





# Range

BOOK AUTHOR: DAVID EPSTEIN



Breadth of experience, open-mindedness, and flexibility are essential for breakthrough performance and problem solving, even especially — in a world focused on specialization.

- **Two paths:** There are two paths to excellence early specialization vs. early experience in a broad range of fields. Most elite athletes and many top performers follow the latter approach, specializing later rather than earlier.
- **Dexterity:** Having a range of experience mirrors the real world and yields dexterity in making connections across disciplines and in solving complex problems.
- **Sampling:** Peak achievers engage in a "sampling" period before settling in to a field. Trying different things yields broad application and creativity and is integral, not incidental, to their success.
- **Failure:** Testing new skills and failing yields both prowess and the "right match" in long term pursuits.
- **Similarity:** Successful problem solvers see and seek problems and solutions in domains similar but distinct from their primary vocation.
- **Outsider effect:** People who can see things from the outside as well as the inside can use old or varied knowledge to bring about visionary and effective solutions.
- **Rigidity versus open-mindedness**: Open-minded people who can mingle disparate and even contradictory views perform better than those who simply tunnel in, rigidly bending solutions to fit their own preordained models.
- Amateurism: Cultivate this. It is a catalyst for innovation.

There is no shortage of literature emphasizing narrow focus and specialized training as keys to success in a range of disciplines. In **Range**, science writer and reporter David Epstein takes a markedly different view, arguing that breadth and flexibility are vital differentiating drivers of breakthrough individual and team performance in the complex, unpredictable environments that define the modern world. Success in these "wicked" environments requires flexibility, active open-mindedness, and the ability to make connections across disciplines. In **Range**, Epstein draws on a rich body of research and demystifies the approaches taken by some of the world's best athletes, scientists, creators, and teams to show how breadth, lateral thinking, open-mindedness, and flexibility are essential for breakthrough performance in a world of wicked problems.

#### **Roger and Tiger**

Roger Federer and Tiger Woods took two very different paths to excellence. Tiger Woods began playing golf as a toddler under the close guidance of his father and "has come to symbolize the idea that the quantity of deliberate practice determines success — and its corollary, that the practice must start as early as possible" (p. 6). Federer, on the other hand, dabbled in several sports as a child and did not forgo other sports to focus on tennis until he was a teenager.

The Federer approach, it turns out, is more common for elite athletes: "Eventual elites typically devote less time early on deliberate practice in the activity in which they will eventually become experts. Instead, they undergo what researchers call a 'sampling period.' They play a variety of sports, usually in an unstructured or lightly structured environment; they gain a range of physical proficiencies from which they can draw; they learn about their own abilities and proclivities; only later do they focus in and ramp up practice in one area" (p. 7).

\_\_\_\_\_\_

"Eventual elites typically devote less time early on deliberate practice in the activity in which they will eventually become experts. Instead, they undergo what researchers call a 'sampling period.' They play a variety of sports, usually in an unstructured or lightly structured environment; they gain a range of physical proficiencies from which they can draw..."



This phenomenon applies beyond sports. Many top performers are "people who start broad and embrace diverse perspectives while they progress. People with Range" (p. 14).

#### The Wicked World

The "choose early, focus narrowly, never waver" approach is most effective in "kind" learning environments, like golf or chess, where "patterns repeat over and over, and feedback is extremely accurate and usually very rapid" (pp. 20-21, 64).

Most of the world, however, is not like golf or chess and is instead characterized by a "wicked" learning environment. Under these conditions, "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" (p. 21).

Solving problems in wicked, unpredictable, and unclear environments "requires range, making connections across far-flung domains and ideas" (p. 47).

## The Long-Term Benefits of Sampling

The sampling-based approach is shared by many of the highest achievers across disciplines. For example, just as Federer jumped from sport to sport, Yo-Yo Ma first played violin, then moved to piano, and only settled on the cello when he realized he didn't like the first two (p. 65).

"The sampling period is not incidental to the development of great performers — something to be excised in the interest of a head start — it is integral" (p. 65).

