CHRISTIAN TERWIESCH AND KARL ULRICH

THE INNOVATION TOURNAMENT HANDBOOK

A Step-by-Step Guide to Finding *Exceptional Solutions* to Any Challenge

WHARTON SCHOOL PRESS

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WHARTON SCHOOL PRESS
Philadelphia

Published by Wharton School Press
The Wharton School
University of Pennsylvania
3620 Locust Walk
300 Steinberg Hall-Dietrich Hall
Philadelphia, PA 19104
Email: whartonschoolpress@wharton.upenn.edu
Website: wsp.wharton.upenn.edu

Ebook ISBN: 9781613631683
Paperback ISBN: 9781613631690
Hardcover ISBN: 9781613631706

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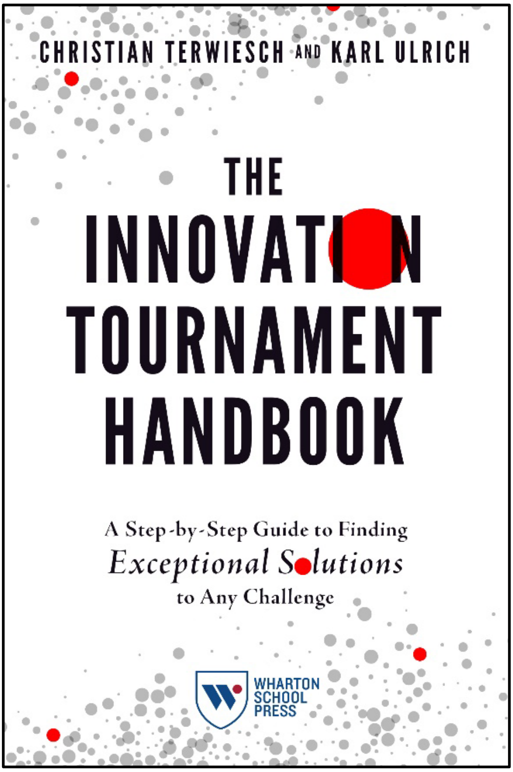

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Introduction

Y Combinator is a Silicon Valley accelerator of new ventures. Its alumni include Airbnb, DoorDash, Coinbase, Dropbox, and Stripe—which have a combined value of more than $100 billion.[1] We get jealous just writing that sentence. How can Y Combinator be so good or so lucky or both? Y Combinator, or YC for short, is good . . . and lucky. But focusing only on its biggest successes overlooks some other remarkable figures. Over its nearly 20-year life, YC has received more than 30,000 applications from aspiring entrepreneurs. It has weighed investing in more than 10,000 and has bet on and nurtured more than 3,000. With apologies to the great people who run it, YC is a machine that pulls in ideas and pumps out startups. At the heart of this machine is a process that we refer to as an *innovation tournament*.

Just like sporting tournaments, innovation tournaments seek to identify a clear winner from a multitude of competitors. In sport, players or teams compete until a winner is crowned champion. In business, an innovation tournament convenes opportunities for creating value. These opportunities might be ideas for new products, approaches to process improvement, names for a new venture, or candidates for entirely new lines of business. And they can originate from individuals, teams, or organizations.

How do innovation tournaments work? Again, like sporting tournaments, innovation tournaments typically consist of multiple rounds of competition, beginning with a large set of raw opportunities and ending with a stellar few. The first round of elimination, when the pool of candidates is large, must be quick and efficient. Later rounds, when numbers are smaller, warrant more in-depth evaluation.

For example, the YC innovation tournaments begin with applications from a huge pool of fledgling ventures. The first round is based on the subjective judgments of a panel of YC staffers. The next round includes live interviews with founding teams. Those teams accepted to the YC cohort receive capital and coaching and over the next several months strive to develop their businesses. Investors then view teams' presentations on pitch day and evaluate whether teams show promise; some teams succeed in raising the cash they need to fuel further commercialization. Eventually outcomes are realized in the marketplace. This multiround process winnows thousands of applicants down to several exceptional companies. For YC, the resulting successes, like Airbnb and Dropbox, deliver payoffs large enough to easily offset the investments made in companies that fail to thrive.

