

Medicine as a Scholarly Field: An Introduction

O.S. Miettinen

Medicine as a Scholarly Field: An Introduction

 Springer

O.S. Miettinen

Department of Epidemiology, Biostatistics
and Occupational Health, and Department of Medicine
Faculty of Medicine
McGill University
Montreal, QC, Canada

Department of Medicine
Weill Medical College
Cornell University
New York, NY, USA

ISBN 978-3-319-19011-2 ISBN 978-3-319-19012-9 (eBook)
DOI 10.1007/978-3-319-19012-9

Library of Congress Control Number: 2015945242

Springer Cham Heidelberg New York Dordrecht London
© Springer International Publishing Switzerland 2015

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made.

Printed on acid-free paper

Springer International Publishing AG Switzerland is part of Springer Science+Business Media (www.springer.com)

Foreword

Careful development, definition, and use of concepts, while firmly ingrained in the discipline of philosophy, should also be an integral feature of any scholarly field, medicine included. The deployment of well-developed concepts is essential for critical thinking and, hence, of central importance to scholarly progress. Medicine, like other scholarly fields, stands to benefit from improved concepts and principles and from better-developed and more explicit philosophy; and this is precisely what is provided in this important new book by Olli Miettinen.

Miettinen's point of departure is his perception of an important but generally missing module in medical education; and this book provides that missing element: an introduction to medicine at large, to its concepts and principles, and also to the philosophy beyond these essentials, relevant to all specialties of medicine and written with precision, lucidity, and insight. Definitions of core concepts of medicine are proposed; terms which often are unreflectively used interchangeably are distinguished from one another; and propositions are put forward concerning the central logical and ethical principles of medicine. The book moreover presents principles for the pursuit of professional excellence and professional happiness of those who have, or will have, careers as physicians.

Taken in its entirety, Miettinen's new book provides an important philosophical foundation for medicine. As such, it is not a book to be read quickly, but to study, to contemplate, and to return to. The reader who wrestles through the pages of this dense text will be rewarded by Miettinen's stimulating prose, probing style, and call for action and, most importantly, will emerge with a clearer, sharper understanding of the core concepts and principles of medicine.

This book offers compelling insights to anyone who reads through its pages and follows its arguments; there is something worthy of consideration for everyone within this introduction to medicine as a scholarly field. The book unveils the logical structure of the rational practice of medicine and the nature and sources of the requisite knowledge-base for it, however lacking that knowledge may still be. It clarifies the relationship between medical research, in all its forms, and the arts of the practice of medicine. It posits core principles for the ethics of medicine. And it

outlines the historical evolution and present state of medicine and advances visions of future improvements in the field. This book is thus essential reading for clinicians, clinical researchers, and epidemiologists and even for medicine's basic scientists. For physicians-to-be, as medical students, it provides what it itself argues has been lacking, an introduction to the concepts and principles of, and philosophy behind, medicine as a scholarly field, and furthermore provides guidance on how relevant principles can serve the development of their future careers in medicine. And for practicing physicians this book offers an opportunity to step back, to reconsider general tenets of medicine sometimes held as immutable, to critically reflect upon various experiences in one's own practice, and perhaps even to help alter the course of medicine itself. The book offers an alternative vision of what medical practice should be.

Throughout, Miettinen beautifully elucidates the concepts and principles of knowledge-based diagnosis, and prognosis, within medicine. Now, after six decades of keen observation and study, and critical reflection on medicine and medical research, Miettinen, in this book, shares the fundamental understandings he has reached and provides his own diagnosis of medical practice itself. The prognosis of physicians' professional excellence, and professional happiness, may well depend on how thoroughly his precepts are learned and his prescriptions heeded.

Harvard University, Cambridge, MA, USA

Tyler J. VanderWeele

Preface

Any modern student of medicine, at the outset of the studies already, knows and understands a fundamental truth about modern medicine as a professional field: Consequent to its ever greater complexity, medicine has fragmented into many constituent disciplines – ‘specialties’ and ‘subspecialties’ – of it; and so, any given doctor now practices only in some limited segment of medicine, ‘general practice’ (a.k.a. family medicine) being a misnomer for one of the limited disciplines of modern medicine. The student thus is not setting out to learn medicine at large but only some particular discipline within it.

The student also knows, at the outset already, something equally notable, though much less comprehensible, about the educational preparation for whichever one of the disciplines of modern medicine: For access to studies specific to the particular discipline of his/her future practice of medicine – be it dermatology or diabetology or psychiatry or whatever else (with dentistry commonly the exception) – (s)he is required to complete an education leading to the MD (Medical Doctor) degree (in the USA and Canada) or some equivalent of this (elsewhere).