The benefits of sampling are particularly relevant in today's world, where knowledge transfer is more important than ever: "Breadth of training predicts breadth of transfer. That is, the more contexts in which something is learned, the more the learner creates abstract models, and the less they rely on any particular example. Learners become better at applying their knowledge to a situation they've never seen before, which is the essence of creativity" (p. 77).

## **On Switching and Short-Term Planning**

Many extraordinary achievers — Van Gogh, Gauguin, J.K. Rowling — were "failures" in multiple domains before flourishing in the field in which they became famous.

The highest achievers find the right "match quality" between who they are and what they do. The author Seth Godin has noted that many of the highest-performing individuals across domains "quit fast and often when they detect that a plan is not the best fit, and do not feel bad about it" (p. 136). It is important to note, however, that switching should not simply reflect "a failure of perseverance," but should rather be based on "astute recognition that better matches are available" (p. 136).

As a young man, Vincent Van Gogh worked intensely but unhappily as an art dealer, French and math teacher, handyman, bookstore clerk, and minister. He found success as an oil painter only after he "tested options with maniacal intensity and got maximum information ... about his fit as quickly as possible, and then moved on to something else and repeated, until he had zigzagged his way to a place no one else had ever been, and where he alone excelled" (p. 144).

Many high performers reached their positions by practicing short-term planning, making decisions based on their interests and opportunities at a given moment, rather than making a grand plan for the long-term. "Because personality changes more than we expect with time, experience, and different contexts, we are ill-equipped to make ironclad long-term goals when our past consists of little time, few experiences, and a narrow range of contexts" (p. 158).

## Analogical Thinking for Wicked Problems

Our natural inclination when solving problems is to take the "inside view" and focus solely on the details of a specific problem. This approach is intuitive, but often ineffective: "Focusing narrowly on many fine details to a specific problem at hand feels like the exact right thing to do, when it is often exactly wrong" (pp. 108-110).

The most successful problem solvers and problem-solving teams actively seek analogous problems in other domains. For example, a study of the world's most productive science labs found that "the labs most likely to turn unexpected findings into new knowledge for humanity made a lot of analogies, and made them from a variety of base domains" (p. 118).

Determining the deep structure of a problem is an important initial step in analogical problem solving: "Successful problem solvers are more able to determine the deep structure of a problem before they proceed to match a strategy to it. Less successful problem solvers ... mentally classify problems only by superficial, overtly stated features" (p. 115).

#### John Dewey: "A problem well-put is half-solved" (p. 115).

### The Outsider Advantage

For some of the most wicked problems, individuals with limited or no specific experience of the problem, but with diverse experiences in other domains, may have an advantage.

Karim Lakhani, co-director of the Laboratory for Innovation Science at Harvard: "Big innovation most often happens when an outsider who may be far away from the surface of the problem reframes the problem in a way that unlocks the solution" (p. 178).

With the rapid pace of knowledge's advance and the increased availability of existing knowledge, outsiders can both "merge strands of widely available but disparate information" and "excavate old knowledge but wield it in a new way" (p. 189).

The development of the Nintendo Game Boy is a classic example of "lateral thinking with withered technology." Gunpei Yokoi, who led its development, chose to adapt older technologies from other Nintendo products to create one product that brought together user experience, portability, affordability, and durability. Despite the Game Boy's competitors' superior technology, the Game Boy

Physicist and mathematician Freeman Dyson categorized the two types as "visionary birds" and "focused frogs." The visionary birds "delight in concepts that unify our thinking and bring together diverse problems from different parts of the landscape," while the focused frogs "delight in the details of particular objects, and they solve problems one at a time."

5

went on to sell 118.7 million units. On his approach, Yokoi noted, "I don't have any particular specialist skills... I have sort of a vague knowledge of everything" (p. 197-198).

In innovative organizations, lateral-thinking generalists like Yokoi and vertical-thinking hyper specialists are complementary. Physicist and mathematician Freeman Dyson categorized the two types as "visionary birds" and "focused frogs." The visionary birds "delight in concepts that unify our thinking and bring together diverse problems from different parts of the landscape," while the focused frogs "delight in the details of particular objects, and they solve problems one at a time" (p. 200). Because the world is both broad and deep, Dyson wrote, "We need birds and frogs to explore it" (p. 201).