Innovation tournaments can be public competitions, or they can play out within the walls of a single organization. Like Wimbledon or the Ryder Cup, they can be contests among people in public forums. When a fire devastated part of the Notre Dame cathedral in 2019, the city of Paris convened an open competition to find a design solution.[2] Back in 2012, the Gates Foundation invited the world to "reinvent the toilet." The California Institute of Technology scooped that prize with a solar-powered device that netted it $100,000 in prize money—and undoubtedly left it flushed with success.[3]

In reality, however, most innovation tournaments happen within organizations. Take the first successful COVID-19 vaccine. BioNTech is a biotechnology company based in Mainz, Germany. When its founder and CEO, Ugur Sahin, grasped the threat that the coronavirus posed to humanity in early 2020, he quickly sensed that the messenger RNA (mRNA) platform he'd developed with his wife, Ozlem Tureci, to fight cancer might also hold the key to a COVID-19 vaccine.

BioNTech conducted an innovation tournament within the organization to simultaneously evaluate the potential of 20 vaccine candidates, of which just a handful advanced to development. One—BNT162b2 to be exact—was ultimately sent to market. Not only has the vaccine probably saved millions of lives, but it has also ensured the company's financial future.[4]

Earning billions, saving millions. Such a gargantuan win is hard to imagine. But innovation tournaments can be applied to all manner of situations with all manner of outcomes. And the premise is surprisingly simple.

In its simplest sense, innovation is finding a new match between a solution and a need. Thinking about it in this way, you realize that innovation can be applied to most situations.

Innovation can be external (focused on creating new products and services) or internal (doing things better, faster, or cheaper within an organization). By these definitions, pretty much everyone is a potential innovator and can benefit from a better way of innovating. Whether you are an IT manager in a claims processing unit in an insurance company, an entrepreneur launching a fitness app, or an industrialist concerned about the sustainability of your operations, innovation tournaments can help you. They can be used in a number of areas: What should you name your new venture? How can you reuse leftover shipping pallets? How can you increase customer retention? What package design best communicates the benefits of your new fitness tracker? What are some ways to reduce the carbon footprint of your factories?

Almost any problem in life is an opportunity for innovation. Looking for a boyfriend or girlfriend? Want to get more sleep? Seeking a wonderful vacation? Each of these challenges can be framed as seeking a new match between a solution and a need. (Pro tip: If you're running a tournament for the boyfriend or girlfriend challenge, you might want to keep that romantic approach to yourself.) The solution to these problems will neither save the human race from a deadly virus nor make anybody a billionaire. Are they still innovations? Absolutely.

Why Innovation Tournaments Work

Innovation tournaments aim to find a new match between a solution and a need that is not merely good but exceptional. They work because they leverage one of the key characteristics of innovation itself.

There are three core truths in the world of innovation. The first two are a bit daunting. Reading them, you might think it's all but impossible to crack an innovation challenge. But read on, because the third truth of innovation introduces the possibility of reliably winning the game.

1. **Value is driven by the exceptional few.** Sequoia Capital, a California venture capital (VC) firm, considered hundreds of possible investments in 2011 and invested in dozens. One of those investments was WhatsApp, the messaging app acquired three years later by Facebook for $22 billion. Sequoia's $8 million investment in WhatsApp's Series A returned more than $2 billion—an annual rate of return of about 600%. Compare that with the average rate of return for top venture funds across their entire portfolios, which is closer to 15% per year.[5] Innovation opportunities in general do not follow a normal distribution. Most are close to worthless, and very few are mind-bogglingly valuable. The implication is that the average quality of opportunities is unimportant. What matters is finding the outliers, the exceptional few.
2. **You do not know from the outset which opportunities will prove to be the most valuable.** Staying with the VC example, consider the anti-portfolios of top venture capitalists—the set of opportunities that firms pass on, for better or for worse. Bessemer Venture Partners in San Francisco is particularly good-humored about theirs. Here's how they describe one painful error in judgment: "Coinbase founder and CEO

Brian Armstrong quickly got to the point: 'What questions can I answer for you in the next two weeks that would cause you to invest in Coinbase?' . . . Bessemer partner Ethan Kurzweil replied 'There's really no question you could answer that would cause me to invest!'" Nine years later Coinbase went public at a valuation of 8,580 times the price Bessemer had been offered.[6] Ouch. While some people may be better than others at evaluating opportunities, all evidence suggests that there is usually much uncertainty in judgments at the early stages of innovation. You just can't know in advance which opportunities will turn lead into gold.

