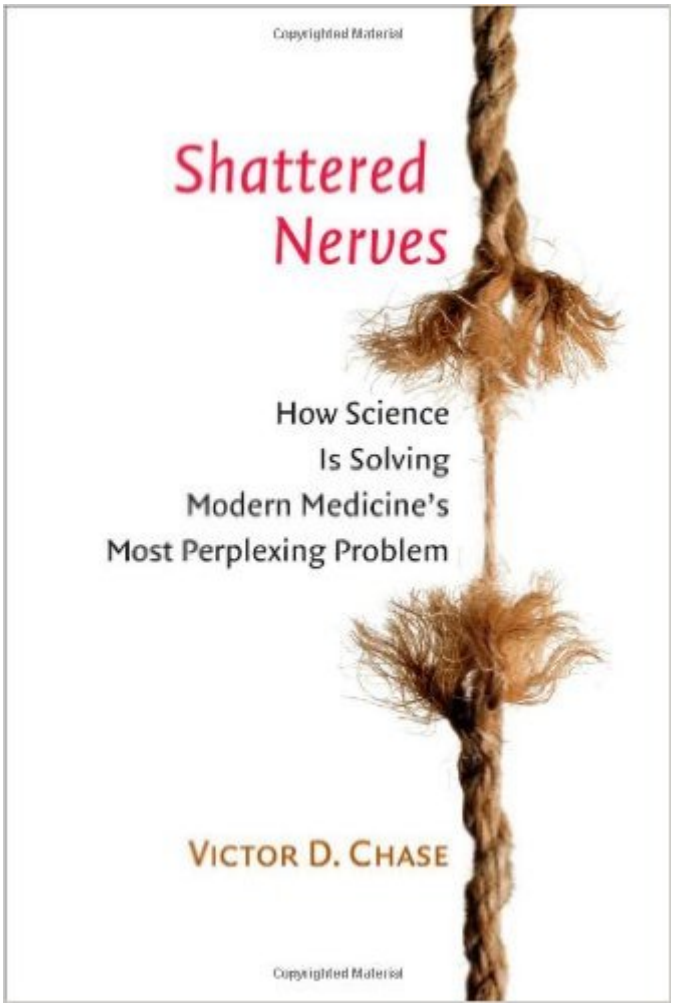
Shattered Nerves: How Science Is Solving Modern Medicine's Most Perplexing Problem



Synopsis

Once the stuff of science fiction, neural prosthetics are now a reality. Research and technology are creating implants that enable the deaf to hear, the blind to see, and the paralyzed to move. Shattered Nerves takes us on a journey into a new medical frontier, where sophisticated, state-of-the-art medical devices repair and restore failed sensory and motor systems. In a compelling narrative that reveals the intimate relationship between technology and the physicians, scientists, and patients who bring it to life, Victor D. Chase explores groundbreaking developments in neural technology. Through personal interviews and extensive research, Chase introduces us to the people and devices that are restoring shattered lives, from implants that enable the paralyzed to stand, walk, feed, and groom themselves, to those that restore bladder and bowel control, and even sexual function. Signals from the brains of paralyzed people are captured and transformed to allow them to operate computers. Brain implants hold the potential to resolve psychiatric illnesses and to restore the ability to form memories in damaged brains. This timely and important book also explores troubling boundaries between restoration and enhancement, where implants could conceivably endow the able-bodied with superhuman capabilities. Chase concludes this fascinating book with a provocative question: Just because we can, does that mean we should?

Book Information

Hardcover: 312 pages
Publisher: Johns Hopkins University Press; 1 edition (November 26, 2006)
Language: English
ISBN-10: 0801885140
ISBN-13: 978-0801885143
Product Dimensions: 6 x 0.9 x 9 inches
Shipping Weight: 1.2 pounds (View shipping rates and policies)
Average Customer Review: 4.8 out of 5 starsÂ Â See all reviewsÂ (8 customer reviews)
Best Sellers Rank: #549,292 in Books (See Top 100 in Books) #152 inÂ Books > Textbooks > Medicine & Health Sciences > Allied Health Services > Medical Technology #194 inÂ Books > Medical Books > Allied Health Professions > Medical Technology #269 inÂ Books > Textbooks > Medicine & Health Sciences > Administration & Policy > Ethics