#### The Perils of Rigid Expertise

Psychologist and political scientist Philip Tetlock studied the predictive accuracy of experts during the Cold War. While most of the experts were surprisingly bad forecasters, the small subset who were most accurate had in common the ability to "take from each argument and integrate apparently contradictory worldviews" (pp. 220-221). Tetlock borrowed nicknames from the philosopher Isaiah Berlin for the two types:

**HEDGEHOGS:** "Deep but narrow ... they fashioned tidy theories of how the world works through the single lens of their specialty, and then bent every event to fit them" (p. 221).

**FOXES:** "'Draw from an eclectic array of traditions, and accept ambiguity of contradictions' ... ranged outside a single discipline or theory and embodied breadth" (p. 221).

The best teams are able to draw on the depth and expertise of hedgehogs, but take on the active open-mindedness of foxes. They are able to "take ravenously from specialists and integrate" (p. 225) and have a particular "willingness to look at new evidence, whether or not it agree[s] with their current beliefs" (p. 228).

Experts are at particular risk of developing "overlearned behavior" and can become unwilling or unable to drop their familiar "tools" when faced with a new, uncertain situation: "They have done the same thing in response to the same challenges over and over until the behavior has become so automatic that they no longer even recognize it as a situation-specific tool" (p. 248).

In the case of wilderness firefighters, this inability to drop familiar tools is literal and can be deadly. When faced with an unpredictable fire where the only chance for survival is to abandon their initial plans and run, many experienced firefighters are reluctant to drop their tools, even when the tools are of no use. Carrying this extra weight can be the difference between outrunning the blaze and surviving or not (246).

Maintaining a formal chain of command and an open, informal chain of communication is a valuable organizational strategy for maintaining balance between commitment to a standard operating approach (often grounded in expertise) and openness to dissenting views and new ideas.

A study of Himalayan mountain climbing teams found that teams from countries with more hierarchical cultures were more likely to get more climbers to the summit, but were also more likely to have climbers die. "Hierarchical teams benefitted from a clear chain of command, but suffered from a one-way chain of communication that obscured problems. The teams needed elements of both hierarchy and individualism to survive" (p. 265).

#### **Cultivating Deliberate Amateurism**

The word amateur did not originate as an insult, but "comes from the Latin word for a person who enjoys a particular endeavor" (p. 274). This sense of joy is particularly important, as "an enthusiastic, even childish, playful streak is a recurring theme in research on creative thinkers" (p. 273). "Hierarchical teams benefitted from a clear chain of command but suffered from a one-way chain of communication that obscured problems. The teams needed elements of both hierarchy and individualism to survive."



Allowing, and even intentionally encouraging, wide-ranging exploration can be a catalyst for innovation. "A paradox of innovation and mastery is that breakthroughs often occur when you start down a road, but wander off for a ways and pretend you have just begun" (p. 274). "Research in myriad areas suggests that mental meandering and personal experimentation are sources of power, and head starts are overrated" (p. 291).

**Epstein, D. (2019). Range:** Why generalists triumph in a specialized world. **New York: Riverhead Books.** 

26 22

Our natural inclination when solving problems is to take the "inside view" and focus solely on the details of a specific problem. This approach is intuitive, but often ineffective: "Focusing narrowly on many fine details to a specific problem at hand feels like the exact right thing to do, when it is often exactly wrong."





#### The Latest and Greatest Books for Leaders

We work hard to stay abreast of the current writings on leadership, especially those books our clients are reading or have been recommended to read. As a benefit to our clients and to facilitate our own learning, the Admired Leadership team has long maintained a tradition of summarizing the newest books of interest to leaders. Better to read a summary for eight minutes before investing 8 hours in the entire book. After reading a good summary, we believe leaders are able to make better choices as to what to ignore, what to peruse and what to make the time to read closely.

