Moshe'z Reading

Moshe Zadka

CONTENTS

Some public notes about the books Moshe reads.

ONE

WORDS OF RADIANCE

Obvious spoiler warning is obvious.

Words of Radiance is the second book in Brandon Sanderson Stormlight Archive series. As always with Brandon Sanderson:

- There are a lot of interleaving stories

- The magic system is uniquely tailored to the environment.

This is the first series in which he has a non-human race, the Parshendi/Parshmen.

If the previous book is the one where the characters who have powers *discover* them, this book is about a "coming out". This book is the one that pays off most of the mysteries from the previous one – the per-knights-radiant-order spren kind and how they relate to the power, what are the shardblades (dead spren except. . .), why did Syl insist that the assassin in white is *not* a Knight radiant, etc.

TWO

MAKING GREAT DECISIONS

This book is a weird mix: it teaches important techniques for making good decisions with the most horrifying example.

For example, it advises thinking carefully about the consequences of decisions. It show cases this idea by talking about a time one of the author has "hired away" someone from a client, and the client retaliated by refusing to work with him. The person who was "hired away", presumably for more money, has no role in this story except for an object. How would he feel about the story about the regret the author feels for offering him a well-paying well-deserved job? Who cares!

SOFTWARE ABSTRACTIONS

This book covers the language `Alloy` and what to use it for. I have complicated feelings about formal methods. It would be cool to find a way to decrease software defects: the so-called "silver bullet".

The first problem is that formal methods mostly don't try and solve this problem. They are a tool for finding problems with the *design*, not the *implementation*.

But this sounds like it might be useful too. If you do follow a process that has a design step, why not formalize the design? This is where Alloy comes in.

It uses SAT-solving to find counter-examples to the design: places where the assumptions are met, but the invariants do not hold. Unfortunately, it does so by having you hard code things like "maximum model size to use". Only by working around these things can you usefully use Alloy.

I still hope to some day have an opportunity to see if this will be useful. But so far, the main conclusion is that if you are tempted to use Alloy, your design is too complicated.

FOUR

EXISTENCE

Warning: Spoiler warning for David Brin's Existence.

This book is *not* part of the Upliftverse, despite dolphins being uplifted. This threw me for a loop, but I guess Brin considers dolphin uplifting to be an immutable part of the universe.

I have a lot of critiques of the science and tech aspect in this book. Brin avoids them all by implying there's an answer and then never giving it, so I cannot check to see the answer makes sense.

This is not the only cheap story telling trick in this book. The most important part of the book happens "off camera": there's a big conflict coming up, then there's a time-skip, and the conflict is in the past.

However, the book does have twists. A lot of them. Good one.

Ultimately, it is an entertaining book, with good story-telling. This is also the first book where the author self-insert character is both minor and, arguably, villainish.

FIVE

ACCELERATE

If this book was written about doctors, it would recommend lollipops to improve healthcare outcomes. Consider: the evidence for implementing checklists to improve outcomes is flimsy, and hard to replicate.

But doctors who give lollipops to patients get a much higher survival rate than those who do not. This seems strange, until you consider that many kids go to doctors for regular check-ups, and are in general healthy. In contrast, many people go to doctors with serious conditions.

While lollipops are *predictive* of patient outcomes, in that you can make a good guess that if a patient gets a lollipop they will survive, it is not a good intervention.

Sadly, much of this book's evidence is no stronger. It completely fits my biases: I am a big fan of automated testing, continuous integration, monitoring, trunk-based development, and many of the other practices they tout.

Because of this, I want to scrutinize evidence that agrees me with me hard. This book did not survive the scrutiny.

It is is easy to complain that measuring interventions is hard and expensive. It is! But economists do it using natural experiments. People who have to obey laws and codes about ethical constraints manage to measure health-care interventions. This book is laziness touting something I already believe in.

FREAKONOMICS

It's hard to say anything about this book that has not already been said. Yes, there are offensive bits there, no matter who you are. Definitely too many places where "he" is used as a neutral pronoun.

But all all of this fades as I enjoyed the author's unique taste – the truth. The drive to find out the hidden truth, the true causality, trying to eliminate any alternative hypothesis – it's so much fun.

The Q&A ask what's left on the editing room floor. The authors respond that few things are left on the editing room floor, but a lot is left on the *research* floor. If they can't find a story backed up by data, they just don't publish it. I believe it.

