

Mikhael Dua

Tacit Knowing

Michael Polanyi's Exposition
of Scientific Knowledge



Herbert Utz Verlag · Wissenschaft
München

Bibliografische Information Der Deutschen Bibliothek

Die Deutsche Bibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über <http://dnb.ddb.de> abrufbar.

Zugleich: Dissertation, München, Hochsch. für Philosophie, 2003

Dieses Werk ist urheberrechtlich geschützt. Die dadurch begründeten Rechte, insbesondere die der Übersetzung, des Nachdrucks, der Entnahme von Abbildungen, der Wiedergabe auf photomechanischem oder ähnlichem Wege und der Speicherung in Datenverarbeitungsanlagen bleiben – auch bei nur auszugsweiser Verwendung – vorbehalten.

Copyright © Herbert Utz Verlag GmbH 2004

ISBN 3-8316-0314-6

Printed in Germany

Herbert Utz Verlag GmbH, München

Tel.: 089/277791-00 – Fax: 089/277791-01

THE TABLE OF CONTENTS

Page

ACKNOWLEDGEMENTS	6
INTRODUCTION	7
CHAPTER 1. MICHAEL POLANYI: A SCIENTIST-PHILOSOPHER	11
1. Biographical Background: The Family	12
2. A Scientist-Philosopher	15
2.1. From Medicine to Physical Chemistry	15
2.2. The Defender of the Freedom of Science	17
2.2.1. What is the Freedom of Science?	17
2.2.2. Critics to the Planning of Science	20
2.2.3. The Autonomy of Science	23
3. Polanyi and Positivism	24
3.1. Positivism	25
3.1.1. Positivism as an Objectivistic Philosophy	25
3.1.2. Logical Positivism and Its Program	27
3.2. Polanyi's Attack on Positivism	28
3.3. The Unspecifiable Elements	31
4. A Bibliographical Sketch of Polanyi's Quest for the Tacit Knowledge	33
5. Recapitulation	39
CHAPTER 2. THE TACIT KNOWING	41
1. Polanyi and Gestalt Psychology	42
1.1. The Philosophical Background of Gestalt Psychology	42
1.2. The Tasks of Gestalt Psychology	46
1.3. Polanyi's Appreciation	50
2. The Tacit Knowing	52
2.1. The Subsidiary Awareness and the Focal Awareness	52
2.2. The Subsidiaries	55
2.3. The Logic of Tacit Knowing	59
2.3.1. Subception: an Example of Tacit Knowing	59
2.3.2. Functional Aspect	62
2.3.3. Phenomenal Aspect	64
2.3.4. Semantic Aspect	66

2.3.5. Ontological Aspect	69
2.3.6. Indwelling	71
3. Perception and Intellection	74
4. Conclusion	79
CHAPTER 3. SCIENCE: AN ART OF KNOWING	83
1. Polanyi and Positivist Definition of Science	86
2. Science: an Art of Knowing	92
2.1. What is Skill?	92
2.2. Skilful Generalisation	96
2.2.1. General Concept and the Paradox of Identification	96
2.2.2. General Concept as Joint Meaning	99
2.2.3. General Concept and Inductive Process	102
2.3. Science as a Personal Indwelling	107
3. Preference to Theory and an Appeal to Reality	110
4. Conclusion	116
CHAPTER 4. SCIENTIFIC DISCOVERY	119
1. A Heuristic Philosophy	122
2. The Progress of Discovery	127
2.1. Problem-Solving	128
2.2. The Vision of Reality	133
2.3. Imagination and Intuition	137
2.3.1. What is Imagination?	137
2.3.2. Imagination and Intuition	139
2.3.3. Imagination and the Change of Vision of Reality	143
3. Scientific Values	144
4. Conclusion	150
CHAPTER 5. VERIFICATION	155
1. Polanyi and the Problems of Verification	158
1.1. Polanyi, Induction and Probability	158
1.2. Polanyi and Falsification	162
1.3. Polanyi and Explanation	166

