Range

Author	Goodreads Link	Rating
David Epstein	https://www.goodreads.com/book/show/41795733-range?ac=1&from_search=true&qid=JaZyCwLHG8&rank=1	***

Favorite Quotes

> "if all you have is a hammer, everything looks like a nail" problem.

> "We discover the possibilities by doing, by trying new activities, building new networks, finding new role models." We learn who we are in practice, not in theory.

Overview

What's the most effective path to success in any domain? It's not what you think.

Plenty of experts argue that anyone who wants to develop a skill, play an instrument, or lead their field should start early, focus intensely, and rack up as many hours of deliberate practice as possible. If you dabble or delay, you'll never catch up to the people who got a head start. But a closer look at research on the world's top performers, from professional athletes to Nobel laureates, shows that early specialization is the exception, not the rule.

David Epstein examined the world's most successful athletes, artists, musicians, inventors, forecasters and scientists. He discovered that in most fields--especially those that are complex and unpredictable--generalists, not specialists, are primed to excel. Generalists often find their path late, and they juggle many interests rather than focusing on one. They're also

more creative, more agile, and able to make connections their more specialized peers can't see.

Provocative, rigorous, and engrossing, *Range* makes a compelling case for actively cultivating inefficiency. Failing a test is the best way to learn. Frequent quitters end up with the most fulfilling careers. The most impactful inventors cross domains rather than deepening their knowledge in a single area. As experts silo themselves further while computers master more of the skills once reserved for highly focused humans, people who think broadly and embrace diverse experiences and perspectives will increasingly thrive

---

Notes

INTRODUCTION: Roger vs. Tiger

```
"if all you have is a hammer, everything looks like a nail"
problem.

recent study found that cardiac patients were actually less
likely to die if they were admitted during a national
cardiology meeting, when thousands of cardiologists were
away; the researchers suggested it could be because common
treatments of dubious effect were less likely to be
performed.
```

CHAPTER 1: The Cult of the Head Start

```
termed "kind" learning environments. Patterns repeat over
and over, and feedback is extremely accurate and usually
very rapid.

In wicked domains, the rules of the game are often unclear
or incomplete, there may or may not be repetitive patterns
```

and they may not be obvious, and feedback is often delayed, inaccurate, or both.

CHAPTER 2: How the Wicked World Was Made

"How many piano tuners are there in New York City?" Students had to estimate, just by reasoning, and try to get the right order of magnitude. The professor later explained that these were "Fermi problems," because Enrico Fermi—who created the first nuclear reactor beneath the University of Chicago football field—constantly made back-of-the-envelope estimates to help him approach problems.*

CHAPTER 4: Learning, Fast and Slow

practicing the same thing repeatedly, each problem employing the same procedure. It leads to excellent immediate performance, but for knowledge to be flexible, it should be learned under varied conditions, an approach called varied or mixed practice, or, to researchers, "interleaving."

Desirable difficulties like testing and spacing make knowledge stick. It becomes durable. Desirable difficulties like making connections and interleaving make knowledge flexible, useful for problems that never appeared in training.

CHAPTER 5: Thinking Outside Experience

Our natural inclination to take the inside view can be defeated by following analogies to the "outside view." The

> outside view probes for deep structural similarities to the current problem in different ones. The outside view is deeply counterintuitive because it requires a decision maker to ignore unique surface features of the current project, on which they are the expert, and instead look outside for structurally similar analogies. It requires a mindset switch from narrow to broad.
>
> interdisciplinary team of scientists came to a pretty simple conclusion: successful problem solvers are more able to determine the deep structure of a problem before they proceed to match a strategy to it.

CHAPTER 7: Flirting with Your Possible Selves

> "We discover the possibilities by doing, by trying new activities, building new networks, finding new role models." We learn who we are in practice, not in theory.

CHAPTER 8: The Outsider Advantage

> "Knowledge is a double-edged sword. It allows you to do some things, but it also makes you blind to other things that you could do."

CHAPTER 9: Lateral Thinking with Withered Technology

> Yokoi's greatest triumphs occurred when he thought laterally. He needed specialists, but his concern was that as companies grew and technology progressed, vertical-thinking hyperspecialists would continue to be valued but lateral-thinking generalists would not.

The polymaths had depth in a core area—so they had numerous patents in that area—but they were not as deep as the specialists. They also had breadth, even more than the generalists, having worked across dozens of technology classes. Repeatedly, they took expertise accrued in one domain and applied it in a completely new one, which meant they were constantly learning new technologies.

"When information became more widely disseminated," Ouderkirk told me, "it became a lot easier to be broader than a specialist, to start combining things in new ways."

"T-shaped person," she said, one who has breadth, compared to an "I-shaped person," who only goes deep, an analog to Dyson's birds and frogs. "T-people like myself can happily go to the I-people with questions to create the trunk for the T,"

In kind environments, where the goal is to re-create prior performance with as little deviation as possible, teams of specialists work superbly.

Edisons—"serial innovators," she and two colleagues termed them. Their findings about who these people are should sound familiar by now: "high tolerance for ambiguity"; "systems thinkers"; "additional technical knowledge from peripheral domains"; "repurposing what is already available"; "adept at using analogous domains for finding inputs to the invention process"; "ability to connect disparate pieces of information in new ways"; "synthesizing information from many different sources"; "they appear to flit among ideas"; "broad range of interests"; "they read more (and more broadly) than other technologists and have a

wider range of outside interests"; "need to learn
significantly across multiple domains";

Facing uncertain environments and wicked problems, breadth
of experience is invaluable. Facing kind problems, narrow
specialization can be remarkably efficient. The problem is
that we often expect the hyperspecialist, because of their
expertise in a narrow area, to magically be able to extend
their skill to wicked problems. The results can be
disastrous.

CHAPTER 10: Fooled by Expertise

narrow-view hedgehogs, who "know one big thing," and the
integrator foxes, who "know many little things."

This did give hedgehogs one conspicuous advantage. Viewing
every world event through their preferred keyhole made it
easy to fashion compelling stories about anything that
occurred, and to tell the stories with adamant authority.
In other words, they make great TV.

CHAPTER 11: Learning to Drop Your Familiar Tools

Gleason told him that he preferred to view his crew
leadership not as decision making, but as sensemaking. "If
I make a decision, it is a possession, I take pride in it,
I tend to defend it and not listen to those who question
it," Gleason explained. "If I make sense, then this is more
dynamic and I listen and I can change it."

"Congruence" is a social science term for cultural "fit"
among an institution's components—values, goals, vision,

```
self-concepts, and leadership styles.
```

CHAPTER 12: Deliberate Amateurs

```
To recap: work that builds bridges between disparate pieces
of knowledge is less likely to be funded, less likely to
appear in famous journals, more likely to be ignored upon
publication, and then more likely in the long run to be a
smash hit in the library of human knowledge.
```

#books #booksummaries #selfimprovement