PACKING FOR MARS

There are many books about the technology of space exploration. They focus on rockets, landing, heat shielding, and other flashy stuff. This book assumes it all way.

Instead, it focuses on the much messier, and less flashy, side of space exploration technology: living beings, and especially humans. Of all the devices in a rocket, these ones are unique.

People sweat. People feel. People eat. People exercise. All of these things are complicated by zero gravity, radiation, and cramped quarters. Strapping humans to a rocket going to space is hard.

As always, Roach explores the disgusting side of science with an open and frank tone that is hard to match. It is easy to be overly sterile, use euphemisms and technical terms that obscure the emotionality of what's going on. But it is just as easy to become a shock artist, focusing on breaking taboos to the detriment of the content.

Roach walks a fine line well, and describes the knowns and unknowns related to crewed space exploration.

EIGHT

THE SIGNAL AND THE NOISE

My prior belief was that as someone who loves Bayesian probability, this book would be enjoyable. After reading it, was happy that I was correct, even if I was disappointed I did not attach a probability to my prior belief.

Because that's what the book is about: avoid thinking of predictions in terms of binaries, attach probabilities to predictions. If there is one thing you will learn from the book, this would be it.

If there are two things you will learn from the book, is that while practice might not make perfect, it does make you better.

The third, and possibly most important thing you can learn, is that not all predictions are equally hard. Predicting the cents value of a stock tomorrow is harder than predicting when the sun will rise.

These three things, taken together, answer the question the book raises: why so many predictions fail – but some don't. It even answers it somewhat *actionably*.

Think probabilistically, use trial and error, and be aware that there might be an upper limit, or at least a sharply deciling effort/qualty curve.

INTRODUCTION TO DECISION ANALYSIS

Given a few reasonable assumptions, it is possible to prove Bayesian Decision Theory is the best way to make decisions. However, the description of Bayesian Decision Theory is dry, mathematical, and hard to follow for most people.

One approach would be to teach people Bayesian Decision Theory from basic principles, including how to apply it. But this would be even drier, even more mathematical, and, potentially, many people would give up.

Imagine the kind of people who would pay good money to learn how to make better decisions. C-level executive or other people in senior management positions. These are people who regularly make decisions that have millions, sometimes even billions, of dollars at stake.

They often hire consultants for help, but if you do not understand the methodology at all, it would be hard for the consultant to explain how they reached their conclusions. These consultants need an easy resource for them.

However, this resource cannot look like "a book for C-level executives to understand what the decision process consultant is saying". This would look bad.

Instead, what you would need is a book that looks like it is teaching you how to make better decisions. The consultant would recommend this book as "explaining what I do", not as "explaining how to understand me".

Crucially, at no point should the book break character. Not in the book itself, not in the back-cover summary, and not in the marketing materials.

In fact, better if the book just looks like it is in general about decisions, not just in business. Include a few examples from people's personal lives, to make it more relatable.

Unfortunately, when you never break character, you fool some innocents. I read this book assuming it would teach me how to improve my decision making. It is not designed for that. It tries to make the math "accessible". It aggressively avoids suggesting learning how to program, instead recommending how to abuse Excel or, sometimes, how to buy overpriced, hard to use, software – that does not run on mobile or on the web, just install it directly on your Windows machine.

There are Excel abuses. There are ways to avoid Jupyter and Graphviz. There is a lot of dumbing down of the math.

I have stopped reading books in the middle. But this one had the fascination of a train-wreck. Even as I grew frustrated with the book, I grew impressed with the author's commitment to never break character.

But I am glad that I have finished it.

BELLWEATHER

I recently reread Connis Willis's Bellweather, one of my all-time favorite books. I read it originally in Hebrew. Then in English. Five times.

Every time, I remember how much I love it again. But I also remember my head-canon about how it was written. I imagine Willis wondering what she should write. Sometime, a while ago, she heard there is something called "science fiction". She has never read any, but it seems cool.

She decides she is going to write some science fiction! She's a smart person, she can figure it out. Just some fiction about scientists, right?

Academia is too boring of a setting. Any senior researchers already have tenure. If we have scientists, we gotta have stakes. Their research must be on the line.

Luckily, the US has a lot of research institutes. Private company trying to find a public good? That's some great stakes, not to mention built-in conflict.

