

INTRODUCTION

THE NATURE OF KNOWING
A RESOURCE MANUAL FOR THE
INTERNATIONAL BACCALAUREATE

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0.1 AIMS OF THE THEORY OF KNOWLEDGE

One important aim of *Theory of Knowledge* in the International Baccalaureate is to teach students how to think for themselves. The student is encouraged to reflect on what they are learning and to reflect on themselves as learners. *Theory of Knowledge* is different from other areas in the International Baccalaureate because there are few hard facts to be learned. The *Theory of Knowledge* program aims to develop a certain attitude of questioning and the skills needed to ask these questions and find answers to them. Another aim of *Theory of Knowledge* is to ask students to look at the whole of what they are learning and relate their knowledge to themselves as individuals and to life as they know it outside of the classroom. This book is an attempt to achieve both of these aims.

THE FOUR WAYS OF KNOWING

Theory of Knowledge or *TOK* is a holistic endeavour: it aims to make connections between the ways of knowing and various areas of knowledge studied during the International Baccalaureate. In conventional philosophical terms, it might be termed *practical epistemology* (“epistemology” = study of knowledge). In contrast to the dry debates with which philosophers of knowledge concern themselves, *TOK* attempts to understand knowledge as an **organic process** involving **situated knowers** in a world of **facts** and **information**, which require **interpretation**. The knower begins to interpret this information by means of various *ways* of knowing and drawing upon, and influencing, a number of *areas* of knowledge.

The four **ways of knowing** are *emotion, reason, language, and sense perception*. It is taken for granted in *TOK* that each of these facets of knowing is crucial for determining our knowledge and knowledge claims. Knowledge is more than rationality, though reason too is a vital part of knowing. Quite often we base our judgements on things other than reason, as this book will make plain. The means by which each of these ways of knowing contribute to what we take to be knowledge is a matter of considerable importance to both individual human life and civilization. An understanding of these processes, and the role they play in knowledge, is part of what it means to be an “educated person”. Hence the importance of *TOK* for the International Baccalaureate.

THE AREAS OF KNOWLEDGE

The six recognised **areas of knowledge** are broadly categorised into the *natural* and *human sciences, mathematics, the arts, ethics* and *history*.

These areas of knowledge largely parallel the discipline divisions in all major world universities. The “Natural Sciences” cover physics, chemistry, biology, geology, etc. “Mathematics” covers the abstract properties of nature (numbers and their relationships). By contrast, the “Human Sciences” cover psychology, economics, sociology, and some other disciplines. “The Arts” consist of literature, drama, music, and the visual arts. “Ethics” consist of practical considerations in the “moral sciences”; that is, the implications of what we do and our actions on daily life. “History”, of course, consists of reflections on the path of human progress to date, and the issues that arise from historical events and their relevance to contemporary life.

In *The Nature of Knowing* we are not interested in presenting subject matter in the areas of knowledge. This is done in individual textbooks in the subject areas themselves. What we are interested in doing is exploring the connections between issues in the **areas of knowledge** and our various **ways of knowing** in those areas. In particular, we identify seventeen different examples of knowing throughout the book. We call these **The Paradigms of Knowledge**. A simple example is knowing that “ $2+2=4$ ”, which we use as the paradigm of mathematical knowledge. Throughout the book we introduce each paradigm in a suitable context. The term

“knowledge”, like most important words, applies to many quite different kinds of things. Our plan is to explore the nature of knowing by presenting a wide variety of “models” of knowing. In the final chapter, we draw together the threads of the book by returning to each paradigm and discussing them in detail. For convenience, a table of the paradigms of knowledge is provided at the end of the book.

The methods of reasoning connected with each of these paradigms will be outlined and discussed by means of practical examples and exercises. This will, by necessity, cover issues in the various areas of knowledge themselves (mathematics, physics, history, and so on). But subject content is not itself the main focus; instead, the emphasis is always on *connections*.

An exploration of connections between the areas of knowledge and the ways of knowing—between the knower as epistemological agent, and knower as emotional, perceptive, rational and language-using being—has several benefits for students:

1. A deepening understanding of the various “academic tribes” and their methods of knowledge acquisition;
2. An appreciation of the relevance that the areas of knowledge have to the students’ personal life as a knowing agent;
3. Perspectives on subject content from the vantage point of a “situated knower”.

Too often it is said that to be a good scientist, for example, one must be dispassionate, objective and unemotional, whereas the reverse is really the case, as the history of major scientific advances testifies. *TOK* develops understanding of such things. In doing so, it teaches humility and critical appreciation of the many factors which influence knowledge and our daily lives.

0.2 AIMS OF THIS BOOK

This text is intended as a structured resource book for use by teachers and students in the *Theory of Knowledge* component of the IB. There is more material presented than can be comfortably used in the time available, but our goal is to assist teachers and students in a way which allows them to choose what they wish to study and how they wish to study it. Key concepts will be explained and examples provided. Teachers may request from the authors a set of selected answers for the exercises and a more detailed account of issues for discussion in class. This material is currently in progress. They may also wish to subscribe to our forthcoming website which will be a forum for discussing *TOK* concepts with others around the world. Details about the answer key will be provided upon request.

