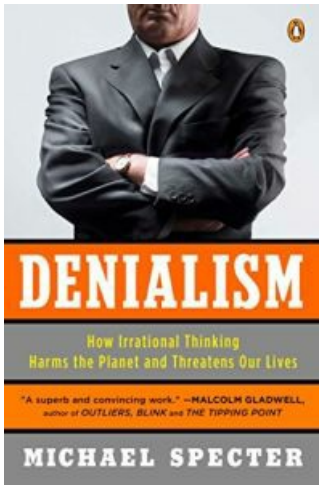

Book Denialism

How Irrational Thinking Hinders Scientific Progress, Harms the Planet, and Threatens Our Lives

Michael Specter
Penguin Group (USA), 2010

Recommendation

Michael Specter's direct, elegant *New Yorker*-style prose renders the complexity of his assertions entertaining, easy to read and eminently digestible. Specter dissects many advocates' widespread insistence on denying accepted scientific and medical facts when the truth might undermine their financial or emotional self-interest. His style makes the pages turn, except in the few places where he seems temporarily to run out of gas, and his book is full of revelations. Its episodic nature works in its favor, since you can read any chapter as a stand-alone article, with no loss of Specter's big ideas or editorial purpose. Are you interested in the malfeasance of drug companies and how that affects your daily health? Do you buy organic foods? Do you pursue alternative medical care? Do you know how much impact genetic science may have on you? Or do you enjoy reading about the shockingly smug ignorance of others (who doesn't enjoy that?) and how they insist on their own enlightenment? *BooksInShort* highly recommends Specter's astute overview of today's bunk, and how not to subscribe to it.

Take-Aways

- Many people refuse to believe scientific fact, no matter how much proof exists.
- Many firms and individuals ignore or suppress the truth for commercial or political gain.
- Merck & Company, maker of the valuable painkiller Vioxx, removed it from the market rather than explain a low risk associated with its use.
- Despite what antivaccination campaigners claim, vaccines do not cause autism.
- This campaign has led to a decline in the number of children vaccinated and a rise in the occurrence of diseases that scientists once considered eradicated.
- Organic versus nonorganic food is not the dietary battle Americans need to fight. The biggest killers in the US diet are "calories and diabetes and sugar."
- Bioengineered, genetically altered foods can help prevent mass starvation, particularly in areas that lack sufficient water and agricultural land.
- Vitamins and supplements provide no measurable health benefit, and some are harmful.
- Genomics – the study and alteration of genes – will dominate the future of science.
- DNA profiling will allow those who can afford it to discover their propensity for various medical conditions and take preventive measures – if they can face reality.

Summary

A World of Denial

Denial is a psychological state in which individuals ignore – or pretend they don't know – the truth. Denial can be healthy in the short term, enabling human beings to accept events gradually that are too traumatic to deal with when they occur, but living in denial over the long range means never coming to terms with reality. "Denialism" is the willful suspension of belief, or deliberate ignorance about facts that might undermine a self-serving emotional or financial position. Denialism – whether purposeful or unconscious, well-meaning or cynical – obstructs progress in many arenas, including medicine, food, science, and so on. It creates a pervasive, morally self-satisfied mythology that has destructive real-world consequences.

> "Denialism is denial writ large – when an entire segment of society, often struggling with the trauma of change, turns away from reality in favor of a more comfortable lie."

Denialism sustains misguided, firmly held opinions that may not alter the world (though some denialism has broad, dangerous costs), but that do keep the denier in a state of blissful ignorance. In that state, the denier makes life choices based on fantasy, not fact. "The issues may be complex but the choices are not." The alternative to accepting scientific facts or "new technologies, along with their limitations and threats" is to "slink into an era of magical thinking."

Vioxx: The Painful Demise of a Painkiller

The saga of Vioxx provides a prime example of corporate denialism. In 1999, the pharmaceutical giant Merck & Company, brought out the painkiller Vioxx, which offered a significant breakthrough. It was extraordinarily effective in suppressing arthritic pain with none of the gastrointestinal side effects (internal bleeding and such) associated with aspirin- or ibuprofen- based pain relievers. Nor was Vioxx an opiate, though its pain relief replaced opiates for some patients. In 2003, Merck sold $2.5 billion worth of Vioxx; some 20 million Americans took it.

> "Unless data fits neatly into an already formed theory, a denialist doesn't really see it as data at all."

But a medical study turned up a disturbing tendency: Those who had already had a heart attack appeared to be at greater risk of having another coronary if they took Vioxx rather than the painkiller Aleve. Further studies suggested a clear link between Vioxx and heart attacks. Merck insisted, despite convincing evidence, that no link existed. Merck also went after doctors and scientists who published studies or papers supporting the contention that Vioxx use could spur heart attacks. Merck pressured one such doctor out of his stance and tried to wreck his career. He said, "One of the most important drugs of our time was released without the proper safety checks, and after the company's own scientists wondered in writing whether it would kill people."

