter person, however, lacking challenges, may have less of an opportunity to develop his or her abilities than the former.

Whereas Gardner concentrates primarily on task novelty in his chapter, Stephen Ceci and Antonio Roazzi concentrate primarily on situational novelty in Chapter 3. They show that tasks that are structurally isomorphic may be performed very differently as a function of the situational context in which they are performed. For example, the very same person who may perform mathematical operations well in a “street context” may perform them only poorly in an abstract context.

In Chapter 4, the opening chapter of Part II, Cynthia Berg and Katerina Calderone look at the abilities of people of different ages to solve everyday problems; for example, youngsters who want to go to a movie but will potentially have problems arriving home in time for a curfew. The investigators studied problem solving across age levels, and turned up some interesting findings. One of the most interesting was
Preface

that what appears to be the same problem for two different people may not actually
be the same problem. Whereas much of the developmental literature has recently
emphasized the role of knowledge in cognitive development (e.g., Carey, 1985; Chi,
1978; Keil, 1984), Berg and Calderone emphasize the importance of interpretation.
People at different ages may interpret what appears to be the same problem differ-
ently, leading to differences in their solutions.

Whereas Berg and Calderone focus primarily on children of different ages, Richard
Wagner focuses on adults in Chapter 5. In particular, he argues that the analyses of
fairly academic tests used for job selection tend to overestimate the validity of these
tests for job performance. From his interactionist perspective, tests of academic
abilities should not predict particularly well to most occupational domains. Available
data indicate a modest level of prediction, and Wagner argues that even this modest
appearance overestimates their true validity.

In Chapter 6, Fred Fiedler and Thomas Link look at a specific kind of job
performance: leadership. Moreover, they relate this performance to standard mea-
sures of intelligence under varying levels of stress. What they find is that fluid
intelligence predicts success in leadership under conditions of low but not of high
stress. Leaders with high fluid intelligence show a marked decrement in performance
when under stress. Those results suggest that at least in one domain, that of leader-
ship, the correlation between abilities and performance is moderated by an important
contextual variable – stress.

Part III of the book opens with Chapter 7, by Nira Granott and Howard Gardner.
In this chapter, the authors apply Gardner’s (1983) theory of multiple intelligences
to the problem of person–context interaction. In their chapter, they distinguish be-
tween first-order and second-order multiple intelligences. First-order ones are those
with which we are born, whereas second-order ones are those that are selectively
promoted or retarded by the environment. For example, a person with high innate
musical potential may never show this potential if he or she grows up in a family in
which music plays no significant role in their lives whatsoever. The same child,
growing up in a household where music plays a central part, will be at a considerable
advantage in developing his or her talent.

In Chapter 8, Jaan Valsiner and Man-Chi Leung present what they refer to as a
sociogenetic approach to abilities and their interaction with context. Among the key
features of this approach is its constructivist view of human nature. People are not
merely passive recipients of information, nor are they even just active processors of
information. Rather, they are active constructors of information. They do not just
receive the world, but in fact, make it what it is for them.

Finally, in Chapter 9, Robert Sternberg presents a framework called “PRSVM” for
understanding person–context interactions. This framework takes into account the
respective roles of the person, the roles the person fills, the situations in which the
person finds himself or herself, the values the person brings to these situations, and
the luck he or she experiences. The earlier chapters are discussed in terms of this
framework.
Preface

We as editors, and the authors as well, hope you find our framework of abilities as interactions between persons and contexts compelling, and that you both enjoy and learn from the chapters in this book.

RJS
RKW

References