

# Matthew's Book Club Summary #14

**By:** Matthew Klippenstein

**Date:** March 18, 2010

**Title:** Energy Shift

The book club started as an informal, fun way to explore and consider business ideas relevant to our work with colleagues. The format consists of one person (usually Matthew) reading a book and writing a summary for discussion during team meetings. This allows the other team members to benefit from the book's insights, without carving time in their schedule to read the full volume.

The idea was to summarize *an interesting part* of each chapter in a paragraph or two, and where applicable, note how these could be relevant to the workplace. This provides the reviewer with practise condensing a mass of data into a few pieces of key information: an underappreciated skill. The reviews are meant to be accurate but light-hearted, on the assumption that people learn more when they're having fun.

Matthew's company gave permission for these to be distributed to non-employees as long as the employer-specific content was removed, for which he is sincerely appreciative.

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## **About the author:**

Eric Spiegel is an ambitious expert in the energy sector. How do we know? Because less than a year after he co-wrote this book for Booz & Company (that's Booz without the "e"), he accepted a job as CEO of Siemens America.

The book is intended to be a "one-stop resource for busy executives and senior policymakers" who need to know The Big Picture when it comes to energy. In other words, it's heavy on the broad brushstrokes, and light on the nitty-gritty. Those kinds of books are always easiest to write. ☺

It was selected because the company is trying to have its technology become part of the global energy mix. As such, it would help to know what we're trying to mix into.

Ch	Title	Summary
1	Looking Beyond Upheaval	<p>They burst the bubble of a bunch of myths, among them:</p> <p>MYTH: the world is running out of oil.  FACT: the world is only running out of cheap oil. There's plenty, but it's more expensive to extract.</p> <p>ALSO: 95% of transportation energy comes from oil, but that only consumes half the world's production. The other half goes for electricity, petrochemicals, and other stuff.</p> <p>MYTH: biofuels are the green solution for transportation.  FACT: biofuels can't be scaled up, and reduce GHG emissions only slightly compared to oil. (see <a href="http://en.wikipedia.org/wiki/File:BiodieselsCountryOfOrigin.jpg">http://en.wikipedia.org/wiki/File:BiodieselsCountryOfOrigin.jpg</a>)</p> <p>MYTH: renewables (solar, wind, geothermal) can provide all our energy needs in 20 years.  FACT: they aren't scaling up fast enough. In 2030 fossil fuels will still dominate.</p> <p>MYTH: nuclear energy is dead.  FACT: it'll stick around awhile.</p>
2	The Relentless Demand for Energy	<p>A boring chapter. World energy consumption has increased 2.6% per year for the past fifty years. Demand will be even higher, as Asia becomes wealthier and people there use more energy.</p> <p><i>The West is aging and has debt issues. Economic setbacks would reduce energy demand: in 2008 recession, global electricity use dropped year-on-year for the first time since World War II.</i></p>
3	Oil's Production Plateau	<p>The easy oil is gone. Someone from Alberta writes that the public and private sector invested \$800 million over twenty years, to make the oil sands viable. See, even they had long commercialization timelines! ☺</p>

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4	Transportation: Tapering Off Oil	<p>Even if everything goes right for battery-electrics, biofuels and fuel cells, most cars will be powered by oil twenty years from now.</p> <p><i>There are ~700 million cars in the world and 50 million are sold each year. Even if every single new car was non-oil based, it'd take 14 years to switch the fleet over (and that's if one old car was retired for each new one purchased, and no net first-time car buyers!)</i></p>
5	Coal's Questionable Future	<p>There's a lot of coal, and the world's biggest energy users (US, China) have lots of reserves. Coal emits 2-3x the CO<sub>2</sub> per unit of energy as natural gas (oil is about 1.2x natural gas).</p> <p>The only thing likely to stop coal use, is legislation... or the fear of legislation.</p>
6	The Promise of Natural Gas	<p>There was relatively lots of natural gas, even before the recent and substantial shale gas discoveries. LNG terminals mean that gas is becoming a global commodity (except in North America – no terminals).</p>
7	The Uncertain Path to Clean Energy	<p>Nuclear won't disappear, but probably won't grow much. Only one company still manufactures the containment vessels, most employees (and reactors!) are nearing retirement, and new plants take 10+ years to build. And recent costs have been astronomical.</p> <p>Wind: proponents want it to provide 10% of the world electricity by 2020. <i>It provides almost 2% now. Growth of 30% per year will get it there.</i></p> <p>Solar: growing faster than wind, but from a much smaller base. [0.2%]</p> <p>Biomass: co-firing for coal plants. <i>e.g. Ontario wants to convert coal plants to 100% biomass:</i> <a href="http://tinyurl.com/ydysox8">http://tinyurl.com/ydysox8</a></p>

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8	The Power Generation Puzzle	The author hedges his bets, says nothing of value. "Maybe one, maybe the other..."
9	Conclusion: Approaching the Energy Shift	<p>This largely reiterates the above. Maybe it's useful for executives, but technical folk will be bored.</p> <p>3 major factors will influence energy decisions:</p> <ul style="list-style-type: none"><li>- GHG regulation</li><li>- energy security questions</li><li>- tech development / cost curves</li></ul> <p>The shift – from fossil fuel based energy to non-fossil-fuel energy – will create new titans. Incumbents rarely stay dominant in the next paradigm shift. (e.g. Google is the Microsoft of search)</p>