3. **You can invest a little to learn a lot.** There is a curious hobby that is popular among some affluent Chinese. Rocks called jadeite (think of a bowling-ball-size lump of gray stone) are found along the border between Myanmar and China.[7] When these rocks are cut open, some of them will reveal a lode of beautiful green jade, a highly valued gemstone. A few are worth millions. The hobby, perhaps better called a game of chance, is to examine an assortment of rocks and pick one to purchase. The trouble is that you can't know the realized value until you've paid the full price and cut open the stone. Uncertainty clouds the outcome until the full investment has been made. Fortunately, most innovation opportunities are much more forgiving. A small investment—say, doing some customer interviews or building a prototype—can reveal useful information. That information can then be used to abandon less promising opportunities and focus further investment on more promising opportunities. Now think again of the jadeite. Imagine that for a small fee you could drill a tiny hole in the rock and test a sample of the stone dust to estimate the odds that the rock contains a prize. The game would no longer be a pure gamble. You would dramatically increase the chances of finding the most valuable gems. In the game of innovation, unlike betting on jadeite, you can

almost always bore a little test hole, investing a little and learning a lot.

Innovation tournaments pull these three characteristics together into a process that can reliably unearth rare gemstones. But wait, isn't an *innovation process* an oxymoron? Surely the essential characteristic of any single innovation opportunity is uncertainty—you cannot reliably predict its value. Yet, process is the antithesis of uncertainty. Processes repeatedly apply the same actions time and again to reliably produce a result. It is true that the fate of any particular opportunity going through a process is unpredictable. But when enough opportunities are aggregated in a tournament, great outcomes reliably ensue.

Start with many raw opportunities. You can't know which are exceptional, but with a large enough sample you can be confident a few gems reside in the rock pile. Next, devise a series of development steps and filters. With each stage, you invest a little and learn a lot about the candidates. Then, winnow opportunities for further investment. Eventually only the exceptional few remain.

Why We Love Innovation Tournaments

As teachers, consultants, and entrepreneurs, we've used innovation tournaments for over a quarter of a century. We wrote our first book, *Innovation Tournaments: Creating and Selecting Exceptional Opportunities*, which laid out the basic concept and established the theoretical underpinnings, more than a decade ago.[8] Since then we have organized more than 100 tournaments for thousands of business students at the Wharton School and for many of the Fortune 500 companies. We have run tournaments in Silicon Valley and on Wall Street but also in Buenos Aires, Kuwait City, Shanghai, and Moscow. We've led tournaments to identify compelling taglines, to identify new product opportunities, to improve patient care in hospitals, and to improve production processes.

Our cumulative experience has taught us that tournaments can address challenges ranging from existential crises, like the COVID-19 pandemic, to the refinement of a single business process in a remote office of a far-flung conglomerate. For most of the organizations we have worked with, the question was not *if* the organization should run a tournament but *how*. In management, execution is critical for success and requires making myriad decisions competently.

We feel blessed to have worked with many interesting organizations to design innovation tournaments. Yet, we also have come to believe that much of our expertise can be codified. We wrote this book to put ourselves out of business as consultants—to capture what we have learned about running innovation tournaments and to communicate that knowledge to working professionals in different organizational settings so that they can easily apply it.

One Template, Endless Possibilities

We've seen innovation tournaments successfully applied to a number of diverse problems across a spectrum of organizations. We've listed a few of these below to give you a sense of just how broad, how heterogeneous, and how specific their application can be.

Science

We worked with a large biotech firm in New England to run three innovation tournaments over a period of three years. In the first, the firm invited its scientists to propose new drugs for development. The specialists assembled posters that were displayed in the company's lobby and gave short oral presentations. Everybody at the company could vote for the drugs they thought were the best ones, and the group would select one major new product. The next year, the company held a tournament with the theme "Everybody is an innovator." This time, it welcomed submissions for changes to everything from travel reimbursements to gene therapies. In a third tournament, management picked a set of strategic priorities and asked employees to submit ideas for achieving them.

Architecture

Though we are probably as close to winning a beauty contest as we are to winning a Nobel Prize, we followed with great interest the two-stage architectural competition to design the building that will become the Nobel Center in Stockholm.[9] A group of 11 prominent architects from eight countries faced the complex task of developing a conceptual proposal for the architectural design of the Nobel Center. In the first stage, the architects submitted their designs—their identities unknown by the judges. The judges chose three submissions, and the corresponding architects were invited to make a more detailed presentation, after which the judges selected the winning design.

Innovation Management

For over two decades, we have taught our Wharton MBA course on innovation management using the innovation tournament framework. We announce a specific theme—say, apps for health and wellness—at the beginning of the course. In the first week of class, each of about 60 students makes a 60-second pitch for a new venture. All students vote on these ideas, and we pick about 30 that are pursued by teams of two students each. The teams do preliminary investigation and design work and then, about halfway through the course, present their refined ideas. All students vote, and we winnow the field to 15 project teams of four students each, who refine the opportunities further. The last day of class, the teams make a final pitch and the students vote for the most promising innovations. This format has proved fun and pedagogically effective, and our university now offers similar courses for students in nursing, medicine, engineering, and education.

