

“Core Curriculum”

I distributed this Epsilon Theory reading list last summer, but it never made it to the website. Given the volume of requests I receive for this and seeing as how the direct subscriber list is about 10x what it was last summer I figured it was high time to reprint.

Please feel free to forward this email to whomever you think might be interested, and all prior notes are available on the [Epsilon Theory website](#). If you're receiving this note via forwarded email and you're not yet on the direct distribution list (and you find it a worthwhile read), I'd appreciate the opportunity to [add you to the list](#). I'm building the Adaptive Investing framework in plain sight and in real time through these notes, and I'd welcome the widest possible participation, as well as your thoughts and comments. As always, if you're no longer interested in receiving these notes, please reply to this email to that effect.

All the best,
Ben

I haven't any right to criticize books, and I don't do it except when I hate them. I often want to criticize Jane Austen, but her books madden me so that I can't conceal my frenzy from the reader; and therefore I have to stop every time I begin. Every time I read *Pride and Prejudice* I want to dig her up and beat her over the skull with her own shin-bone.

– Mark Twain

Once upon a time in the dead of winter in the Dakota Territory, Theodore Roosevelt took off in a makeshift boat down the Little Missouri River in pursuit of a couple of thieves who had stolen his prized rowboat. After several days on the river, he caught up and got the draw on them with his trusty Winchester, at which point they surrendered. Then Roosevelt set off in a borrowed wagon to haul the thieves cross-country to justice. They headed across the snow-covered wastes of the Badlands to the railhead at Dickinson, and Roosevelt walked the whole way, the entire 40 miles. It was an astonishing feat, what might be called a defining moment in Roosevelt's eventful life. But what makes it especially memorable is that during that time, he managed to read all of *Anna Karenina*. I often think of that when I hear people say they haven't time to read.

– David McCullough

You need to read more science fiction. Nobody who reads science fiction comes out with this crap about the end of history.

– Iain Banks

A scholar is just a library's way of making another library.

– Dan Dennett, *“Consciousness Explained”*

I still feel – kind of temporary about myself.

– Willy Loman (*“Death of a Salesman”*, by Arthur Miller)

I've had dozens of requests to put together a reading list for Epsilon Theory, and I've resisted. There's something uncomfortable about telling people what they should read, of recommending this book but not that one to *you* because it happened to resonate with *me*. Also, as Mark Twain said, I haven't any right to criticize other authors (unless I really, really hate their books!), and I have zero interest in engaging in the all-too-familiar academic exercise of dueling criticism. Been there, done that.

But the roads I'm trying to explore with Epsilon Theory are not the commonly traveled paths of investment theory and practice, and I can appreciate that it would be useful for my readers to have some sort of field guide for this unfamiliar territory. And from a personal perspective, it's more than just comforting to compile a list like this. Books provide grounding. They help us feel less temporary about ourselves, to use Willy Loman's memorable phrase, and I'm certainly no exception to that. So with the caveat that this is an entirely impressionistic and non-comprehensive exercise in what has been useful for my personal intellectual grounding, and should be thought of as pointing you to a shelf in the library from which you might want to engage in your own exercise in discovery, here goes ...

Statistics and Econometric Analysis

Edward Tufte is best known today for his books on information display – *The Visual Display of Quantitative Information*, 2nd ed. (2001), *Envisioning Information* (1990), *Visual Explanations: Images and Quantities, Evidence and Narrative* (1997), etc. These books are amazing in every way, both as resource and as inspiration. But less well known is Tufte's academic career as a statistician at Princeton's Woodrow Wilson School, where he collaborated with one of the founders of Information Theory, John Tukey. In 1974 Tufte wrote what I believe is the single best book in explaining both the basic techniques and the meaning of applied statistics – *Data Analysis for Politics and Policy*. Whether you're a newbie to statistical applications or a Ph.D in econometrics, this is an incredibly useful book (and although out of print, there are plenty of used copies circulating on Amazon).

I've mentioned the work of Gary King, Director of Harvard's Institute for Quantitative Social Science, in my note [Rise of the Machines](#). If you're already a fluent speaker of the language of econometrics, his work on ecological inference and likelihood functions is both groundbreaking and extremely useful. But one of King's great skills is his ability to apply econometric techniques to pretty much any area of inquiry, including fields of study that, for whatever reason, tend to be strangers to this methodology.

King's book with Robert Keohane and Sid Verba – *Designing Social Inquiry: Scientific Inference in Qualitative Research* (1994) – is an excellent read for anyone who wants to think more rigorously about causality and inference in markets, politics, and our social lives. This is not a statistics book. It's a how-to-think-about-statistics book.

