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Introduction

This book about the philosophy of modern medicine\(^1\) is written within the broad parameters of the framework as set out below:

1. Such a medicine is scientific medicine; as such it can only be understood as part of modern science.
2. The beginnings of such a medicine\(^2\) may be dated to at least the seventeenth century just as modern science itself may similarly be dated.
3. Modern science cannot be understood in a vacuum without tracing it back to modern philosophy in which it is embedded.

The book explores in detail the implications of the three theses outlined above, establishing that the major characteristics of such a medicine as well as such a science follow more or less directly from their philosophical foundation and source.\(^3\) Thus it is not an accident that modern medicine is atomistic, reductionist, mechanistic as well as technology-oriented as the philosophical worldview from which it follows is bounded by the same parameters.

Part I contains five chapters. These together set out the philosophical foundations of modern science as well as, therefore, modern medicine, in order to display why the latter possesses the features it does exhibit:

- Chapter 1 shows the intimate link between science and philosophy in general, and between modern science and modern philosophy in particular.
- Chapter 2 argues that every philosophy in which its science is embed- ded entails a methodology which that science follows – modern phi- losophy entails methodologically that modern science is objective/
quantifiable and reductionist in character. The imprimatur “science” in this tradition of science/philosophy would only be bestowed on data obtained using such methods.

- Chapter 3 explores, in the view of this author, one of the most radical philosophical ideas behind the modern scientific revolution. It is not the Copernican Revolution (whether narrowly or more broadly understood) but an ontological revolution – that is to say, the abandonment of the naturally-occurring mode of being for the artefactual mode of being. This profound change was prepared by (amongst others) Descartes and his dualist thinking which opens a space for modern science, as its remit is confined only to matter (not soul/mind). Furthermore, organisms (whether non-human or human) are made of inert matter, subject to the laws of physics (and later other sciences such as chemistry) only. This is combined with the ontological volte-face that the organism is an artefact; more precisely, it is a particular type of artefact – a machine. Such a philosophical perspective is called mechanism, or the mechanistic world-view. Such a world-view entails reductionism: that the whole is no more than the sum of its parts, that once the parts have been explained, the whole has been explained without residue. At the same time, such a perspective has built into it the privileging of homo faber (over homo cogitans, Descartes notwithstanding) who manipulates, controls and transforms nature to suit their wishes and goals. Science is to provide the theoretical basis for generating technologies suitable for achieving this ideological goal, which prompts Heidegger to call science Theoretical Technology.

- Chapter 4 explores the notion of machines as Engineering, which will then show in greater detail why reductionism is entailed by the axiom that the body-is-machine.

- Chapter 5 examines in some detail the ontological volte-face of organism-is-machine by looking at the relationship between theoretical biology and philosophy as well as at the technologies engendered by the great discoveries of Mendelian genetics and molecular genetics/biology underpinning the two scientific agricultural/medical revolutions of the twentieth century.

Part II has three chapters which, in the light of Part I, explore in some detail the nature of modern medicine:

- Chapter 6 looks at, in general, the implications of the axiom that the body-is-machine for modern medicine. In particular, it looks at
the implications of Engineering and engineering for Medicine and medicine.

- Chapter 7 shows that a temporal cleavage exists between basic medical sciences and therapies (mirroring a similar cleavage between theoretical science and technology in general); it argues why anatomy is the first medical science to be established, then followed by physiology. It also shows that medical technologies are necessarily and increasingly high tech in character, as they alone can give us more precise, more finely quantitative, more directly accessible data via machines.

- Chapter 8 demonstrates that medical technologies increasingly intervene at a deeper and deeper level of matter in tandem with the deeper and deeper levels of theoretical understanding of matter. It also looks at two specific forms of technological intervention, namely, surgery and pharmacology to show in particular that the former manifests in a more or less literal fashion that body-is-machine while showing that the latter displays the reductionist character in its various stages of development and design. Furthermore, it examines psychopharmacology to expose the precise philosophical framework within which it operates. It argues that the philosophical framework in question is epiphenomenalism (that matter can affect mind, but not mind matter). However, epiphenomenalism cannot make sense of the placebo effect; the most recent research shows that there is more to the placebo effect than meets the eye. This new understanding has resulted in the emergence of a new philosophical perspective which appears in turn to have the effect of challenging the philosophical as well as the methodological foundations of modern medicine itself.

Part III has four chapters:

- Chapter 9 looks at a sub-conception of the aetiological definition of disease, namely, the infectious-agent model of the monogenic approach. It looks at the reasons for its ascendancy since its emergence in the late nineteenth century, its continuing success as a progressive research programme (even today, a hundred years later); at the same time, however, it also looks at the anomalies which such a programme has to confront and the ways it has adopted to cope with them.

- Chapter 10 explores the causal model behind the infectious-agent monogenic conception to show that it is mono-fatorial, linear and Humean in derivation. It sets out both its strengths and its
Philosophical Foundations of Modern Medicine

weaknesses. It distinguishes between three different contexts: (a) explanatory/scientific, (b) attributive, (c) clinical. From the first perspective, the chapter argues that no factor could be singled out as “the cause” as each of the relevant factors which may be identified, each on its own, is neither necessary nor sufficient – all the identified factors form a complex set of sufficient (“inus”) conditions. On the other hand, from the second and third perspectives, it is legitimate for doctors to single out one of these “inus” conditions as “the cause”. In the light of such a critical assessment, it is plausible to argue that the monogenic conception of disease be regarded as a methodological guideline in medical research about what factor(s) may count as cause(s) in diseases, rather than enunciating in a straight-forward fashion the empirical discovery of “the cause” of disease.

• Chapter 11 explores, in some detail, two attempts in the context of clinical medicine to articulate “the cause” of a disease, namely, the criterion of controllability/eliminability and the notion of the Random Controlled Trial (RCT). It argues that these two are closely related as the former’s understanding of cause is implicated in the latter; that they both are involved in the notion of experiment; that Mill’s methods, in the main, set out the logic of such experimentation; and that this sense of cause is what Collingwood calls Sense II.

• Chapter 12 examines a very different tradition, alongside the monogenic conception of disease, in the history of modern medicine which is embodied in the theory and practice of epidemiology. As its metaphysics is not atomistic but holist, its methodology is not reductionist; the notion of cause it deploys is multi-factorial and reciprocal or “ecosystemic”. One could argue it is “revolutionary” science (whereas at the beginning of the twenty-first century, the infectious-agent model of disease may be said to be “normal” science). However, no Nobel award has been bestowed on the subject and its leading practitioner(s). This chapter attempts to make a case for saying that this may be a sadly-missed opportunity, as the “ecosystemic” kind of science shows signs of being the science of this new century.
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