

Forward

In which the author attempts to justify himself and to pay down some debts that he knows can never be paid in full.

So, who needs another Anatomy book?

Seriously. Look in any large commercial bookstore—you'll be shocked by the sheer number of books written on the subject. Especially bookstores associated with a university, and even more so, universities with a medical school. You'll find Anatomy textbooks, many of them hefty tomes and others, slimmer, distilled, even pocket volumes. Also Anatomy atlases, some of these of the classic, masterfully hand-drawn kind and others, the increasingly popular slick photograph and illustration variety; and Anatomy dissection guides; and an Anatomy coloring book or two. Elsewhere, there are likely Anatomy-themed novels, and more. So what, other than hubris or a tragically delayed middle-age crisis would drive me to now add yet another Anatomy book to this hopelessly cluttered pile? The only answer I have to this obvious but no-less-worthy-for-being-so question is "None of those others are like mine." For one thing, there is the small matter of my three decades spent studying, organizing, drawing, explaining, encouraging, haranguing med students on three continents on all matters anatomical. Three decades of scrubbing formalin (and its smell) from my skin, and of regaling my family and friends with true if tasteless tales from the crypt. Three decades.

Then there is what one might call "legacy". As it's said—about life—"No one gets out alive." After all these years, am I supposed to just shut up about the many life lessons I've acquired from my interactions with colleagues and students, especially students? The point is, one needn't be a writer of the caliber of a Primo Levi or an Oliver Sacks, to name just two of my literary inspirations, to have something worth saying and preserving. No one can deny that every author brings a unique perspective to their writing. I can say with near certainty, moreover, that I come to the subject, at the least, from an unusual perspective—at least for modern times. Notwithstanding today's placement of Anatomy squarely in the category of a biological science, the great Anatomists of the Renaissance and before, Vesalius, Galen, etc., were as driven by a conviction that Human Anatomy is as much about

divinity, about the will of the Creator, as it is about the human being he created; about high esthetics as much as flesh and blood. As I've endeavored to show throughout the chapters that follow, it is surely no coincidence that the giants of classical Anatomy were also prodigiously gifted artists. So, my own love for and abilities in both science and art, while possibly an unusual combination today, can hardly be said to be an odd choice for a life as an Anatomist. Nevertheless, I came to the subject accidentally.

My first real job as an adult was as an illustrator in the Graphics Department of the Uniformed Services University of the Health Sciences in Bethesda, Maryland (nickname: "Useless U"). While performing some rather pedestrian touch-up work on some teaching slides for the late Malcolm B. Carpenter, a professor and author of a widely-used textbook of Neuroanatomy, the idea of pursuing a career in Anatomy was raised. Evidently I showed a greater-than-usual interest in the science behind the slides I was working on, or perhaps a less-than-usual antipathy for it. Regardless, the good professor mentioned that his friend across town at GW (George Washington University), Dick Snell, was then recruiting grad students for doctorates in Human Anatomy. Whatever I might lack in science creds, would, he assured me, be more than compensated for by my being "an accomplished illustrator". Of course, being quite freshly minted in the business, having just a few months earlier graduated from the University of Maryland, I was an illustrator in job description only, and "accomplished" not at all. Still, I'd be lying if I were to say that his flattery had no effect. On the contrary, within at most a few weeks, I had arranged an interview with Dr. Snell for the purposes of affecting a major career change. As for Dr. Carpenter's stated belief that my art background would be a value added, only a few moments were required for it to be made clear that for the GW chairman, at least, it was anything but. Still, in spite of my numerous deficiencies viz. the program's published academic requirements, I was accepted into the program, albeit on an initially probationary footing. More than 30 years later, I can hardly believe my good fortune at having been the recipient of such an opportunity.

In addition to my background in the visual arts, I'd like to think that my work as a Cell Biologist also goes some way to explaining the specific perspective I bring to the subject of Human Anatomy and to the book I am attempting to justify. That work was carried out, in large measure, as a microscopist. More specifically, as an electron microscopist, meaning that the primary tool that I brought to my chosen research topics was the transmission electron microscope. If that is not particularly familiar, most will understand that it refers to something that enables one to look at very, very small things. For the sake of this discussion,

that is quite sufficient. The point is that most parts of the body that could be seen with the naked eye or with a regular light microscope were already well described in the 19th and early 20th centuries. What remained to be learned required (requires) ever more powerful analytic tools, including the aforementioned electron microscope. Regardless of whether performed without magnification or with one or another kind of microscope, this approach in biology has been known as morphology, meaning the study of the forms of things. Perhaps you can see where I'm going with this.... Basically, for one trained to look, to appreciate visual detail, this is the kind of research one would probably be most naturally inclined toward. One thing for sure, visual particulars and matters of esthetics have played no small part in my approach to studying biological forms—also my understanding and appreciation for that ultimate form, the human body. Therefore, I would claim that this book is a true reflection of its author's longstanding and coexisting love for physical beauty and scientific truth.