> "Denialist arguments are often bolstered by accurate information taken wildly out of context."

The British medical journal *The Lancet* published estimates that 88,000 Americans suffered heart attacks "after taking Vioxx." Of those patients, "38,000 died." Merck removed Vioxx from the market and, in 2007, created a lawsuit settlement fund of almost $5 billion. That fund forestalled "nearly 50,000 lawsuits" against Merck. The fund also forced an end to "hundreds of class action suits" that could have bankrupted the company. Creating the fund permitted Merck "to never admit fault in a single one of those cases."

> "No public health measure has enhanced the lives of a greater number of people than the widespread adoption of vaccinations."

Vioxx caused a huge public shift in attitude toward large pharmaceutical companies and the US Federal Drug Administration (FDA). Many people stopped believing that either the company or the agency had consumers' interests at heart. The deception and Merck's refusal to take responsibility triggered new levels of distrust. "Denialism couldn't exist without the common belief that scientists are linked, often with the government, in an intricate web of lies." However, the fundamental irony of the Vioxx matter is that Vioxx killed, and would have killed, far fewer people than die from the side effects of other pain relievers. Aspirin and ibuprofen cause gastrointestinal bleeding related to the deaths of 15,000 Americans a year. Some 100,000 more are hospitalized annually. "The injuries, including heart attacks and strokes, caused by Vioxx do not compare in volume." If Merck had acknowledged the likely risk associated with Vioxx, thousands more people might still be alive, and millions free of pain. Moreover, the fundamental trust between patients and drug manufacturers might still be intact.

Vaccines and Autism

In the US, diagnoses of autism – a collection of developmental concerns, not just one disorder – increased from "less than one child in 2,500" in 1970 to one in 150 in 2009. Some of this climb can be traced to 1991's US Disabilities Education Act. It promises disabled children a public education, but it requires that children have a proven diagnosis of a disability to qualify. Shortly after passage of the act, the number of children diagnosed with autism began to rise.

> "Vaccination for virtually every highly contagious disease is never as dangerous as contracting the infections those vaccines prevent."

As more children began to show the symptoms of slow development or the social disconnection associated with autism, parents began to search for a cause. Much suspicion accrued to the number and complexity of vaccines given to infants at a crucial age in their development – right around 18 months. Parents claimed to see a causal link between their kids' vaccinations and a sudden shift in their behavior, even though autistic symptoms seldom appear in children younger than 18 months anyway. Parents focused both on the MMR vaccination (to prevent measles, mumps and rubella, but primarily measles), and thimerosal, the preservative in it. Thimerosal contains a trace amount of a nonharmful form of mercury. Ignoring the type of mercury, parents assumed that their children had suffered a kind of mercury poisoning that led to the autism.

> "How far will we descend into denialism before the fear of disease once again overshadows the fear of vaccines?"

An enormous hue and cry resulted, tied to a still-growing grassroots antivaccination movement. Many parents – often concentrated in certain geographic areas – would not let their children receive the vaccine. A "badly flawed" 1998 study in *The Lancet* by Dr. Andrew Wakefield claimed a direct link between autism and the MMR shot. Scientists repudiated the study (10 of its 13 contributors withdrew from it. In its wake, though, vaccination against measles dropped from 92% of Britain's population to 73%. In some London areas, the inoculation rate fell as low as 50%. The incidence of measles surged. "England and Wales had more cases of measles in 2006 and 2007 than in the previous 10 years combined." A great change in social behavior was afoot.

> "Data is not warm or kind. It is also, however, not cold or cruel. Assessing data and gathering facts are the only useful tools we have to judge whether a treatment succeeds or fails."

Vaccination has been around for a long time. Voltaire claimed that the ancient Chinese protected themselves against smallpox by inhaling a "dried powder of smallpox crusts." Thomas Jefferson had a slave inoculate his children against smallpox in the way of African tribal medicine. Benjamin Franklin opposed inoculation, but when his son died of smallpox, he became a supporter. In 1777, George Washington "ordered mandatory vaccination for every soldier."

> "People tend to see science through the prism of commerce."