Game Theory and Information Theory

The classic primer on game theory is *Games and Decisions: Introduction and Critical Survey*, by Duncan Luce and Howard Raiffa. Originally published in 1957, the 1989 edition is still in print, still assigned in courses all over the world, and is still the most comprehensive work on game theory for non-mathematicians. If you're really interested in game theory, you must have this book. Other classic books on game theory include Robert Axelrod's *Evolution of Cooperation* and Thomas Schelling's *The Strategy of Conflict*. These are wonderful books, full of real-life examples of game theoretic applications. But if you only have time for one classic book on game theory, I'd recommend William Riker's *The Art of Political Manipulation* (1986). The chapter on Abraham Lincoln and the strategic decision-making involved with the Lincoln-Douglas debates is alone worth the price of admission.

As for information theory, the obvious classic is Claude Shannon's *The Mathematical Theory of Communication*, which served as the midwife for this entire field. It's for the really serious student, though, the equivalent of reading Von Neumann and Morgenstern to learn about game theory. Much more accessible are two books by James Gleick: *Chaos* (1987) and *The Information* (2012). Thinking about the world in terms of information and subjective probabilities goes back at least to the 18th century work of Thomas Bayes, and two recent works – Nate Silver's *The Signal and the Noise* (2012) and Sharon McGrayne's *The Theory That Would Not Die* (2011) do a Gleick-ian job (high praise indeed!) of making this perspective accessible for the non-specialist.

The game and information theoretic research that I'm finding most useful today is not written by economists or political scientists, but by linguists and biologists. There's a scope and a sweep to this work, as well as an explicit incorporation of evolutionary theory, that I find extremely useful. David Lewis's book *Convention* (1969) is a good example of this, as he is trying to explain the development of social coordination solely with the tools of strategic decision-making under informational uncertainty (game theory), without resorting to the *deus ex machina* of human exceptionalism or consciousness.

There's nothing special about the human animal in this perspective, no sense in which some unique reasoning capacity has created this convention that is more True with a capital T than that convention. In *Signals* (2010), Brian Skyrms takes the Convention games developed by Lewis to a new level of usefulness by directly incorporating evolutionary models of learning, showing how "communication and coordination of action are different aspects of the flow of information, and are both affected by signals." It's a dense book in parts, to be sure, but worth the effort. Markets are just as much a social exercise in communication and coordination as language, and what linguists call Convention is what economists call Common Knowledge. I think that pretty much everything that Lewis and Skyrms describe generically for language can be transferred to a better understanding of markets ... there's a lot that can be mined from this work even if it never talks about markets directly.

Markets and Risk

Of course, there are some authors that make explicit the connection between markets and either game theoretic or information theoretic concepts of risk, and they deserve special mention. Most of these will always be familiar to Epsilon Theory readers, so I'll just list them here in no particular order. Again, this is not intended to be a comprehensive list, just what has been meaningful to me!

- John Maynard Keynes, *The General Theory of Employment, Interest, and Money* (1936)
- George Soros, *The Alchemy of Finance* (1987)
- Benoit Mandelbrot, *The (Mis)behavior of Markets* (2004)
- William Poundstone, *Fortune's Formula* (2005)
- Peter Bernstein, *Against the Gods* (1996)
- Nassim Taleb, *Fooled by Randomness* (2004)

Also, each of these authors has written several books, each useful in its own way. Enjoy!

Behavior and Human Nature

Well ... this is obviously a rather large area of inquiry, so I just want to note a couple of authors who are directly relevant to the Epsilon Theory perspective on markets.

First, Daniel Kahneman and Amos Tversky pretty much invented the modern academic study of behavioral economics, and their core book is an edited collection of papers (along with Paul Slovic)

titled *Judgment under Uncertainty: Heuristics and Biases* (1982). It's still in print. More recently Kahneman wrote *Thinking, Fast and Slow* (2011), which covers most of the ground of *Judgment under Uncertainty* but in a much more entertaining fashion.

Second, you can't have a conversation about human behavior without discussing the work of E.O. Wilson. While it's not as directly applicable to Epsilon Theory as the linguistic research of Brian Skyrms, Wilson's work is formed on the same foundation of evolutionary theory and an insistence on seeing the human animal as just that and nothing more (or less). I defy you to read *The Social Conquest of Earth* (2012) and not think differently about the world.