This requirement implies that such a degree signifies mastery of what I call *the medical common* – the educational content that is relevant to each of the constituent disciplines of modern medicine – all of this and nothing but this, as best, is understood by the authorities who specify the required contents of medical-school studies in a given jurisdiction of medicine at a given time. For the USA and Canada, the required studies are now stipulated by these countries’ Liaison Committee on Medical Education. The appointment of its members and its current composition are specified in lcme.org.

These undergraduate studies for all of medicine now commonly involve, inter alia, introductions specific to some of the currently official constituent disciplines of medicine. Whether these modules, or any of the others for that matter, actually merit inclusion in the medical common is not a concern of mine in this particular book. Instead, I here focus on what I regard as a much-needed but generally missing module in these studies, *introduction to medicine at large*, and this in such terms as are *relevant to whichever genuine discipline of medicine*, regardless of whether

the discipline is officially recognized or even exists as some doctors' career focus in medicine. That is, the focus here is on introduction to medicine at large as a prospective module early in undergraduate medical education – wherever, whenever.

Such an introduction to medicine would address the general *philosophy* of the field, the modern counterpart of the philosophy – Hippocratic – at the root of the genesis of modern medicine. It thus would introduce, in its first phase, critically formed (ontologically 'real') general *concepts* of the objects of medicine and of medicine itself, naturally together with apposite terms denoting these (in the lingua franca of the modern world wherever English is the dominant language, but otherwise in the local counterpart of this or both). It would then introduce general *principles* of medicine, both logical and ethical. And as these principles would call for the deployment of medical *knowledge*, introduction to the nature (ontic) and sources (epistemic) of this knowledge would be included. Besides, the introduction might well outline the avenue to the attainment of true *professionalism* in modern medicine – as to how, to this end, a genuine discipline of medicine is best defined and how full competence in a well-defined discipline of modern medicine is best pursued.

The need for such a module in undergraduate medical education is evident from the prevailing confusion about those introductory matters of medicine, which this book exposes – and endeavors to rectify. The status quo implies, more specifically, that medical students need an introduction to medicine at large on a *sufficiently high level of scholarship*, for it to help forestall such confusion among doctors of the future.

To wit, I see a need for an introduction to medicine at large such that from it any student preparing for a career in whichever genuine discipline of medicine would learn to think, critically, about the answers to questions such as: Are the terms 'disease,' 'sickness,' and 'illness' (in English) synonyms? What about 'treatment,' 'therapy,' and 'intervention' in this respect? What is true and unique about all genuine disciplines of medicine, distinguishing them from all paramedical professions? Can a modality of treatment – surgery, say – be definitional to a genuine discipline of medicine? What logically is the essence of diagnosis, and what is the source of its requisite knowledge-base? What are tenable conceptions of scientific medicine and medical science, respectively? What is the essence of ethical medicine? How is professional happiness in medicine best assured?

Scholarly thinking about the answers to these questions and much more, any student of medicine would learn from sufficiently well-developed general philosophy of medicine addressed in *propaedeutic studia generalia* – introductory general studies – of the field. Whereas the prevailing confusion about these introductory matters of medicine reflects the still-continuing absence of such studies from medical education (and vice versa), it is by no means a priori clear even to the clinical members of the faculties of medical schools what the topics and especially the actual contents of these studies should be.

In this book I posit propositions not only on the broadest syllabus but also on the core contents of these studies – for leaders, providers, and, especially,

recipients of medical education to ‘Read not to contradict, nor to believe, but to weigh and consider’ (ref. in Section 2.2). These propositions derive from, and reflect, my serious efforts, over almost six decades by now, to understand the big picture of both medicine and medical research – efforts motivated by my sense of the importance of these understandings for properly purpose-driven and genuinely insightful innovations not only in medical education but also in medicine proper and the research to advance this preeminent one of the ‘learned professions.’

Only now, after so many decades in medical academia with that outlook, do I feel ready to assume this task, more challenging than any of the ones I have previously undertaken. But this does not mean that comprehension of the introduction to medicine in this book is beyond the reach of beginning students of the field, provided that they – by their suitable selection – have the right attitude: appreciation that determined, serious effort is needed to acquire the ‘essential competencies’ of medical professionals specified in the widely adopted CanMEDS document, one of these being *competence as a scholar* in one’s particular discipline of modern medicine.

This exalted professional status – the genuine version of it – cannot be attained in the framework of what Frank Furedi laments as the now-prevalent ‘twenty-first-century philistinism’ in academia. Where this is the quality of the surrounding academic culture, students of medicine need not – and should not – assimilate it into their own outlook as students and, ultimately, as doctors.

