

Where Medicine Went Wrong:Rediscovering the Path to Complexity: 11 (Studies of Nonlinear Phenomena in Life Science)

By Bruce J West

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Where Medicine Went Wrong explores how the idea of an average value has been misapplied to medical phenomena, distorted understanding and lead to flawed medical decisions. Through new insights into the science of complexity, traditional physiology is replaced with fractal physiology, in which variability is more indicative of health than is an average. The capricious nature of physiological systems is made conceptually manageable by smoothing over fluctuations and thinking in terms of averages. But these variations in such aspects as heart rate, breathing and walking are much more susceptible to the early influence of disease than are averages.

It may be useful to quote from the late Stephen Jay Gould's book *Full House* on the errant nature of averages: "... our culture encodes a strong bias either to neglect or ignore variation. We tend to focus instead on measures of central tendency, and as a result we make some terrible mistakes, often with considerable practical import." Dr West has quantified this observation and make it useful for the diagnosis of disease.

Contents:

- Chance and Variation
- The Expectation of Health
- Even Uncertainty Has Laws
- The Uncertainty of Health
- Fractal Physiology
- Complexity
- Disease as Loss of Complexity

Readership: Healthcare professionals, pre-med students and general readers. May be used as a supplementary text for advanced undergraduate or graduate course in complexity science.

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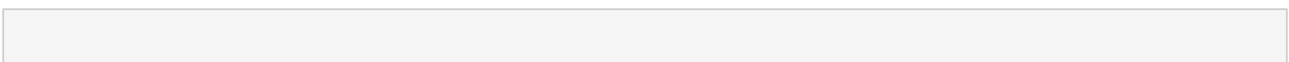
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Editorial Review

Review

“Bruce J West writes to both inform and inspire in his new book, fueling the debate on the role of nonlinear phenomena in the life sciences ... Overall, the biomedical engineering should find this book stimulating, thought provoking, and a source of interesting historical anecdotes for future talks or lectures.” IEEE Engineering in Medicine and Biology Magazine

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