While we do provide answers on request, teachers and students should feel free to question the correctness of the answers, and communicate with the authors about them. Almost nothing we can say in this subject is safe from challenge on some grounds. We hope that when you have finished using this book you will have improved your ability to formulate and justify your own views. We hope you will come to realise that some questions do not have simple answers. At times we must choose between a range of answers where equally well-informed and rational people can still disagree.

The authors of this book consider themselves to be midwives rather than originators of the material herein. We wrote the book, but by no means do we own the ideas. We therefore welcome contributions for subsequent editions from both students and teachers. These contributions may be in the form of questions for clarification; ideas for relevant readings and exercises; lessons and lesson plans; illustrations and diagrams; suggestions for inclusion of relevant issues and debates; notice of omissions, errors and inclusions; and so on. In fact, we welcome anything which might be considered within the natural province of *TOK* and the

scope of this book. Perhaps teachers might set assignments for students which involve sending an example of a class activity to the authors. We strongly encourage this.

In sending submissions to the authors please note the following. All contributions should be in English with the contributors' names and institutional details clearly identified. Paper submissions should be typed and double spaced. All submissions published in later editions of the book will be acknowledged. Please note that we cannot guarantee that all submissions will be used and we cannot return submissions to authors. Submissions can be sent to:

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0.3 HOW TO TEACH THEORY OF KNOWLEDGE ("GROUND RULES OF CONDUCT")

The following suggestions for strategies which can be used in teaching a course in *Theory of Knowledge* draw upon suggestions given by *TOK* teachers. Most of the suggestions below have been highlighted in an unpublished paper by Philip Bartle entitled: "Groundrules for Conduct". Students as well as teachers should read and understand each of these points before attempting to read and discuss this book.

1. What is expected in *TOK*?

The teacher is a co-learner along with the students in *TOK*. Teachers give content for the student to assimilate, but they mainly provide the framework for content. Everyone in the learning environment is responsible for content. The teacher guides the discussion as a facilitator and students are assessed on skills in reasoning and debating and argument.

2. Mutual respect

TOK teaches skills in critical reasoning by means of class debate and discussion. Progress is assessed by means of good argument. "Argument" is used here in the sense of "arriving at conclusions by means of valid deductions", not in the sense of a "fight". Students should give mutual respect to each other's ideas and views without being judgemental. Often, it is from wild, fanciful speculation that real progress is made. But this speculation needs to be grounded in good reasoning.

3. Disagreement

As we say above, almost nothing we say in this book is safe from challenge. This means that everything we say can and should be disagreed with, if good arguments can be made against the ideas presented. It is important that all students have an opportunity to make their disagreements forcefully. Class discussions should be open to disagreement from anyone at any time in the discussion.

4. Tolerance

At the same time, while disagreement in class is encouraged, so is tolerance of others' views. Contradictory opinions will often be voiced and the teacher's role is to moderate and elicit these views. Students should be tolerant of perspectives that they do not necessarily share, and should equally be free to answer them in a calm and rational manner.

5. Openness

Allowing for new ideas to enter the discussion is vital to progress in *TOK*. Students should not be hostile to developments in the discussion even if they disagree with them. An open mind is essential for *TOK*. Allow all ideas in and then sift and challenge them in a spirit of open and friendly debate.

6. Not understanding is OK

Students should feel free to clarify any point that they are unclear about. Some of the ideas are very complex and it is unrealistic to expect students to understand everything after only one reading. One of the first stages in being knowledgeable is to first be aware of your own ignorance. There is nothing wrong with saying you do not understand.

7. Changing positions

When debating ideas in *TOK* students do not have to keep the position with which they started. As new information and ideas are presented students should feel free to change their views. Indeed, education consists of a progressive development of one's opinions on things. However, as a matter of courtesy, please signal or indicate to the class when you wish to defend something different from what you defended before.

8. Participation

Sometimes it is good to listen to a debate without participating. Silences in a discussion are also instructive, if they allow time for reflection and gathering your thoughts. Participation can be both direct and indirect by means of group work. All students should be encouraged to actively contribute when they have something to say, or sit and listen when they do not. There is no requirement in *TOK* for students to feel they have to "talk for the sake of it".

9. Debate

The purpose of debate in *TOK* is to encourage and stimulate reflection, not to win a contest. *TOK* skills arise from contemplative activity, not accumulative gain by point scoring. Debates should be conducted in this spirit.

10. Communication

As this source book is in English, discussions should be in English as well. However, students should feel encouraged to ask for translation of concepts into their own language. They should certainly be encouraged to provide enlightened contributions to discussions from the perspective of different cultures and languages as often as they can.