Customer Reviews

The purpose of this review is to inform curious readers about the contents and overall style of the book Shattered Nerves by Victor Chase. Holistically, I will present a summary followed by the

general style of the book and finally my own opinion of the contents and how it is written.Summary:First Part: This book begins with Chase thoroughly describing the advances in medical technology throughout centuries up to present day. He details through the most significant experiments and people who used all kinds of methods to solve the issue of paralysis and other nerve damage diseases. The concepts that were so crucial to bringing us to current day science in this area of neuroscience ranged from electricity and batteries to an understanding of nerves carrying current. Some experiments that led this growth in concepts were perhaps more crazy or dangerous than others, "Once he was able to use his battery to create a steady flow of electricity on demand, he went about testing the effects of that electricity on his own body. He found that `the current of the electric fluid ... excites not only contractions and spasms in the muscles, convulsions more or less violent in the limbs through which it passes in its course; but it irritates also the organs of taste, sight, hearing, and feeling, properly so called, and produces in them sensations peculiar to each.' In one particularly dramatic experiment, he placed two charged probes into his ears: `At the moment the circuit was completed I received a shock in the head, and a few moments later... I began to be conscious of a sound, or rather a noise, in my ears that I cannot define clearly; it was a kind of jerky crackling or bubbling, as though some paste or tenacious matter was boiling.' Wisely, he wrote, `I did not repeat this experiment several times.'" (p.39) Overall, despite the sometimes questionable decisions of the researchers, the concepts discovered moved science forward dramatically in order to bring us to the present-day ability of motor function in many diseases or injuries where it was once impossible.Later in the Book: Current-day research and clinical successes as well as some failures, are the main chunk of this lively read. Electrode implants are becoming common ways of helping to interpret the brain signals being sent to a non-functioning nerve site, to allow people who are missing function to regain it. Chase does a great job of detailing the different advances and medical availabilities that are being utilized to help those who have nerve damage through mostly anecdotes of people who have received the treatments. In the majority of the middle of this book, he goes through different areas of success in reviving motor capabilities or control, in areas such as hand movement, the ability of quadriplegics to stand and potentially walk again, cochlear implants and other major hearing advances for the deaf, and retinal implants. Chase then takes great time to explain the electrode and how it is being used as the new nerve in all of these advances, and then implementing prosthetic systems in the brain. He then moves from discussing motor nerve damage to brain diseases, such as Parkinson's disease; Chase explains deep brain stimulators and their effects in countering motor diseases that originate in the brain. Current research is being done to see if there is a way to use these brain stimulators to alleviate

depression. Different successes have been seen so far in the implants, with the most extreme case being one patient fully recovering and setting up their own successful business. Finally, he discusses Alzheimer's and the possibility of an implant or a chip in the hippocampus that helps keep and restore memory. A man named Berger has done extensive research in trying to develop a hippocampus computer model in order to help recover the full functionality of it. The end of this book is an overview of the ethics behind these advances. Chase brings up the different ethical decisions and dilemmas researchers face in this area of neural prosthetic technology such as: "when is an implant ready for human testing? How can researchers ensure that human test subjects are made fully aware of the potential risks involved? Once these devices are approved for clinical use, who should receive them?" Different professionals opinions are surveyed and described, followed by a history of ways ethics have been implemented over the last century, including a description of the IRB and other common regulation codes and practices.Reading this Book (The Style): This book is written with the overall goal to provide a story of how nerves are being restored by science. Chase details the history of nerve repair, and then describes some of the most innovative and interesting ways that motor function and nerve repair is happening recently/currently. The history is extremely interesting, Chase does an incredible job at using humor and just purely amazing facts and research to keep you engaged and excited while reading through a seemingly "dry" subject such as the history of neural prosthesis. I actually think my favorite chapter of the book was "The Grandfather of Neural Prostheses", which details the history of one man and how his incredible genius mind impacted the development of numerous tracks within neural prosthesis. The ways he got invested in each of the fields is ridiculous, mainly he was interested and read some on the topic and all of a sudden was a genius in it and made a massive impact/breakthrough that most people are still basing their research on. I was blown away by how his story was presented almost every single page. Chase does this throughout the rest of the book - the topic is never boring to read through. Using stories of different patients, Chase presents the repairs in a very personal way, discussing through a person's life and how the technology being described was used to impact their life. Almost every chapter gives one or multiple stories of how the technology was developed to the point of helping this particular person, and what has happened since.My Opinion: I have really enjoyed this book overall. There were a few topics that I was less-interested in, but as stated, Chase's use of stories keeps you engaged and frankly in awe of what modern medicine is able to accomplish and how people have really been helped with what you are reading about. I loved learning about so many different systems in the body without feeling like I was reading a textbook, and thinking of how I would act in similar situations was always an interesting thought process that

kept me very interested in the book. I would definitely recommend this book to others, especially if one is not overwhelmingly knowledgeable about the nervous system. Chase does a really good job of explaining things on a simple level for understanding to form, and then makes you feel really smart that you are understanding how someone was given a cochlear implant, or how retina implants are being developed. I would absolutely suggest getting the book for a light read or even for a class learning more about advancement in neuroscience. It was very enjoyable but still helped solidify a lot of understanding of the brain and nerves and opportunities to improve both.