Third, it would take another three pages of dense writing to engage with the intense academic debate regarding the fundamental nature of human consciousness and, by extension, human behavior and human decision-making. In a nutshell, the argument is over whether any aspect of the human mind is separate from the collection of neurons and engrams and chemicals that make up a human brain. The most outspoken proponent of the "no" position is Dan Dennett, and in books like *Consciousness Explained* (1992) and *Darwin's Dangerous Idea* (1996) he puts forward an argument for an entirely empirical and naturalist view of the human mind that I find compelling. Dennett is an accessible writer for the non-academic, but even better is Giulio Tononi, a neuroscientist at the University of Wisconsin, who achieved in *Phi: A Voyage from the Brain to the Soul* (2012) a beautiful (there's no other word for it) exposition of the naturalist view of human consciousness.

Finally, I'd be remiss if I didn't mention a couple of historians who continue to be instrumental in developing my perspective on human nature and social behavior. As with the Market and Risk section I'll just put this highly non-comprehensive list out there without comment.

- Robert Caro, *The Power Broker* (1975)
- Steven Englund, *Napoleon: A Political Biography* (2005)
- David McCullough, *The Greater Journey: Americans in Paris* (2012)
- Amity Shlaes, *The Forgotten Man* (2008)
- Liaquat Ahamed, *Lords of Finance* (2009)

Narrative

The important role of Narrative is a common thread throughout the Epsilon Theory notes, and in some ways it might be the most original concept I've developed for an improved understanding of markets. But it's also the least amenable to a standard bibliography.

There's a strong post-modern (in the academic sense of the word) component to any evaluation of Narrative, as it pervades the work of authors like Michel Foucault and Jean Baudrillard, but I have a hard time recommending their books. Do I think that Foucault and Baudrillard have important things to say, things that are relevant to a real-world investor in 2013? Yes, I do. Foucault's *Discipline and Punish* (1995), for example, is a meaningful book, not only for the ostensible topic – how the social institution of the Prison was constructed on the basis of Narratives that served the interests of the powerful – but for how all social institutions, such as the Corporation and the Market, are similarly constructed on the back of similar Narratives. Those Narratives change over time, creating structural risks in the institutions that seem so permanent to anyone immersed in those institutions, and that's definitely relevant to every investor. Unfortunately, there's an intentional obtuseness and opacity to the language spoken in these self-consciously post-modern projects that make them inaccessible. These books are written as an enormous conceit, one which masks their useful embedded signals. So if you have a year to spare and can tolerate impenetrable language mazes ... then yes, I heartily recommend Baudrillard's *Simulacra and Simulation* (1995). Otherwise, not so much. The best I can do on this front is to take a useful concept from the post-modern canon – Foucault's use of Bentham's idea of the Panopticon, for example – and try to make it relevant in a future note.

There's a better way to develop a sensitivity to the role of Narrative in markets than reading Baudrillard, I think, and it takes two forms.

First, I think it's important to read as much non-mediated history as possible. Peter Vansittart wrote two excellent books – *Voices 1870-1914* (1986) and *Voices from the Great War* (1985) – where he compiled as many written excerpts as he could find from both the famous and the ordinary as they experienced a world in structural flux. Studs Terkel did much the same with *The Good War: An Oral History of World War II* (1997) and *Hard Times: An Oral History of the Great Depression* (2005). Is there some degree of mediation in the compilation of these excerpts or the construction of these oral histories? Of course. But all the same you get a much more unvarnished picture of what it *meant* to

live in those times, and comparing that picture with what “history” has taught us will make you a much more active and aware consumer of mediated history today.

Second, I think it’s important to know what the Stories are. This has a serious component – I think that I’ve read almost everything Joseph Campbell has written (and that’s a lot!) – but it also has a component that will strike some as flaky or less-than-serious. I read a lot of science fiction. I read a lot of comic books. To be sure, there’s an enormous range in quality in both of these fictional forms. For every Iain Banks, Neil Gaiman, or Mike Carey there are dozens of eminently forgettable sci-fi and comic authors, and the truth is that not everything written by Banks, Gaiman, and Carey is that memorable. But it’s in the consistent if not constant exposure to the Stories in all sorts of different guises, forms, and formats – some well-constructed, most less so – that one gains an appreciation for how vital and present the Stories are in the nightly news and the daily CNBC wrap-up of market events. Inside every Narrative is a Story, just wrapped up in a different set of events. The human mind may be a collection of neurons, engrams, and chemicals, but human society is in large part of collection of Narratives. It’s the Stories we tell ourselves that keep us together, and we tell the same Stories over and over, from the cradle to the grave. I think it’s important to maintain an awareness of those Stories and that aspect of social construction in our adult lives, and I am certain that I’m a better investor for it. As C.S. Lewis, who forgot more Stories than most of us will ever know, wrote “No book is really worth reading at the age of ten which is not equally – and often far more – worth reading at the age of fifty and beyond.” Amen, brother Lewis!

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