Industrial Design

We partnered with the award-winning industrial design firm Lunar Design, which has since become McKinsey Design, to develop a beautiful and ergonomic ice cream scoop for the company Belle-V Kitchen. The designers identified 18 distinct concepts for the handle alone, validated them with 3D-printed prototypes, and then refined the three best concepts before final testing revealed a superior form. The scoop went on to win the praise of both consumers and design critics. One reviewer called it the Rolls Royce of ice cream scoops.[10]

These examples vary widely in terms of the problems confronted, the people involved, the selection methods adopted, and the time and money allocated. But in every case, many opportunities enter the tournament, development resources are applied judiciously, a set of selection methods narrows the field, and one or more exceptional opportunities eventually emerge.

In *The Innovation Tournament Handbook: A Step-by-Step Guide to Finding Exceptional Solutions to Any Challenge*, we will share a general template for an innovation tournament. However, you will need to adapt this template to your specific context. Finding a tournament setup that works for you is a matter of selecting from a set of design options, just as you'd configure a new car, plan a vacation, or order a pizza. This book guides you through the menu and provides detailed instructions for designing and running an innovation tournament.

How to Use This Book

You can use *The Innovation Tournament Handbook* two ways. You can use it like a cookbook, working from the first chapter to the last and making each of your innovation tournament design decisions along the way. If you want to use this book in this way, think of each chapter as a specific step.

Alternatively, you can treat the book as a user manual and thumb through the content to locate a solution to the specific puzzle you are facing. Each chapter can be read independently of the others, and you can access the content in any order to address your immediate needs. Here's a preview.

In chapter 1, "Define the Innovation Challenge," we teach you how to articulate your innovation challenge. Albert Einstein is often quoted as having said, "If I had an hour to solve a problem, I'd spend 55 minutes thinking about the problem and five minutes thinking about solutions." Though the evidence is weak that Einstein actually said this, we fully concur with the sentiment. A smart innovation tournament requires first and foremost a carefully defined innovation challenge. In this chapter, we propose that you frame your innovation challenge as *how might we?* Positing your challenge this way signals your openness to possibility. In this chapter we will also teach you a method for ensuring that the statement is broad enough to open up the possibility of breakthroughs, but narrow enough to avoid blind alleys.

In chapter 2, "Set the Tournament Architecture," we articulate nine decisions you need to make to structure innovation tournaments. For example, should you include participants from outside the organization? Should the tournament last for a day or for a month? Should the tournament be convened in person or online? We treat these decisions separately but then provide several templates for the most common tournament architectures, including one-day workshops and large-scale corporate tournaments.

Chapter 3, "Direct the Tournament (or Not)," looks at whether you should direct the ideation process according to a *predetermined strategy*, a set of guardrails established in advance—for example, only considering opportunities related to a target market segment. If you are highly confident that your strategy is correct to the point of excluding other approaches, we'll show you how using a top-down innovation tournament, in which only opportunities aligned with the predetermined strategy are considered, works. We will also argue that, in most of the settings we've experienced, a more open-ended tournament is usually the better choice. After all, you can always apply a strategic filter in considering and selecting opportunities for further exploration. Furthermore, unless the tournament has severe time constraints, an initial bottom-up effort can be followed by a more directed tournament once a strategic direction has been validated.

Chapter 4, "Generate a Better Pool of Opportunities," focuses on specific ways to improve the flow of opportunities that fuel your tournaments. Three levers drive the success of an innovation tournament: You can increase the quantity of ideas by engaging more people. You can increase the average quality of ideas by engaging the right sources. And you can increase the variance in the quality of the ideas by increasing the diversity of the originators of ideas.

Chapter 5, "Perfect the Pitch," describes approaches to representing and communicating opportunities, including the most common method in team settings: the 60-second oral presentation. In this chapter, we will provide you with hands-on advice for how to set up a process that lets hundreds, if not thousands, of participants pitch their ideas.

Chapter 6, "Craft the Selection Processes," details different methods for selecting the most promising opportunities and argues for quick, approximate methods early on—stickers applied to posters, for example. We also describe how to apply more refined analyses later on.

Chapter 7, "Develop Opportunities," shifts the perspective from the tournament as a whole to that of the individual opportunity. Sometimes you want to think like the tournament organizer, and sometimes like the contestant. As the organizer of a footrace, you want to attract a large and capable field. As contestant 1043, you want to run the best possible race. Both perspectives are critical for identifying the best athletes.