Shattered Nerves does a great job of providing a layperson’s explanation of the fascinating advances medical science is making in the field of neuroprosthetics. It nicely blends the human stories of the researchers and the subjects with clear descriptions of the technical advances--and the science that underlies the technology--all without becoming too complicated for the interested non-scientist.This book tracks the development of implants and aids that help take the place of damaged nerves in the human body. From cochlear implants that help deaf people hear, to hookups that allow people to operate computers just by thinking, reachers are successfully combining medical science, engineering, computer technology and great personal committment.Be sure to get to the last chapter, which discusses ethics and the issues that confront the researchers and technologists in this field. This is a good book for anyone interested in how technology advances and how real people make the individual steps that add up to giant strides for medical science. It provides great insights into the personalities and the processes involved.

Shattered Nerves: How Science is Solving Modern Medicine’s Most Perplexing Problem explores a new and blossoming medical frontier: that of neural implants which are enabling vision, hearing and movement in patients who have been blind, deaf and even paralyzed. Personal interviews blend with research to draw important links between the science involved and the lives of those affected, with chapters exploring boundaries between restoration and enhancement and considering both physical and psychological consequences of restoring damaged brain functions. This outstanding survey of brain research frontiers is not only a top pick for health collections, but for many a general-interest lending library.

Victor Chase’s history and up-to-date story of prosthetic implants is riveting. I found it to be a wonderful read for its selective history of prosthetic implants, cutting-edge science, and for the in-depth human side that he presents. The author’s care and concern for the patients he interviewed

comes across as much as his intimate understanding of the science he helps his readers to understand and appreciate. I'm saving my copy as a reference for when parts of me decide to head south...without passports.

This book takes you on an amazing journey into the lives of not only the medical pioneers developing these complex systems, but the recipients of them as well. It gives a layman's understanding of complex medical terminology and applications and also rivets you with the true human spirit of the people receiving these modern miracle implants. I thoroughly enjoyed reading and learning about the individuals profiled and highly recommend this book.

This is a great book for anyone interested in neural prosthetics and neurostimulation. It goes over the technology and also patient and doctor stories of how these devices were developed.

I'm overwhelmed by the amount of fascinating, up-to-the-minute information, the painstaking research, and the easyto understand writing. Especially intriguing is the clear path to future breakthroughs indicated in each area.It shatters our preconeptions about the limits of medicine. I'll be looking for these in future reading for years to come.

Excelent book for someone entering the field of neuroprosthetics.

Structures: Walls and Mirrors (The Benjamin/Cummings Series in Computer Science) Swift: Programming, Master's Handbook; A TRUE Beginner's Guide! Problem Solving, Code, Data Science, Data Structures & Algorithms (Code like a PRO in ... engineering, r programming, iOS development) Ruby: Programming, Master's Handbook: A TRUE Beginner's Guide! Problem Solving, Code, Data Science, Data Structures & Algorithms (Code like a PRO in ... web design, tech, perl, ajax, swift, python,) Java Programming: Master's Handbook: A TRUE Beginner's Guide! Problem Solving, Code, Data Science, Data Structures & Algorithms (Code like a PRO in ... web design, tech, perl, ajax, swift, python) Php: Programming, Master's Handbook: A TRUE Beginner's Guide! Problem Solving, Code, Data Science, Data Structures & Algorithms (Code like a PRO in ... engineering, r programming, iOS development,) Python: Programming, Master's Handbook; A TRUE Beginner's Guide! Problem Solving, Code, Data Science, Data Structures & Algorithms (Code like a PRO ... engineering, r programming, iOS development) Quality Assurance: Problem Solving and Training Strategies for Success in the Pharmaceutical and Life Science Industries (Woodhead Publishing Series in Biomedicine) Problem Solving for Oil Painters: Recognizing What's Gone Wrong and How to Make it Right