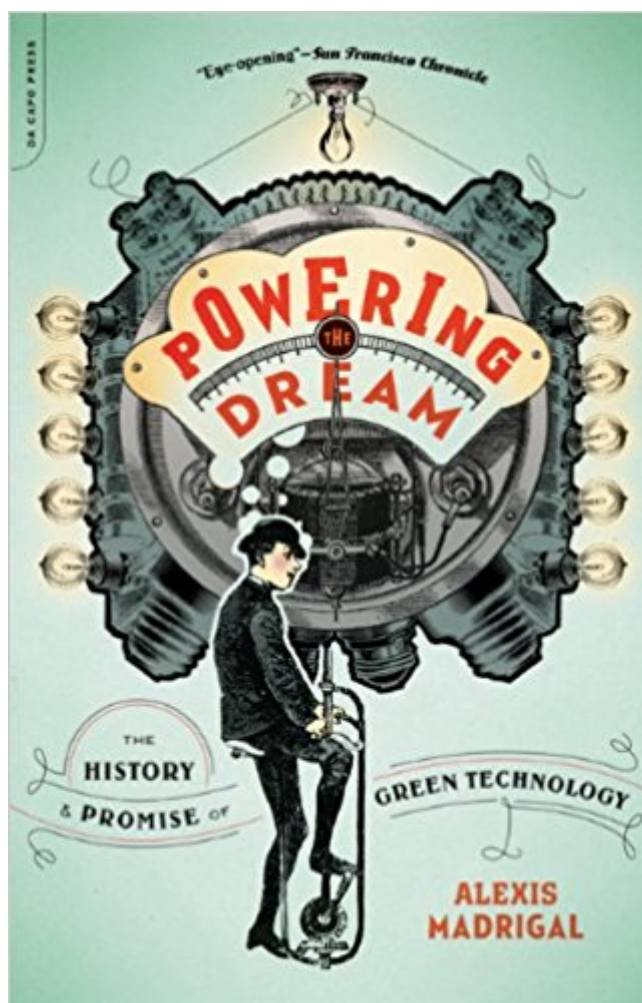


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# Powering The Dream: The History And Promise Of Green Technology



## Synopsis

Few today realize that America's relationship with green technology is far from a recent development. The truth is Americans have been inventing green for more than a century. Powering the Dream tells the fascinating stories of the brilliant, often irascible inventors who foresaw our current energy problems, tried to invent cheap and renewable solutions, and drew the blueprint for a green future.

## Book Information

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## Customer Reviews

InfoDad.com, 4/14/11 "Madrigal seems to understand better than most writers on this topic that capitalism itself can be the great growth engine producing better and greener technology" Madrigal's willingness to consider the many green-tech attempts of the past, most of them failed but so many of them fascinating, is a refreshing change from the doomsday scenarios so common in alternative-energy writing" His belief that solutions can be found, and that the past may hold the key to coming up with a better future, is salutary and most welcome. " PopMatters.com, 4/20/11 "Personable and engaging" Refreshingly, it's not a depressing, we've completely screwed up the planet kind of book. There's an optimism that shines through...In the end, Madrigal writes a book that works on many levels. While not particularly scholarly, his simple statements do ask audiences to think critically, his chapter openings are catchy, and his optimism gives readers hope that it's not too late to find greener technologies. " Internet Review of Books, 4/22/11 Kirkus, 3/1/11 "Eye-opening micro-histories

about American energy past, with an eye to the future...A well-told cautionary tale about the need for widespread renewable-energy production. • Conservation, March 2011 • It's refreshing to read a history book whose intent is to improve decisions in the present and near future • An able account of the very checkered history of green energy schemes in America • Madrigal has the best critique I've seen of the "appropriate technology" philosophy promoted by my Whole Earth Catalog in the 1970s • An admirable book. • • Booklist, 4/1/11 • Madrigal rises above politics to review the surprisingly long and fruitful history of renewable energy in the U.S. • He shows beyond a doubt that the past will lead the way to a greener future. • • Library Journal, 3/15/11 • Part history of America's use of green technologies, part history of our relationship with that technology, and part hope for the future • On all these counts, the book is successful • Recommended for general readers with an interest in America's past, present, and future relationship with green technology. • • A wonderfully interesting book, and while it may be in parts a cautionary tale about unintended consequences, it is also a valuable history lesson. And the depth of research is astounding, especially as the author connects information to illustrate how nearly all-things-energy came to be • While addressing readers in every-day language, Madrigal's index and bibliography (each with more than twenty pages of listings) provides evidence of the breadth of his scholarly research and the validity of his historical references • Madrigal also does an excellent job in outlining the characters behind technical innovation • To finish Powering the Dream is to find oneself optimistic, pessimistic, a bit cynical, and nursing a small flame of hope that the same hubris, ambition, and the desire to live a better life for ourselves and our children that got us into this mess will get us out. • St. Petersburg Times, 4/17/11 • Madrigal records a century and a half of American energy innovation "such as electric taxicabs in 1900" and imagines the future. • January, 4/20/11 • Madrigal skillfully uses stories from the past to illustrate both the follies and successes of the present. In doing so, he places some of the environmental madness we're experiencing now in perspective. • • Better batteries won't be enough to charge the future, argues Alexis Madrigal in the beautifully wrought Powering the Dream. With an eye to misfires in America's past • he astutely points to what it might take: technocrats wise enough to see that we need to reinvent not just our technology but our relationship with it. • OnEarth.org, 4/15/11 • [This book] may jolt many environmentalists • Madrigal's survey of our past failures to get renewable energy off the ground is endlessly provocative. • • TheAtlantic.com, 4/11/11 • Madrigal's tour of the forgotten history of green technology is more than just an entertaining jaunt back through time • The history he documents is instructive to our current energy policy debate. • • [An] excellent new book...Madrigal shows that American policy toward green energy has been a mess,