2.	The Fiduciary Dimension of Verification	168
2.1.	Factual Assertion and Fiduciary Assertion	169
2.2.	Fiduciary Elements: Personal Beliefs and Convivial Beliefs	174
2.3.	The Logical Function of Scientific Beliefs	179
2.3.1.	The Premise of Scientific Discovery	180
2.3.2.	Doubt and the Stability of Beliefs	183
2.3.3.	The Claim for Truth	188
3.	Beliefs and the Problem of Empirical Adequacy	193
4.	Conclusion	195
CHAPTER 6. TACIT KNOWING, PARADIGM AND PREJUDICES		199
1.	Tacit Knowing and Paradigm	202
1.1.	The Concept of Paradigm	202
1.2.	Experience and Paradigmatic Theory	205
1.3.	Paradigm and Tacit Knowing	208
2.	Tacit Knowing and Prejudices	213
2.1.	Gadamer and Hermeneutics	213
2.2.	The Concept of Prejudices	216
2.2.1.	Prejudices as Fore-Understanding	216
2.2.2.	Authority and Tradition	218
2.2.3.	Prejudices and Humans Sciences: The Classical	220
2.2.4.	The Hermeneutic Experience	223
2.3.	Prejudices and Tacit Knowing	226
3.	Tacit Knowing: <i>from</i> Paradigm and Prejudices <i>to</i> an Appeal to Reality	230
4.	Conclusion	236
CONCLUSION AND CRITICAL REMARKS		239
1.	Tacit Knowing and Positivism	240
2.	From-To Structure of Tacit Knowing	242
3.	Tacit Knowing and the Problem of Scientific Scepticism	247
4.	A Society of Explorers	253
5.	Critical Remarks	257
BIBLIOGRAPHY		263

INTRODUCTION

In his book *The Tacit Dimension* Michael Polanyi says that our attempt to understand the nature of human knowledge will face the fact that “we know more than we can tell.”¹ This means that our very act of communication presupposes a knowledge that we cannot tell. Although we are given adequate methods for expressing ourselves, the application of such a method does not change the fact that previous to it we did know more than we could tell at the time.

The important clue to understand the value of this fact is a distinction between two kinds of awareness: focal and subsidiary. “All thought,” as Polanyi says, “contains components of which we are subsidiarily aware in the focal content of our thinking and ... dwells in its subsidiaries, as if they were parts of our body.”² With subsidiaries Polanyi means such clues which are aspects of ourselves: they are points in our own intuition, attitudes, skills, memories, and hunches. They include general notions or theoretical frameworks that we use to know reality. In this aspect, knowing means an active comprehension of things known, an action that requires skill. Human knowledge then is not something that could be told but something that we do in our searching for truth.

But while personal, the subsidiary, or tacit root of knowing is primarily directed away from the inner core of my being to the focal centre of my attention. “All knowledge,” as Marjorie Grene interprets Polanyi in her “Introduction” to *Knowing and Being*, “consists in a from-to relation.” She goes on, “Of course, subsidiary knowledge is mine: indeed, it is what I have assimilated to my very self; it is what I have interiorised to a point where I can rely on it. But such an interiorisation to a point guides me towards a distally located goal.”³ All knowing, therefore, displays this dual structure. I attend from a proximal pole, which is an aspect of my being, to a distal pole, and by attending to it I place it at a distance from myself. Knowing then is both personal and universal.

The central concern of this study is to explicate Polanyi’s concept of the nature of scientific knowledge by means of an analysis of the from-to structure of tacit knowing which permits the appeal to reality to be attested to, although not verified by the positivistic scientific method. Polanyi’s enquiry into the nature of human knowledge of course leads on to a wide range of questions outside science, like arts, ethics, religion, and the problem of free

¹ Michael Polanyi, *The Tacit Dimension* (Gloucester, Mass.: Peter Smith, 1983), p. 4

² *Ibid.*, p. x

³ Michael Polanyi, *Knowing and Being*, edited by Marjorie Grene (Chicago: The University of Chicago Press, 1969), p. x

society. But the enquiry into the nature and justification of scientific knowledge provides the first model to understand the theory of tacit knowing.⁴ Based on this reason we will trace out the crucial problem in the philosophy of science, which cannot be handled through the positivistic method: that is the problem of scientific discovery. Science, as Polanyi argues it, lives by discovery and ever further discovery;⁵ without the itch to solve problems, to follow hunches, to try out new and imprecise ideas, science would cease to exist. Yet discovery cannot be explained in terms of wholly formalisable, wholly explicit knowledge. Any attempt to deem impersonal, universally established, objective knowledge through a mechanism of scientific method is meaningless. Science is more than an explicit method that we use. It is an art of knowing in which a professional scientist, using all his method and his knowledge, seeks to search reality. Our intellectual passions which impel us towards this contact with reality will always suffice to guide our personal judgement so that it will achieve the full measure of truth that lies within the scope of our particular calling.

The purpose of this study then is to explore Polanyi's understanding of scientific knowledge based on his theory of tacit knowing. How he elucidates the tacit element in scientific knowledge and how it is justified are the crucial questions which this study tries to answer. To start this study first of all we have to demonstrate the biographical roots of the theory of tacit knowing. This is the task of Chapter one: tacit knowing is the result of Polanyi's concern for the philosophical problem of scientific knowledge. It will be showed that his struggle for the freedom of science has led him to the position that scientific knowledge is rooted in scientific beliefs and tradition. And his attempt to justify the role of scientific beliefs to support the organisation of scientific freedom is another side of his attempt to expose the unspecifiability of scientific knowledge. Criticising positivism Polanyi contends that scientific knowledge of reality basically cannot be counted through explicit ways. Scientific knowledge is based on the tacit elements: intuition and belief.