Next, she had to come up with a science. Physics? Chemistry? Those are going to be hard for most to relate to. Sociology is cool though. Everyone lives in a society. The year is 1996, and Chaos Theory is super-hot, so we gotta get that in.

Two sciences? Sounds like the plot for a romance over a scientific collaboration almost writes itself. I'm cutting Willis some slack for her stereotypical gender norms, this is 1996, so the sociologist is the woman and the chaos theory is the man.

Finally, she needed a good research project. Again, the main criteria here is relatability. This, I believe, is when she struck gold. "Fads!"

Remember the stupid fads of the 90s? Tamagotchi, Pogs, not to mention just recovering from things like beanie babies, cabbage patch kids, and pet rocks. No, seriously, they literally sold rocks as pets.

She realized she can put all her frustrations with fads into a book. Every chapter opens with the protagonists' "research notes" on a fad, talking about what it was, how it started, and how it ended.

Even if the rest was worthless, for that alone, it is worthwhile to get the book. Willis's research into fads for the book was impressive.

She also managed to capture really well the extreme frustration that accompanies scientific research. It is not obvious what the answer is, or how to find it. One failure leads to the next failure. That's the best case scenario! The worst case scenario is that the scientist gives up.

It is telling that the only two people who are frustrated by the science in the book are the two protagonists. Nobody else in the research institute even cares. They all are just there to fill out grant applications and watch the clock. There are only two people who are actually trying to make discoveries.

But a hero or heroine is only as good as their villain. Boy, does Willis do a great job on the villains. Like any good Marvel movie, one of the villains is the "hero but bad". The evil scientist tries to go after a thinly-veiled MacArthur fellowship by doing "science on demand".

A villain is only as good as their henchpeople of course. On one side, a stereotype of a millenial assistant. Yup, Willis did those before it got cool. She doesn't care about working, or accomplishing tasks well, but is good at complaining about smokers.

The other minor bad is "Management". It takes a few chapters before the big reveal about Management, and I do not want to spoil the book. I will just say that the Six Sense has got nothing on Bellweather when it comes to last-minute twists.

Of course, like any fairy tale, or Marvel movie except "Infinity War", all's well that ends well. But as for the details? You'll have to read them yourself.

ELEVEN

DUEL

The book Duel by David Grossman was one of my favorite books as a kid. I read it in the original Hebrew. When I saw it was available on Amazon in English for a ridiculous price, I had to get it.

As soon as it arrived, I read it in one seating. No, that's not accurate. I read it in one *standing*, unable to tear myself away long enough to find a chair.

This book is a lot like the Lord of the Rings. It's not exactly an *unreliable* narrator – what the narrator says happened probably did "happen". But it is a narrator who assumes that it is *their* story which is important, while it is really tangential to the "real" plot.

The protagonist, a tween kid, is trying to stop a duel between his elderly friend and the friend's college frenemy. Unfortunately, he is in way over his head. The frenemies have a lot of history together, which includes dealing with German anti-semitism, escaping the holocaust, and being dirt poor in British-occupied Israel.

Reading this story as an adult, I finally read the real story between the lines. A story about love, conflict, and struggling with a secular Jewish identity in a post-Holocaust world.

Everyone he meets has traumas from the time between the end of World War II and to Israel becoming a state. As a kid growing up in Israel, the Holocaust was part of his background knowledge, which is part of the problem. He assumes he understands it because he has learned about it.

Yet, just like the Hobbits in LotR, he manages to save the day in the nick of time. Like the Hobbits, he has had help that he barely understood.

Duel is two books for the price of one: one for kids, and one for adults.

THE CHARACTER OF PHYSICAL LAW

Sure, Feynman was a misogynistic asshole. But this isn't "Surely, You're Joking". In this book, Feynman talks about his speciality: figuring out physics!

This was my thought process as I paid 10 cents (yes, really) for a used copy of this book at a library sale several years ago. It sat on my book shelf, unread, for a while.

I decided to dust it off and start reading it. In the book, Feynman talks through how physical laws look like, through the stories of their discoveries. He is careful to give proper credit, with a nice footnote for each person he mentions.

The book mentions a woman once, and even then only when it is about a collaboration she had with a man. But this is a book from the '60s and women have been historically discouraged and excluded from physics. Maybe there wasn't anyone to cite?

One of the fundamantal properties of physical law, according to the book, are symmetries. Symmetries, as you would expect from a physics book for a lay audience, are poorly defined.