Montreal, QC, Canada

O.S. Miettinen

Acknowledgments

The words in all the drafts, and in the final version too, of the manuscript of this book were ‘processed,’ competently and cheerfully, by *Chantal Burelle*. This contribution to the genesis of this piece of work was a sine-qua-non for it, given the continual agensis of such skills in me.

Three colleagues at my current home university (McGill) read the first draft of this text: *Kenneth Flegel* (internal medicine and editorship of a medical journal), *Richard Cruess* (orthopedic surgery and deanship of a medical faculty), and *Sylvia Cruess* (internal medicine and endocrinology) – the latter two now eminent members of our medical faculty’s Centre for Medical Education. The feedback from all three of these colleagues was very encouraging, thus constituting the other sine-qua-non for the genesis of this book.

That pivotal set of encouragements was supplemented by the sole reader of an early draft at the university of my adjunct affiliation: *James Smith* (pulmonology) at Cornell University. He also made valuable suggestions for improvement of the comprehensibility of the expositions of some of the more subtle clinical concepts, novel ones in particular.

Igor Karp (epidemiology) at Université de Montréal and University of Western Ontario read practically all drafts of this text and helped weed out various technical and some conceptual deficiencies. He also checked the statistical results presented in Section 8.1 and Appendix 2.

Alfredo Morabia (epidemiology and history of it) at City University of New York and Columbia University read a late version of the manuscript and made a valuable contribution to the focus of Chapter 1 (on the genesis of modern medicine) and, thereby, to the cohesiveness of the text as a whole. He described the resulting text at large as having the structure of a fugue (à la J. S. Bach).

By far the principal one among the colleagues contributing to the contents of this book has been *Johann Steurer* (internal medicine) at the University of Zurich. As the head of the Center for Patient-Oriented Research and Knowledge Transfer there, he has, for many years, been transferring relevant knowledge to me in the form of a large number and variety of books, thus greatly enriching many parts of this text.

Indeed, many of the books cited in this text I came to study on account of this highly learned and exceedingly generous colleague. He also read some drafts of this text and made valuable suggestions. And about this text overall he remarked: “To me it is astonishing and for medicine actually shameful that it has taken up to year 2015 before there is a work in which the essence of medicine is described and discussed.”

A late draft of this text was read by someone with a very different but here centrally relevant type of expertise: *Ilkka Niiniluoto* (theoretical philosophy and rectorship of a university) at my original alma mater, University of Helsinki. The opening of his feedback was this: “The aim of this book . . . is admirable. The composition of the work – from the key concepts to logical and ethical principles – is very clear and systematic. I am convinced that this kind of book is needed.” On some of the topics he stimulated worthy additions. And one of his asides I found to be particularly notable: “The diagnostic method [*sic*] . . . is still hotly debated by philosophers of science.” So, confusion about some matters of the theory of medicine prevails among philosophers too, but they evidently are well aware of this and active in seeking to correct it.

A practically final version of the manuscript was studied by *Tyler VanderWeele* at Harvard University. My interest in his reading of that version of the manuscript – when inputs for improvements no longer were my concern – was based on his being a veritable scholar in the health fields with a here-relevant distinction in this: Like any student entering medical school, he has not undergone studies leading to the MD degree or any equivalent of this. I thus judged him to be particularly well suited to produce a Foreword for this book, to thereby orient beginning students of medicine to the contents here specifically from their vantage – to what students approaching medicine with the requisite scholarly bent ([Preface](#)) can expect to learn from this book and to what avail in the pursuit of competence as scholars in their particular future disciplines of modern medicine. As is evident, he agreed to carve out the time to render this special service to the cause here.

To say something that would go without saying, I am indebted to everyone herein acknowledged and to many others besides.

Contents

Part I Preamble

1 The Genesis of Modern Medicine	3
1.0 Abstract	3
1.1 Hippocrates as ‘The Father of Medicine’	4
1.2 Galen as ‘The Second Hippocrates’	5
1.3 Hippocratic Progress in Medicine	5
1.4 Scientific Progress in Medicine	6
1.4.1 ‘Basic’ vs. ‘Clinical’ Contributions	6
1.4.2 Academic vs. Industrial Contributions	7
1.4.3 Epidemiological Contributions	8
1.5 Progress Leading to Fragmentation	8
2 How to Introduce Modern Medicine	11
2.0 Abstract	11
2.1 A Paradigm for the Introduction	12
2.2 Implications of the Paradigm	13
2.3 Insufficiency of the Paradigm	14
2.4 Significance of the Paradigm	16
2.4.1 Significance re Content	16
2.4.2 Significance re Process	18