long before this new batch of Republicans went into Congress fixed on dismantling environmental protections.â New York Journal of Books, April 2011â In a world reeling from the news of the nuclear plant failures at Fukushima, no book could be more timely than Alexis Madrigalâs Powering the Dream. Headlines filled with nuclear disaster and soaring oil prices have reignited the energy debate while news stories about alternative energy focus almost exclusively on the sexiest new technology. Whatâs lacking is contextual background and perspective. Powering the Dream provides thatâ [This book is far from a dull scientific read. Mr. Madrigal is a storyteller. He seems naturally drawn to the drama of success and failure and the fascinating eccentrics and visionaries that taken part in the battle of energy technologiesâ [Those who are concerned about the future of energy and the environment will find Powering the Dream a very informative and useful resource.â Outside, May 2011 Bookforum, April/May 2011â Madrigal managesâ "without any gonzo shenanigansâ "to engage and sometimes even electrify the reader with lean and jaunty prose, skillful storytelling, analytic theorizing, and a proficiency in factual gee-whizzeryâ [He makes the dream of a perfect power source seem all the more urgent, now that we know for how long, and in how many past episodes, itâs been deferred.â Grist.org, 3/28/11â [An] absorbing, often astonishing new bookâ [Rather than rehash well-understood problems or relitigate well-entrenched debates, Madrigal tells stories, unlikely, idiosyncratic stories, about real human beingsâ [The book yields a continual sense of discovery, sometimes delight. Madrigal has produced a kind of anti-history: a chronicle of paths not taken, failed visionaries and cranks, near-misses and fiascos. Along the way there are lessons learned, but no Grand Theories or first principles. With epistemic humility that's rare in the green space, Madrigal picks through these events for observations about what seems to work and how we might avoid our past mistakes.â Mother Jones (website), 3/29/11â [Madrigal is] a master at autopsies of promising yet deceased technologies.â Time.com, 4/6/11 Hudson Valley News, 4/20/11â Inspiringâ [The first book to explore both the forgotten history and the visionary future of Americaâs green-tech innovators.â Cleveland Plain Dealer, 5/1/11â Well-thought-out ideas about how to advance low-cost green technology.â Print, 5/10/11â A quiet page-turner that anyone concerned with our future energy policyâ "or lack thereofâ "should readâ [Madrigal is a talented wordsmith and astute researcher with an eye for ferreting out the âneed-to-knowâ minutia in a complicated world of energy giants, green pioneers and international trading markets.â Blog Business World, 5/8/11â [An] eye opening and very engaging bookâ [A celebration of the spirit of innovation and its many successes and failuresâ [Well researchedâ [Fascinating and thought provokingâ [This book will change the way you think about green technology, and its past, present, and future.â Ode,

June 2011  
Quirky stories about individuals whose past inventions, often failures, anticipated many contemporary environmental solutions.

Alexis Madrigal is a senior editor at The Atlantic, where he launched their Technology Channel, and an award-winning former staff writer for Wired.com. He lives in Washington, DC.

A great read, very enjoyable and I learned a lot. A nice balance of stories and treatment of the technology. I never felt overwhelmed with the engineering detail that you sometimes get in histories of technology, a wide variety of topics and opinions maintain context and page-turning. The prose are fun and very readable. One observation is that Presidential administrations tend to get the praise and blame for funding, but we can't forget who controls the purse strings. My understanding is that a lot of the great post 73' oil crisis energy legislation originated in a very active House Science & Technology committee. Highly recommend to anyone interested in the history of harnessing the energy of the sun.

Madrigal is a terrific author, as his work in The Atlantic reinforces on a regular basis. In Powering The Dream, he continues the tradition of investigative reporting spun with a great historical narrative. A must read for anyone interested in Green Technology, the environmental movement in the U.S., or energy in general.

Shows you how the market can be so manipulative that even superior technology can fail. Recommended read if you are interested in green energy yet don't understand why it hasn't take off yet.