I am certain that Feynman, as a scienstist, does know the proper definition: it is when a system is invariant to a transformation group, and that group is called "the symmetry group".

Before Noether

One of the fundamantal properties of physical law, according to the book, are symmetries. Symmetries, as you would expect from a physics book for a lay audience, are poorly defined.

I am certain that Feynman, as a scienstist, does know the proper definition: it is when a system is invariant to a transformation group, and that group is called "the symmetry group".

Before Noether was known for revolutionizing math, she proved an important theorem: every differentiable symmetry has a corresponding conservation law. Yet, Feynman acts surprised when he finds that conservation laws are the same, even as the details of the physical systems change.

He does not mention Noether by name. He does not mention anything about the relationship between symmetry and conservation. Even as he keeps talking about both of these things.

I'm admittedly biased. Noether is my childhood hero. Her story, accomplishments, dealing with sexism, dealing with anti-semitism, and getting only a fraction of the recognition she deserved, was a powerful read when I was ten.

The way Feynman ignores these contributions was the only thing I managed to take away from the book. It's a shame. It really did have a lot of insights. But it felt like reading while being punched in the face, the only thing I can remember is being punched.

HOW TO MEASURE ANYTHING

This book is not "clickbait". The author does, indeed, explain how to measure anything.

But even more importantly, the author asks the important questions. What is measurement? Why would you measure?

The questions are related, and the second is the one that should be answered first. I bought this book as part of buying a few books on practical decision theory. This book came up in the search.

The *reason* to measure is to make better decisions. If decisions are not informed by the measurement, then there is no need to measure. This means that the only relevant meaning for "measurement" is in the context of a decision process.

The author's definition for measurement is "a process that reduces your uncertainty about something". The author repeatedly explains that measurement is inherently a process with errors. If you have no idea how big a door is, and you compare it to your arm, you have reduced uncertainty.

You will reduce uncertainty even more if you pull out a tape measure. This takes more effort, but still involves some error. You can reduce it even more with sophisticated laser-based equipment. This takes even more effort, and even more effort if you want to use a blue-light laser, which has even tighter uncertainty.

So what should you do?

The answer is simple. It depends on why you need to know the door's size. If you need to move a couch in, and you need to know if it fits, using your arms is probably fine.

If you need to cut some wood to replace the frame, a tape measure is probably the tool: the uncertainty using arms is too much.

This ties closely to the concept of "value of information", which the author also explains.

But beyond the theory, and even beyond the practical advice, of which there is a lot, there is one theme throughout the book. You can measure things. If they matter, you probably should. And you probably can.

From the monetary loss of brand value because a spokesperson tweets something bad to the amount to spend saving a life, you can, and should, measure it. Almost always, the people who say that you cannot put a monetary value on human life undervalue it compared to those who measure it.

Measuring is a moral imperative. Getting better at it is ethically important.

I do feel sorry for the author for having to explain how to program using Excel formulae, because business people reject anything more sophisticated.

A BRIEF HISTORY OF TIME AND 3 MINUTE STEPHEN HAWKING

When I wake up at night, I try to avoid using my phone. Instead, if sleep eludes me for a bit, I will read paper books. As the hour is late, and I am tired, I'll often grab the first book on the shelf that looks reasonable.

A long time ago, out with my wife, I picked up 3 Minute Stephen Hawking. The 3-Minute series is perfect for reading myself to sleep, with its structure on "3 minute morsels".

What I didn't like was that, as expected, the book was a bit more disabled inspiration porn than I wanted. It was also less focused on the theories than on the man and the gossip.

Nevertheless, I waded through. There were some genuinely interesting bits. One of the fascinating, if horrifying, bits was the context for how A Brief History of Time was written. This was Hawking trying to translate, as quickly as possible, his fame into money in order to fund appropriate care for his condition.

The book referred to "A Brief History of Time" as a book that many people bought, but few have read. Especially after the book shallow treatment of Hawking's math, I was ready to disprove the statement.

I have, like many, previously have bought "A Brief History of Time" and, of course, never read it. This was my chance. It was to be my next night-time reading book.

It was then that I was glad to have had the context of "3 minute". Hawking, sadly, is not a good writer. The book was a rush job. It had no co-author since Hawking wanted to keep the royalties.

