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## Preface

The purpose of this book is to bring to a wider audience the astonishing work that Leonardo did in trying to understand the anatomy and physiology of the heart. This work was carried out at the end of his career as an investigator of anatomy. Note that I have referred to him not as an anatomist, but as an investigator of the human form, for his purpose was very different from that of the usual practitioners of this science. Unlike Vesalius and the many great anatomists who followed, Leonardo was a pupil of natural philosophy, interested in all of the natural world and in particular, in man's place in the microcosm–macrocosm continuum that had exercised the minds of philosophers from Aristotle and Ptolemy to the Renaissance. Like Vesalius, however, he broke new ground in the positioning of the student of anatomy, from one who simply regurgitated the works of Galen to one who thought for himself using the evidence in front of him to describe the human form in new light. Until Vesalius—and here we have to discount Leonardo's contribution, as he did not publish any of his work—the anatomy professors read from the works of Galen; once a year a body was dissected by a prosector and the parts were demonstrated to the students of medicine by the Demonstrator. Needless to say, the marriage of dictat and observations was not a happy one. Vesalius broke new ground in becoming the dissector, the recorder, and the demonstrator all rolled into one, turning the art into a science. Leonardo did the same thing, but his was work done in private and never released to the academic fraternity at large through publication. We may suppose that even if the work had been published, it would hardly have been accepted from one who lacked a formal education and was viewed as an artist and engineer.

It is even more startling, then, to discover in Leonardo's works descriptions of form and function of this immensely complex organ that continue to speak to those of us who work with it every day. Many of his insights, such as the description of the closure mechanism of the arterial valves, pulmonary and aortic, hold true today and indeed were unravelled only in the modern era by two Oxford engineers who published their findings in *Nature* with only one reference—to Leonardo da Vinci!

This book includes chapters on Leonardo's life and times and the state of anatomy in his time. I have included a chapter on his use of drawing, as it is important for the newcomer to Leonardo to realise that he used drawing in many different ways.

In addition to having a large section on the heart anatomy and its relevance to us today, this book has reproductions of contemporary dissections that I have carried out to test the veracity of Leonardo's work. The results are quite astonishing.

This is the first time that all of Leonardo's drawings and writings on the heart have been brought together in one volume, and I am immensely grateful to the Royal Collection for allowing their reproduction along with translations of all of the accompanying text. The text has been transcribed from the mirror image in which Leonardo wrote and has been translated in the hope that this will be a useful resource for other academics who wish to study Leonardo's thinking through his writing and his drawing. Although the audience is likely to be mainly academic I hope that enough general information is included to interest the more general reader.

The Heart of Leonardo

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2013, XXII, 256 p. 145 illus., 144 illus. in color.,

Hardcover

ISBN: 978-1-4471-4530-1