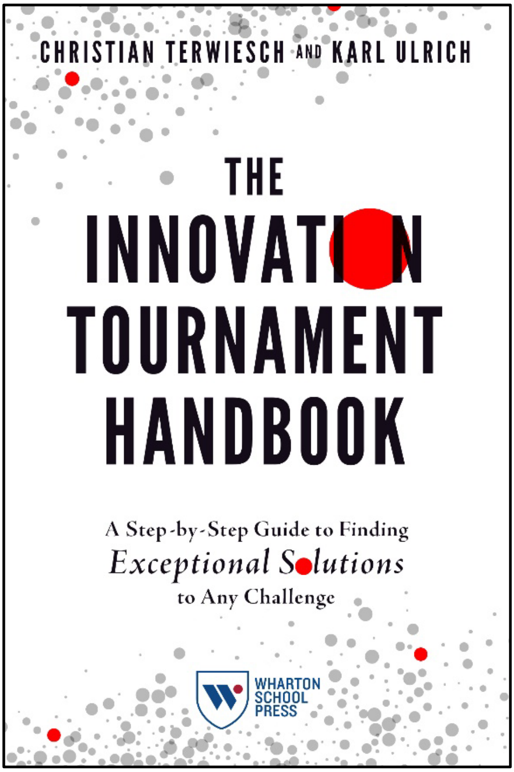
In chapter 8, "Tournaments and the Culture of Innovation," we turn to organizational culture. Some aspects of innovation benefit from tight cultures and others from loose cultures, terms we'll elaborate in the chapter. We show that the tournament structure can help integrate tight and loose elements and can foster an innovative culture.

The conclusion is a call to action for you as an innovator and innovation leader. Here we will help you organize your critical next steps into four pillars for future success.

Again, we've put these chapters into what we consider a logical order, but there are very few dependencies among them. You can browse according to your own needs.

Finally, we wrote this book to work well in written or audio format and so have largely avoided the use of tables and figures. We realize that in many organizations, ideas will be communicated to groups using presentations supported by graphics. To help with that, we have provided presentation graphics for your use at the website innovationtournaments.com.

Thank you for reading this excerpt!



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About the Authors

Christian Terwiesch is the Andrew M. Heller Professor at the Wharton School of the University of Pennsylvania. He is a professor in Wharton's Operations and Information Management department and codirector of Penn's Mack Institute for Innovation Management, and also holds a faculty appointment in Penn's Perelman School of Medicine. His research on operations management and on innovation management appears in many of the leading academic journals, including *Management Science* and the *New England Journal of Medicine*. He is an award-winning teacher with extensive experience teaching MBAs and executives.

Terwiesch is the coauthor of *Matching Supply with Demand*, a widely used operations management textbook that is now in its third edition. Terwiesch used this book to launch the first massive open online course (MOOC) in business on Coursera. Well over half a million students have enrolled in the course.

His book with Karl T. Ulrich, *Innovation Tournaments*, was published by Harvard Business School Press. His latest book, *Connected Strategies*, combines his expertise in the fields of operations, innovation, and strategy to help companies take advantage of digital technology leading to new business models. The book has been featured as the cover story of the *Harvard Business Review* and has been shortlisted for the prestigious Thinkers 50 award, the "Oscar of Management."

Karl T. Ulrich is CIBC Endowed Professor at the Wharton School of the University of Pennsylvania, where he is also professor of mechanical engineering. His most recent project was the design and construction of Tangen Hall, the largest facility in the world for student entrepreneurship. He cofounded Venture Lab, the Weiss Tech House, and the Integrated Product Design Program, institutions fostering innovation in the university community.

He is the coauthor of *Product Design and Development* (7th edition, McGraw-Hill, 2019), a textbook used by a quarter of a million students worldwide; *Innovation Tournaments* (Harvard Business Press, 2009); and *Winning in China* (Wharton School Press, 2021). He is the recipient of many teaching awards at the Wharton School, including the Anvil Award, the Miller-Sherrerd Award, and the Excellence in Teaching Award.

In addition to his scholarly work, Ulrich is a prolific innovator and entrepreneur, holding 24 patents. He is a founder of Terrapass Inc., which the *New York Times* identified as one of the most noteworthy ideas of the year, and a designer of the Xootr scooter, which *Business Week* recognized as one of the 50 coolest products of the twenty-first century. Ulrich holds bachelor's, master's, and doctoral degrees in mechanical engineering from MIT.

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