In short, the book is not a good one. Hawking meanders from one subject to the next, goes off on tangents, and the narrative has neither rhyme nor reason.

Hawking also opines on matters far out of his specialty. Though he was a fervent atheist, and had little to know religious studies background, he brings up "God" as a weird metaphor every now and again. Though he was famously dismissive of philosophy, he tries to do philosophy, badly. His physics metaphors are also lacking, often confusing more than illuminating.

But the most fascinating thing about the book is that Hawking nearly admits to having no intuition about physics. Oh, he has done impressive mathematical work. He solved complicated problems, found solutions to difficult differential equations.

But whenever it was time to figure out which direction the evidence leads, how the world works, he consistently bets on the wrong horse. He is not even embarassed by it: though his bets are public, and he publicly recounts them, there is no sense that he is aware that being that often confident *and* wrong is a problem. It does not reduce his confidence, not even a little bit.

I was glad I read both books, but even happier to have put them behind me.

FIFTEEN

THE TELL-TALE BRAIN

Each of us has one. It is what lets us read this text and make sense of it. But how does the brain *work*?

This simple, straightforward, question about how a lump of fatty tissue can do complex computation is the subject of this book written by V.S. Ramachadran. The one word answer is "weirdly".

So before going any further, a content warning: this book has been written some time ago, and uses, at times, language that is no longer acceptable nowadays. It has some off-color jokes which feel too offensive for their humor value.

That said, it does feel like Ramachadran is not doing this out of bigotry. Though his discussion of LGBT and mental health issues does not use modern sensitivie language, throughout reading it, I perceived him as compassionate and caring. Language changes, and the language in this book did not age well.

I do not know how the *ideas* in this book changed. I am not a (literal) brain scientist. But at the very least, it is a great inside into the state of knowledge about the brain as of ten years ago.

It would not surprise anyone who has tried to program a computer that the brain has some really weird bugs. Evolution is worse than the least responsible, least principled, software development organization. If a bug does not happen often enough "in production", if the cost of fixing it is too high, or if there is an ugly, but quick, workaround, evolution is quicker to allow the bug into production than the most aggressive of product managers.

From the inside, though, the brain feels like it makes sense. It feels like it is living in a world, getting sensory input, and making decisions.

In reality, there are five different paths for sensory inputs to affect behavior, none of them necessarily consistent with each other. Some parts of the brain will actively lie to other parts.

A neuroscientist's job is to figure out how we got here. Ramachadran has been on a quest to find the internal structure of thought, its features and bugs, and how evolution produced it.

When a programmer tries to figure out how a program works, they have a lot of tools at their disposal. They can modify specific parts, even break them intentionally, and observe the behavior. They can attach debuggers and add log statements. They can check the history of the code.

A neuroscientist, especially one specializing in the human brain, is much more constrained. Society has specific laws against modifying parts of the brain and especially against breaking them intentionally. Attaching sensors to the inside of the brain requires complex, dangerous, surgey that is also quite frowned upon. Worse of all, the fatty tissue in the brain fossilizes poorly.

A neuroscientist must cobble together what evidence falls their way, and find compatible theories. The richest source of such evidence, sadly, are damaged brains. Brains can be damaged by both external trauma and internal problems.

A damaged brain reveals a lot about what is required for parts to work. A patient with blindsight can catch balls that they cannot consciously "see". Different kinds of aphasia, depending on the part of the brain that is damaged, can cause a patient to construct meaningless grammatical sentences or meaningful sentences with grammatical and vocabulary mistakes.

There are other sorts of evidence. Since evolution left us some code-forks that have less ethical and legal issues, experiments on other animals can teach us a lot. We can attach electrodes to the surface of the skull. During some brain surgeries, electrodes are implanted deeper in the brain. The ear canal is close enough to the brain that disturbing it can have an effect. Finally, neurodiversity is a source of brains that work slightly differently, allowing comparing and contrasting.

Ramachadran pieces together all these pieces of evidence into an entertaining narrative that shows how the most complicated structure in our world operates. The chapter connecting the aesthestics of art to the structure of the brain, taking detours through the colonial occupation of India and the brain structure of baby birds, is one of the best examples.

Ramachadran builds a theory of nine universal rules of aesthetics, and explains how each is connected to the brain and its evolution. His position as an Indian immigrant who lived in the UK and the US gives him insight into how different art looks in different traditions, and contextualizes his ability to find universal rules.