By using vaccines, the developed world practically wiped out cholera, yellow fever, diphtheria, polio and mumps. Measles, which virtually vanished before the antivaccination movement, "infected nearly four million Americans annually until 1963, when a vaccine was introduced." Spending a dollar on an MMR vaccine now prevents some $20 worth of later medical expenses, but still vaccination rates fell. In response, health authorities held study after study to determine if a link existed among vaccination, thimerosal and autism. Cowed by strident antivaccination activists, the US National Academy of Science soft-pedaled its clear, evidence-based study concluding that no link exists between the MMR shot and autism. The emotional responses of parents of autistic children, plus a newly widespread lack of faith in doctors and scientific processes, enabled an epidemic of denialism to cloud this issue.

> "When people decide that science can't solve their problems, they reject its principles."

"People often cling to their initial response when they discover something profoundly disturbing, even if more compelling evidence emerges." Another National Academy of Science report, 2004's *Vaccines and Autism*, should have shut down the antivaccination push. The Center for Disease Control, the American Academy of Pediatrics and vaccination companies made a crucial misstep: Thinking it would assuage fears, they took thimerosal out of vaccines, though many studies vindicated it. This only inflamed suspicions anew. In 2009, the National Vaccine Injury Compensation Program's VICP court, which exists to try suits about vaccines, definitely denied any link between autism and vaccines. If not for denialism, this would be the end of the issue. But antivaccination advocates continue to proselytize, and once-vanquished diseases continue to rise.

Organic Food

Organic food has gone mainstream in America, where mass-marketers Walmart and Costco have become its two largest distributors. But organic versus nonorganic food is not the dietary battle Americans need to fight. The biggest killers in the US diet are "calories and diabetes and sugar," plus "mindless consumption." Organic food represents only 5% of the nation's diet, though Americans think it has more nutrients – as it may, but most of them already get all the nutrients they need. The world's starving billions, however, cannot meet the massive land and water requirements of organic farming. Their survival depends on hardy, big-yield bioengineered crops, like the 90% of US soybeans that comes from biotechnology. In sub-Saharan Africa, 75% of the growing land is played out, and more of the other 25% turns to desert every year. Livestock, a luxury for any culture, alters crop priorities in ways that work against feeding mass populations. "Livestock...consume 80% of the world's soybeans and more than half the corn." Producing a hamburger uses 1,300 gallons of fresh water. A change in dietary habits and crop patterns would do more to alleviate world hunger than any application of organic farming.

Vitamins and Supplements

Americans have always been suckers for snake oil. And they still are. Study after study demonstrates that vitamin supplements (as opposed to crucial vitamins obtained from food) offer no discernible health benefit. None. A study that followed 161,808 women for eight years "found no evidence for any benefit from multivitamin use." Multivitamins showed no measurable effect on heart attacks, blood clotting, strokes, breast cancer or colon cancer. Yet society persists in supporting a $100-million-dollar supplements industry. Take fish oil: Used as a supplement, it has no positive effect and it can be harmful in large doses. Studies of echinacea prove that it does not "lessen the duration or intensity of any symptom." But "belief outranks effectiveness" in an environment where "confusing popularity with authority is one of the hallmarks of denialism."

> "People want to blame something they can't understand, so they blame technology."

South Africa's experience demonstrated the tragic truth. Former president Thabo Mbeki refused to accept that HIV caused AIDS, and, therefore, would not allow his citizens to take the medicines that were saving AIDS sufferers worldwide. Mbeki read the antivirals as a Western plot and searched for a local, natural cure. He and his health minister decided upon lemon, garlic and herbs. A Harvard School of Public Health study determined that supplying antivirals to South African AIDS patients would have saved 365,000 lives.

Genomics: The Information in Your DNA

Genomics – the study of the structure of genes, how they interact and how scienctists might manipulate them – is the future of science and of medicine. However, purely genetic solutions raise tricky philosophical and legal questions, including the issue of race. For instance, in the US, Latinos of Puerto Rican ancestry suffer greatly from asthma while Latinos of Mexican heritage do not. To parse out all possible variables means studying genetic differences among people thought to be of the same race. Another odd example is that interferon works well against hepatitis C in Caucasians, but has no effect on those of African descent with the same syndrome.

> "Denialism is a virus. And viruses are contagious."

A variance in genetics means an inconsistency in how enzymes "process and eliminate drugs" from the body. Genetics play a huge role in people's propensity to contract different diseases. People who have "two copies of the APOE4 gene," for instance, are 15 times more likely to develop Alzheimer's. As the cost of studying each person's genetic portrait drops, medicine will become ever more individualized. Those who can afford a DNA scan will be able to obtain medical and preventive care specifically tailored to their genetic structure – depending on just how much about their likelihood of contracting any specific condition they want to know in advance. As genomics provide an increasingly clear picture of individual health and metabolism, each person's willingness to deny medical and scientific truth should diminish accordingly.

About the Author

Award-winning writer **Michael Specter** covers technology and science for *The New Yorker*, where he has been a staff writer since 1998.