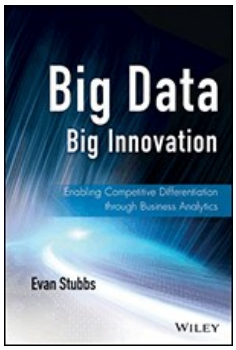

Big Data, Big Innovation: Enabling Competitive Differentiation through Business Analytics

by Evan Stubbs

Chapter 1: Lead or Get Out of the Way

Overview

The greatest leaders are as much a product of their time as they are a reflection of their skill. Without Hitler, what would we remember of Churchill? Without Xerxes, the legend of the 300 Spartans led by Leonidas would never have happened. Without the right context, even those with the greatest potential remain part of the peanut gallery, shouting epitaphs at those who wear the limelight.

It's in times of crisis that leaders emerge—times of change, times like the present.

The Future is Now

Our world is a fascinating one; we're at an inflection point, one defined by big data and business analytics. What was once science fiction is becoming reality. Let's be frank though—that sounds pretty hackneyed. After all, hasn't *everything* been science fiction once?

This is true. It's also true, however, that science fiction is a deep well to draw from. A well where some ideas are so fantastical that it seems impossible that they'll ever become reality. Asimov, a science fiction writer, for example, wrote speculatively of "psychohistory" in his *Foundation* series.[1] A form of mathematical sociology, scientists would use massive amounts of behavioral information to predict the future. Through doing so, they were able to foresee the rise and fall of empires thousands of years in advance.

As with all good stories, power always comes with constraints. Accurate predictions were only possible given two conditions. First, the population whose behaviors were to be modeled needed to be sufficiently large—too small, and the predictions would become error-prone. Second, the population being modeled could not know it was being modeled. After all, people might change what they were doing if they knew they were being watched.

It seems fantastical, doesn't it? Still, this is fundamentally the promise of big data. We know more about the world than ever before. Many of those being watched are still unaware of how much things have changed. Between national intelligence, security leaks, and the potential of metadata, most of us are only just realizing *how much* information is out there. And, by analyzing that data, we have the power to predict the future in ways that people still can't believe. Amazon, for example, took out a patent in late 2013 on a process to ship your goods *before* you've ordered them.[2] Big data offers unparalleled insights and predictive abilities, but only to those who know how to leverage it. For most, getting value from big data is a challenge. However, the reflection of every challenge is opportunity.

Things have changed. And, it's a rare leader who isn't aware he or she needs a plan to realize this opportunity. However, there's a twist. It's not just a good idea. It's not something that's *going* to happen. It's happening *now*.

Catalyzed by books such as *Thinking, Fast and Slow*[3] and *Nudge*,[4] behavioral economics is already blending data with heuristics and psychology to create new models to describe and influence consumer behavior. Recognizing the power of a scientific approach to analyzing information, the U.K. government established a dedicated Behavioral Insights team to take advantage of these ideas. Formed in 2010 and nicknamed the "nudge unit," their goal was to blend quantitative and qualitative techniques to improve policy design and delivery.[5]

The model has proved to be a popular one. In late 2012, the Behavioral Insights Team went global through partnership with the government of New South Wales in Australia. In mid-2013, the Obama administration appointed Yale graduate Maya Shankar to create a similar task force.

Paul Krugman, winner of the Nobel Memorial Prize for Economic Sciences, credits Asimov's vision of a mathematical sociology as inspiring him to enter economics.[6] This vision of a future shaped by our ability to analyze information is becoming real. And, it's changing the face of medicine, policy, and business. Thanks to constantly increasing analytical horsepower and falling storage costs, the cost of sequencing the genome has dropped from US$100 million in 2001 to just over US$8,000 in 2013.[7] More than just being cheaper, every decline in sequencing costs puts us that much closer to truly personalized medicine.

Even the social web is sparking innovation. Facebook's acquisition of Oculus, Instagram, and Whatsapp wasn't just an attempt to diversify. It was a deliberate attempt to stay engaged across all channels *all the time*. With over a billion people now on Facebook, it's amazing what one can find by scanning personal interactions. Organizations like the United Nations

(UN) are tracking disease and unemployment in real time through the large-scale analysis of social media.[8] The Advanced Computing Center at the University of Vermont is using tens of millions of geolocated tweets in its Hedonometer project to map happiness levels in cities across the United States.[9]

The future is closer than it's ever been. Taking the leap to Asimov's psychohistory isn't as farfetched as it once might have seemed.

[1]Isaac Asimov, *Foundation* (Garden City, NY: Doubleday, 1951).

[2]U.S. Patent #8,615,473 B2.

[3]Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus & Giroux, 2011).

[4]Richard H. Thaler and Cass R. Sunstein, *Nudge: Improving Decisions about Health, Wealth, and Happiness* (New Haven, CT: Yale University Press, 2008).

[5]Cabinet Office, "Behavioural Insights Team," www.gov.uk/government/organisations/behavioural-insights-team (accessed Jan. 11, 2014).

[6]Paul Krugman, "Paul Krugman: Asimov's Foundation Novels Grounded My Economics," *Guardian News and Media*, Dec. 4, 2012, www.theguardian.com/books/2012/dec/04/paul-krugman-asimov-economics (accessed Jan. 11, 2014).