I've been following Madrigal's notes for this book, at the blog greentechnistory.com, possibly since its inception, however many years ago that was. From the beginning, this book project has been, to my knowledge, utterly unique: a view on modern cleantech / clean energy through the lens of history. I just don't think it had occurred to many of us that clean energy -- which seems so newfangled -- had a long history. But in the pages of Powering The Dream we discover the earliest electric cars -- which were contemporaneous with the first conventional, gasoline-powered cars. There are old, even ancient, systems for harvesting wind, waves, tides; there's the first janky, not-quite-ready for prime time nuclear power plants. Here's the nub of this book, the lesson we should all take to heart: the history of energy in this country, on this planet, even, is highly path

dependent. In other words, governments and individuals made decisions to pursue some paths and not others. Renewables are hard, but for entirely different reasons, so are conventional sources of energy. By showing us a past full of failed (and occasionally, successful) experiments in harvesting energy from anyplace but the sunlight stored in fossil fuel reserves, *Powering the Dream* invites us to play what-if: What if we'd taken a different energy path. In an age of climate change and dwindling supplies of (some) fossil fuels, *Powering the Dream* is a helpful, hopeful opposite to an awful lot of either groundlessly sunny optimism or dire predictions of collapse. It posits, simply, that the pool of technologies from which we can draw energy is bigger than we typically imagine, and that in the experiments of the past are the foundations of the energy sources of the future.

If the future of clean energy technology hopes to successfully enable our society's transition away from fossil fuels it will have to remember all the moments when a more perfect power stood poised to usurp a constant flow of coal and oil only to find itself denied the spotlight. The American story is one of a philosophy reinforced through access to cheap energy and burgeoned by technological innovation. In *Powering the Dream*, Alexis Madrigal provides a conscience for the green energy sector, one that threatens to be swept away in a bubble of financial instrumentation hoping for a breakthrough rather than sustained investment and incremental improvement. Where software and computing has been continually enhanced through reaffirmations of Moore's Law, will applying the same philosophy to energy lead to suffering Moore's curse? Though few advocating for an innovation based solution to climate change through access to the infinite power of the wind and sun realize they are echoing the words of an early 19th century techno-utopian they do so all the same, carrying John Etzler's biases and assumptions along with them. The innovative and shiny energy technologies touted by politicians and slick commercials as solutions to our ability to 'win the future' have been with us for our history as a nation. We had electric cars with a streamlined swap-out infrastructure for fresh batteries at the end of the 19th century and megawatt scale wind turbines in the 1940s. The history of fossil fuel alternatives reveal a world of missed opportunities and frustrating political shortsightedness. When fundamental rules of the global energy paradigm changed in the 1970s the problem of depleting fossil fuels was recognized and the United States responded by founding the Solar Energy Research Institute, developing technology to drop the cost of electricity generated by photovoltaics from \$100/watt in 1970 to \$10/watt in 1973 and establishing efficiency standards for appliances. The National Renewable Energy Lab's Aquatic Species Program built a catalogue of algae that could have provided a foundation for commercial scale algal biofuels with only the equivalent of \$100 million in total funding, to put that in perspective Exxon

made \$142 million on each day of 2008. When federal support for the program dried up in 1981, the project was scrapped, knowledge faded away and many of the algal strains selected for their efficiency were lost. A decade of progress was undermined when the Reagan administration cut federal funds that would have allowed the clean energy sector to survive American ignorance towards energy when it comes cheaply. While federal policies threw up roadblocks, so did state level politics. Solar thermal power provides the greatest hope for inexpensive and reliable utility-scale energy from the sun, a company named Luz built many plants based on the technology in the 1980s. Just as Luz was at the point of enabling solar thermal electricity to compete with fossil fuels on price, unfortunate timing in the California legislature killed the laws allowing Luz's business models to work. The company went bankrupt and the solar thermal industry stalled for decades. Through these unfortunate stories we see that energy technologies aren't selected for efficiency and rationality but shifted through bizarre economics that destroyed knowledge and postponed innovation, costing valuable time in the race to beat the depletion of global oil fields. The search for a technological breakthrough that magically makes the blowing wind or the sun's luminosity into a miracle energy source is exposed in the absurdity of Kenetech's rise and fall. Claiming a rapid advance in turbine technology that would allow wind to compete with fossil fuels, Kenetech raised tremendous capital through grandiose promises and collapsed when its poor product literally fell apart. A rapid boom and bust cycle for Kenetech exemplified the American wind sector, all while years of sustained Dutch investment had created a robust wind industry in the Netherlands with a reliable product. Has the American approach to innovation and business finally met its match with the challenge of energy? Or, did more than a century of attempts at alternative energy build the foundation for a national energy revolution? Powering the Dream doesn't explicitly come down on either side of these questions but outlines a fascinating and overlooked history of failures and successes as they were impeded by regulatory frameworks and politics. Where our view of environmentalism is often limited to a perception of pristine nature fighting fossil fueled industrialization, perhaps green energy will finally succeed by uniting the patience of the ecologist with the creativity of the engineer.

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