11. Negotiation

There is nothing wrong with compromising your ideas, or negotiating, if someone else has a better idea or argument. Nor is there anything wrong with coming to a better understanding by adopting aspects of your opponent's position as your own, if this can be done coherently.

12. Curiosity

Be curious and you will learn something new. Martin Luther King said that “Nothing in all the world is more dangerous than sincere ignorance and conscientious stupidity.”

0.4 HOW TO USE THIS BOOK

The text is divided into two parts which form the content of the book. The two major content sections consist of chapters on the four **ways of knowledge**—*language, emotion, logic, and sense perception*—and the six **areas of knowledge**: *mathematics, the natural, and human sciences, history, the arts and ethics*. Each section presents an overview of various areas crucially associated with knowledge and the gaining of knowledge. Here is a suggested guide for completing the exercises in each chapter:

1. Begin each chapter by discussing the questions listed at the start of each chapter, though feel free to read chapters in any order.
2. Read the introductory material given in each chapter. (*Hint*: It may be necessary to read them more than once.)
3. Prepare answers to the questions that follow each section or passage.
4. Bring these readings and your written answers to your class and discuss them with your teacher and classmates.
5. Seek to develop your understanding by doing additional work, such as projects, posters or class presentations, as instructed by your teacher.

0.5 ACKNOWLEDGEMENTS

This text is partly the product of many years of teaching the topic *Critical Reasoning* in the Philosophy Department of Flinders University. It is also partly the result of our involvement in the International Baccalaureate in Adelaide and the “Philosophy for Schools” (P4S) and “Philosophy for Children” (P4C) movements in Australia. While the subject of Philosophy is the natural counterpart to *TOK*, it is true to say that the disciplines are not equivalent. Unlike Philosophy, *TOK* requires a more practical approach to the issues and a concern for pedagogic implications at all levels. Nonetheless, it is also true to say that our philosophical training has been indispensable in the writing of this book.

We are grateful to Dr Tim Sprod of The Friend’s School in Hobart, Tasmania for his contribution to Chapter 18 and for initial comments; Dr Lynda Burns for allowing us to utilise some of her *TOK* Workshop language materials in Chapter 5; Susan Hinchcliffe and the teachers from Port Morseby International School for the use of their *TOK* Course Readers; Dr Helen Lunt and Susan Harris for comments and suggestions; Rory McCauliffe and Fabio Cirrito from IBID Press should also be thanked for their patience and understanding over the long gestation period of this book. Roger McCart from the Australian National University did a magnificent job of proof-reading of the first draft at short notice and we are very grateful to him.

It should be clear that in a book that covers such a wide range of subject areas, the authors can hardly claim to be specialists in all facets of human knowledge. In particular, the authors must acknowledge the authors of the following specialist works:

- M. H. Abrams, “The Orientation of Critical Theories” (1953) reprinted in D. Lodge (ed.), *20th Century Literary Criticism*, London, Longman, 1971.
- S.F. Barker, *The Philosophy of Mathematics*, Englewood Cliffs, Prentice-Hall, 1964.
- A.F. Chalmers, *What Is This Thing Called Science?* 2nd ed., St. Lucia, University of Queensland Press, 1982.
- I.M. Copi, *Introduction to Logic* 4th ed., New York, The Macmillan Co., 1972. (Other editions have also been consulted.)
- I.M. Copi & K. Burgess-Jackson, *Informal Logic* 2nd ed., New York, Macmillan Publishing, 1986.
- T. Eagleton, *Literary Theory: An Introduction*, Oxford, Blackwell, 1983.
- R.N. Giere, *Understanding Scientific Reasoning* 3rd & 4th eds., Fort Worth, Harcourt Brace, 1991 & 1997.
- D. Huff, *How to Lie with Statistics*, New York, W.W. Norton, 1954.
- S.N. Thomas, *Practical Reasoning in Natural Language* 2nd ed., Englewood Cliffs, Prentice-Hall, 1981.

And also the authors of the texts listed below :

- F. Cirrito (ed.), *Mathematical Methods* 2nd ed., Melton, IBID Press, 1998.
- J. Green & S. Damji, *Chemistry*, Melton, IBID Press, 1998.
- G. Kerr, N. Kerr, & P. Ruth, *Physics*, Camberwell, IBID Press, 1999.
- M.P. Weem, *Biology*, Camberwell, IBID Press, 1999.
- M. Woolman, *Ways of Knowing*, Melton, IBID Press, 2000.

The authors must also gratefully acknowledge the contribution made by the students who, as part of their work for Critical Reasoning, have located many of the passages used in the text and exercises. All students in the topic were expected to find examples of generalisations, observation reports, definitions, causal statements and reasoning in the reading for their other topics or in popular sources of information. The hopefully interesting range of passages used as examples and exercises in this book is due partly to their efforts.

Finally, we would like to thank our wives—Alice and Jean—and our families, for their patience and understanding during the long gestation period of this book.

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