Part II General Concepts of Medicine

3 General Concepts of the Objects of Medicine	21
3.0 Abstract	22
3.1 Health	22
3.2 Illness	25
3.2.1 Illness as Somatic Anomaly	25
3.2.2 Illness as Hidden or Overt	26
3.2.3 The Prevailing Confusion	26

3.3	Sickness	27
3.3.1	Sickness in Health	27
3.3.2	Sickness from Illness	28
3.3.3	Symptoms and Signs	29
3.3.4	Syndrome of Sickness	30
3.3.5	Overview	31
3.4	Disease	31
3.5	Pathogenesis	32
3.6	Etiogenesis	34
3.6.1	The Concept of Etiogenesis	34
3.6.2	Concepts of Causation	36
3.6.3	Microbes as Pseudocauses	38
3.7	Course	41
3.7.1	The Concept of Course of Illness	41
3.7.2	Complication of Illness	42
3.7.3	Outcome of Illness	43
3.7.4	Overview	44
3.8	Risk	44
3.9	Morbidity	46
3.9.1	The Prevailing Confusion	46
3.9.2	Rates of Morbidity	47
3.9.3	Types of Population	49
3.9.4	Rates vis-à-vis Risks	49
3.10	Mortality	50
3.11	Glossary	51
4	General Concepts of Medicine Itself	55
4.0	Abstract	55
4.1	Medicine	56
4.1.1	The Essence of Medicine	56
4.1.2	Surgery in Medicine	59
4.1.3	Branches of Medicine	60
4.1.4	Rational Medicine	61
4.1.5	Scientific Medicine	62
4.1.6	Pseudomedicine	63
4.2	Diagnosis	64
4.2.1	The Essence of Diagnosis	64
4.2.2	Differential Diagnosis	65
4.2.3	Clinical Diagnosis	66
4.2.4	Pattern Recognition	66
4.3	Etiognosis	67
4.4	Prognosis	68
4.5	Knowledge	69
4.5.1	'Actual Knowledge' in Medicine	69
4.5.2	Hierarchy of the Knowledge	70

- 4.6 Treatment 70
 - 4.6.1 Species of Treatment 70
 - 4.6.2 Rational Treatment 72
- 4.7 Glossary 72

Part III General Principles of Medicine

- 5 Logical Principles of Medicine 79**
 - 5.0 Abstract 79
 - 5.1 Some Overarching Principles of Medicine 80
 - 5.2 The Requisite Knowledge for Diagnosis 81
 - 5.3 The Requisite Knowledge for Etiognosis..... 85
 - 5.4 The Requisite Knowledge for Prognosis 86
 - 5.5 The Genesis of Gnostic Knowledge 87
 - 5.6 The Accessibility of Gnostic Knowledge..... 88
 - 5.7 The Deployment of Gnostic Knowledge 88
 - 5.8 Economists’ Principles for Medicine 89
 - 5.8.1 The Economic Aspect of Medicine..... 89
 - 5.8.2 The Duality in Economists’ Outlook 90
 - 5.8.3 Economists’ Principles for Medicine..... 91
 - 5.9 Epilogue..... 92
- 6 Ethical Principles of Medicine 95**
 - 6.0 Abstract 95
 - 6.1 Ideas About Ethics in General 96
 - 6.2 Ideas About Professional Ethics 97
 - 6.3 The Core of Medical Ethics 98
 - 6.4 The Hippocratic Oath..... 99
 - 6.5 Amoral Practices in Medicine..... 99
 - 6.6 Epilogue..... 103

Part IV Pursuing Excellence in Medicine

- 7 Defining Attainable Excellence 107**
 - 7.0 Abstract 107
 - 7.1 Defining a Pure Art 107
 - 7.2 Defining a Coherent Art 109
 - 7.3 Defining Competence in the Art 110
- 8 Pursuing Attainable Excellence 111**
 - 8.0 Abstract 111
 - 8.1 Being Realistic About Case-Based Learning..... 112
 - 8.2 Being Realistic About Science-Based Learning 113
 - 8.3 Practicing the Art of the Possible 115

Part V Epilogue

9 The Meaning of It All 119

 9.0 Abstract 119

 9.1 Gnostic Knowledge as the Key 119

 9.2 Gnostic Knowledge as the Goal..... 121

 9.3 Philosophy as the Guide 122

Appendices 125

 Appendix 1: Theoretical Framework for Diagnosis 125

 Appendix 2: Researcher-Assisted Learning from Practice 129

 Appendix 3: Neo-Hippocratic Learning of Medicine 132

 Appendix 4: Answers to the Questions in the Preface..... 134