Here, I will also remark that while the most important targets for whatever Anatomy lessons I have to impart are obviously the students that are required to learn it, increasingly, the general public needs them as well. Medical students tend to become unduly entwined in the weeds, as it were. The numberless named structures—bones, bumps, ridges, and grooves on bones, ligaments, and muscles attaching on bones... you get the idea. In doing so, they often lose sight of what's truly important, rarely stopping to appreciate the functional interrelationships the parts have, their intrinsic beauty, the fantastic mystery, ingenuity, and quite incredible organization existing in whatever body system they populate. The public, meanwhile, has been fooled into thinking that those structures preclude any reasonable understanding without a med student's investment and basic knowledge of science. It's as if the layman has ceded what is surely his birthright, the right to know and to understand his or her own body, to a class of white-coated wizards who in turn guard it like some latter-day Philosopher's Stone. In this book, I make an attempt to remedy this situation. So, for instance, I try to explain, simply and in context, the meaning and origins of the often inscrutable words/names traditionally used by the keepers of the secrets, for too long shrouded in medical mystery.

To achieve this, I make every effort to embed the selected anatomical structures and their particular contribution to whatever function they serve in the body into a [hopefully] absorbing narrative. I try and tell stories or accounts written, not in medecalese, but in language that approximates that spoken by everyday folks, without sacrificing accuracy.

Look, I've studied and taught this subject a long time, from the day I first put scalpel to cadaver. So what I've tried to create here is neither text nor storybook. Rather, I've attempted to humanize the subject of Anatomy by describing and connecting its parts by means of accounts—most true—and, to the medical issues surrounding that Anatomy; issues that students of medicine and laypeople alike may well come in contact with. In this way, I believe, the latter may come to understand their bodies better, or at least be guided and motivated to learn more, and the students to retain their always challenged sense of wonder and humility. Also, I've always loved making people laugh, and in Human Anatomy we have some very fertile territory for that goal.

Which brings me to a moment of reflection on the hazards of trying to break down complex subjects in order to transmit them to others. No self-respecting teacher, or author for that matter, sets out to deliver incorrect or misleading material. And yet, rare indeed is the instructor who has not committed the academic version of malpractice while lecturing on their subject. Call it human nature or the nature of human understanding, or what have you. The bottom line is that, as a teacher of mine used to say (no offense intended to Roman Catholics), “Only the Pope is infallible.” *Mea culpa*. It is an inescapable fact. “Stuff” happens. Nevertheless, I pledge here, to you, my reader, that everything I've written in these pages is, to the best of my knowledge, true, unless I say otherwise. Or, if it isn't. Let me put it this way, my intention is to provide accurate information. Anyone finding an anatomical or medical error in this book, is invited, urged even, to contact me with the humiliating correction. I can take it. As I've said, no one is perfect. In any case, I have reason to believe that *Two Zebras* will provide information that is at once interesting, useful, and not-so-terribly-painful to digest. If I succeed in that, I'll consider my mission fulfilled.

So how to “use” this book? Some, especially students of medicine, or nursing, or any other medically-oriented subject, may approach it like they would a textbook, beginning with whatever section and/or chapter is felt to be relevant. Or helpful. Or logical. If you're a health professional, med student, or otherwise medically knowledgeable person, feel free to skip the explanations of the particular organ or tissue under discussion. In any case, most will find something of interest in even these technical parts, while accepting my declaration that *Two Zebras, Human Anatomy in the Age of Wikipedia*, is not intended as a textbook. It ought to be read then without regard to the book's superficial similarity to one. While I

prefer that, I don't really care that much. So go ahead, do as you will, just read the book. And enjoy. Please.

Finally, it must be said that while most of what is written in the chapters that follow are, to the best of my knowledge, absolutely true, I admit to taking some license with regard to statements or actions by particular individuals. I hope that in doing so, I have not caused offense or aroused homicidal thoughts towards the author.



Master John Banister delivering an anatomical lecture. c. 1580.