[7]National Human Genome Research Institute, "DNA Sequencing Costs," www.genome.gov/sequencingcosts (accessed Jan. 11, 2014).

[8]United Nations Global Pulse, www.unglobalpulse.org (accessed Jan. 11, 2014).

[9]Hedonometer, "Daily Happiness Averages for Twitter, September 2008 to Present," www.hedonometer.org/index.html (accessed Jan. 11, 2014).

The Secret is Leadership

It's hard to ignore the potential of big data. Realizing it, though, that's tricky. For every successful project there's a mountain of failed projects. Few in the field have escaped completely unscathed. Anyone who says she has probably hasn't been trying hard enough.

If you're reading this book, it's a fair assumption that you're interested in linking big data to innovation. The cornerstone to this is business analytics. Big data and business analytics go together hand in glove. Without data, there can be no analysis. And without business analytics, big data is just noise. Together, they offer the potential for innovation. Innovation, however, requires change, and change is impossible without leadership.

Without value, all of this is meaningless. Big data has the potential to make things more efficient. It can generate returns. It might simply answer "the hard questions" that no one knows the solution to. Some of these benefits lead to internal value, such as productivity. Others lead to external value, such as revenue. Still others can lead to total reinvention through dynamic change. Not all of these are complementary. Because of this, harnessing the full potential of big data involves walking the tightrope between the dynamism of change and the stability of continuous improvement.

The secret behind success is leadership. Without it, it's impossible to balance the opportunity for reinvention with the benefits of continual improvement. A strong leader can do more with access to limited capability than the best team can without a leader.

We don't yet know the final impact of big data and business analytics. We do know, however, that it *will* change things. Change in itself isn't new; we already live in a world where change has become so normal that it's almost invisible. However, for reasons that are covered in the next chapter, big data is "bigger" than this. It's likely to cause large-scale industrial and social disruption not seen since the industrial revolution, not because of what it is but because of what it represents.

Our future may be one where the economy only requires a tenth of the current workforce. Guided by the use of operational analytics and intelligent algorithms, it might lead to large-scale social unrest due to chronic unemployment and wealth

centralization. It may be one where privacy becomes meaningless and the most personal aspects of our lives become public property. It may be one where *precrime*, the ability to predict crimes before they occur, becomes a reality.[10]

These may seem absurd, but, they're already happening. Through automating analytics, some organizations are able to achieve orders of magnitude of higher levels of productivity than their peers. The impact this will have on the labor market is unclear. Katz, a Harvard economist, suggests that even though there's no precedent for a structural change in the demand for jobs, today's digital technologies present many unanswered questions.[11] Historically, technological innovation has almost always led to greater long-run employment. Thanks to the potential of intelligent systems, the biggest question is this: Will the future reflect the past? It's possible, as far-fetched as it might sound, that the entire middle-skilled strata of the labor market may simply become unemployable.[12]

The division between the "haves" and "have-nots" continues to grow. Sharing selfies and personal details has become the norm on SnapChat, Facebook, and a multitude of other social media sites. Through analyzing interests, social networks, and behavioral patterns, organizations such as Google, LinkedIn, and Facebook have become experts in guessing who you might know. And, some justice departments are already experimenting with predictive analytics to better understand the likelihood of recidivism for offenses such as driving under the influence or domestic violence.

The world doesn't need custodians to navigate this period of rapid change. It needs leaders—people with the confidence, vision, and ability to redefine their world. Whether it's for profit or for the common good, the future is business analytics.

[10]Philip K. Dick, *The Minority Report* (New York: Pantheon, 2002).

[11]David Rotman, "How Technology Is Destroying Jobs," *MIT Technology Review*, Jun. 12, 2013, www.technologyreview.com/featuredstory/515926/how-technology-is-destroying-jobs (accessed Mar. 27, 2014).

[12]"The Onrushing Wave," *Economist* (Jan. 18, 2014), www.economist.com/news/briefing/21594264-previous-technological-innovation-has-always-delivered-more-long-run-employment-not-less (accessed Mar. 27, 2014).

Notes

1. Isaac Asimov, *Foundation* (Garden City, NY: Doubleday, 1951).

2. U.S. Patent #8,615,473 B2.

3. Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus & Giroux, 2011).

4. Richard H. Thaler and Cass R. Sunstein, *Nudge: Improving Decisions about Health, Wealth, and Happiness* (New Haven, CT: Yale University Press, 2008).

5. Cabinet Office, "Behavioural Insights Team," www.gov.uk/government/organisations/behavioural-insights-team (accessed Jan. 11, 2014).

6. Paul Krugman, "Paul Krugman: Asimov's Foundation Novels Grounded My Economics," *Guardian News and Media*, Dec. 4, 2012, www.theguardian.com/books/2012/dec/04/paul-krugman-asimov-economics (accessed Jan. 11, 2014).

7. National Human Genome Research Institute, "DNA Sequencing Costs," www.genome.gov/sequencingcosts (accessed Jan. 11, 2014).

8. United Nations Global Pulse, www.unglobalpulse.org (accessed Jan. 11, 2014).

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10. Philip K. Dick, *The Minority Report* (New York: Pantheon, 2002).

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12. "The Onrushing Wave," *Economist* (Jan. 18, 2014), www.economist.com/news/briefing/21594264-previous-technological-innovation-has-always-delivered-more-long-run-employment-not-less (accessed Mar. 27, 2014).