Chapter two will deal with the concept of tacit knowing. Polanyi's thesis that knowing is an active process will be introduced in this stage. The chapter will delve into the nature of human knowledge and demonstrate that the search for reality concerns itself with the question of the subject's capability for knowing. Polanyi's reference to Gestalt psychology shows that knowledge is not a mechanistic process but a creative one. And this creative process is not a psychological by-product but has its own logical structure. The chapter will clarify the from-to structure of tacit knowing in all its aspects: functional, phenomenal, semantic, and

⁴ Michael Polanyi, *Personal Knowledge, Towards a Post-Critical Philosophy* (Chicago: The University of Chicago Press, 1964), p. vii

⁵ Michael Polanyi, *Science, Faith and Society* (Chicago: The University Press of Chicago, 1964), p. 28

ontological. Through this explanation it will be shown that the notion of contact with reality is the centre of his epistemology: the structure of tacit knowing is the possibility of making contact with reality.

Chapter three will argue that scientific knowing is a skilful, perceptive knowledge. Its attempt to produce the general conception cannot be traced out through the positivistic method but in principle is an art of knowing. Polanyi's contends that to bring about the general conception, scientist should indwell in the general notion and theoretical background. "The general conception is a personal grasp of reality" is the message of the concept that science is an art of knowing. As a consequence, only a theory that appeals to reality is accepted as rational and objective.

Chapter four has a continuity with Chapter three. If the purpose of science is to appeal to reality, the question arises as to how science sets its task to achieve this goal. This is the problem of scientific discovery. Before we accept a theory as being to be proved, first of all we have to suggest that any theory is rational and scientific. Following Henri Poincaré and George Polya, Polanyi contends that the scientific concept can be discovered when we dwell in the problem. He believes that the problem in which we dwell is not only a puzzle, a discomfort, or a conflict; it includes the clues on which we are relying and which have a bearing on the solution – or in other words, it includes the clues which are in fact aspects of the entity we are seeking to comprehend. With this paradox of the problem in mind, Polanyi then defines his concept of discovery as the imaginative-intuitive vision of reality. This personal vision of reality will be regarded as scientific not primarily because it has predictive capability, but because it appeals to reality to which the scientist and his community have to commit themselves.

Chapter five will deal with the problem of verification. Rejecting the predictive power of science as the criterion for verification, Polanyi criticises inductivism and falsificationism in science. The truth of scientific theory cannot be judged by empirical data, whether it confirms or falsifies the theory. The function of scientific theory is to explain some data, and this in principle presupposes understanding. With this position in mind Polanyi contends that verification has a tacit dimension: it presupposes personal beliefs, of course, in dialogue with scientific beliefs held by the scientific community. This is the message of Chapter five. It might be thought that for Polanyi data cannot speak directly to us. They could be counted as scientific data because they have been seen in a certain scientific framework.

Since all knowledge presupposes tacit elements, Chapter six will deal with the fundamental question concerning the concept of tacit knowing: Is it a fundamental ground of

all knowledge, without which knowledge is impossible? Or it is only a diversification of human knowledge, and therefore only one side of the focal aspect of human knowledge? To handle these questionings this chapter tries to make a comparison between tacit knowing, paradigm and fore-understanding. It might be thought that there is a continuity between them. Through the concept of paradigm Thomas Kuhn in a sense has revived what Polanyi has thought, namely, that a scientist lives, thinks, and solves his problem according to the framework that has been lived in the scientific community for a period of time. But the problem with Kuhn is his relativism. Scientific paradigm is only one model of problem solving. And any revolution of paradigm – that one paradigm could be changed by the other – has no relation to the nature of a goal.

The problem of relativism has been thought by Hans Georg Gadamer in his thesis of prejudices, that all understanding presupposes a kind of prejudice. Giving the justification of prejudices in his search of effected history, Gadamer suggests that a full understanding might be achieved in a continuing dialogue between I and the other. In such a dialogue it might be hoped that we could find the truth of the other. But Gadamer has to make clear that the truth of the other in dialogue with the other might be different from the truth of the other in the stage of prejudices. To this problem Polanyi's thesis of from-to structure in tacit knowing could give a positive contribution. What we thought, lived, and dwelt-in are no more than subsidiary elements that we need to understand the other on another level of understanding: the other as he is. There is for Polanyi a triad structure in tacit knowing: "A person A may make the word B mean the object C. Or else: the person A can integrate the word B into a bearing on C."⁶ What we have integrated then are prejudices or paradigm. But these are the subsidiaries that we need to bear on the focal terms, the universal. For Polanyi, knowing is not just what we have experienced but something that we intend to know, that is more real and universal.

⁶ *Knowing and Being*, p. 181