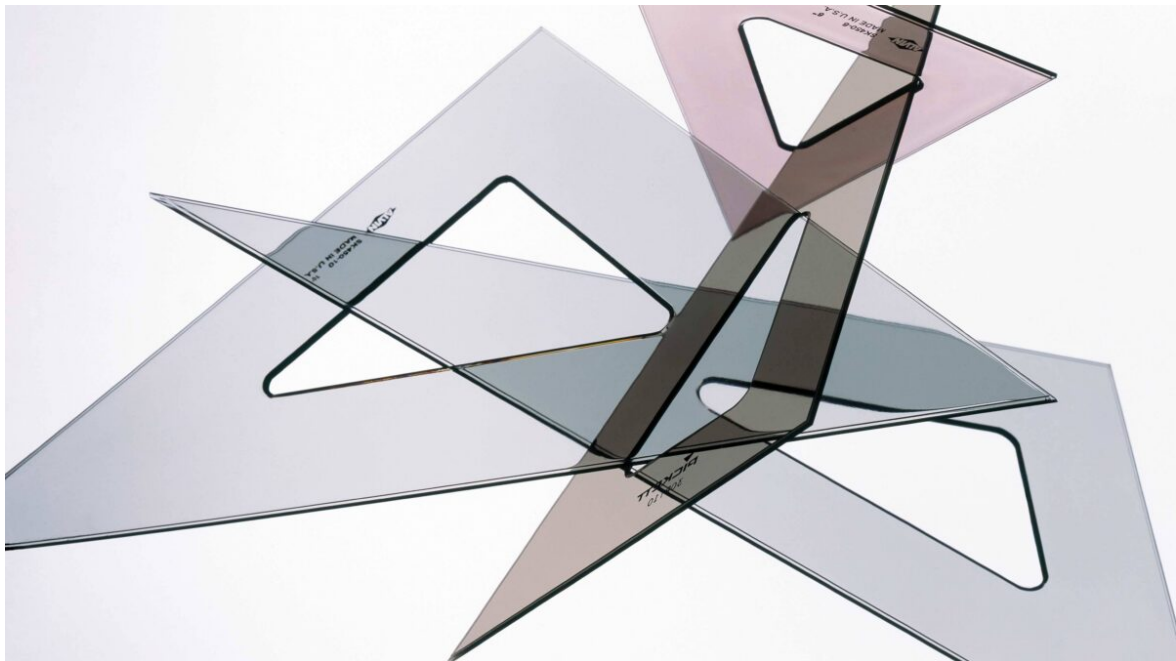


Radical Optionality

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Summary. The next era of competition is at hand. To succeed in an environment of high uncertainty, greater short-term pressure, and tighter resource constraints, companies must become even better and more efficient at developing options for future advantage while... [more](#)

In the early 1990s, the digital revolution marked a shift to a new era of competition, one that was characterized by rapid business-model innovation, the dissolution of enterprise boundaries, and a blurring of industry borders. These changes were driven by technology and facilitated by a very low cost of capital. Today

we're at another inflection point. The pace of change continues to accelerate as digital innovations such as AI reshape business models and shorten the timescales necessary and available for achieving strategic renewal. Moreover, climate change, geopolitical conflict, and social polarization are elevating uncertainty and volatility. Business leaders are facing choices not between a few plausible future states but rather a multitude, with each individual state being hard to describe *ex ante* and only recognizable *ex post*. It is no longer sufficient for firms to develop specific options that could secure advantage in a given future scenario. Rather they need to be able to adapt quickly to—and thrive in—any new reality.



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This shift is taking place as the extraordinary period of essentially free capital is coming to an end. Fewer resources are available for financing the search for new advantages, and investors are increasingly demanding short-term returns.

Many leaders will react to these new environmental conditions by pouring their efforts into maximizing short-run earnings and conserving cash. However, research has shown that long-term returns are predominantly driven by differential growth, particularly in turbulent times. Thus firms face a dual challenge: They need to execute sharply on their current models while developing a multitude of options to secure future growth and competitive advantage—on tighter timescales and at lower costs.

To reconcile these apparently conflicting objectives, we propose a new strategic paradigm, which we call *radical optionality*.

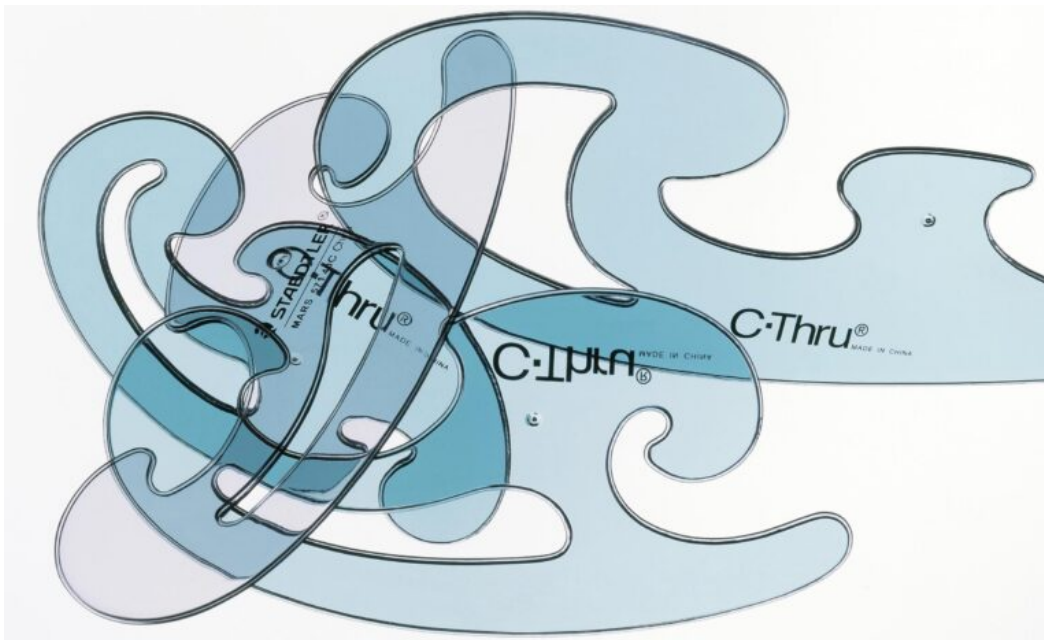
Embracing radical optionality will help firms turn uncertainty from a disruptive threat into a potential source of advantage, allowing them to thrive in any future state of the world.

Revisiting the Implicit Assumptions of Strategy

In today's business models, creating options entails a steep economic cost: There are high costs of exploration, both opportunity and marginal, as significant efforts are needed to gather relevant information to feed the innovation process. The rewards are uncertain and only manifest themselves in particular future states. Companies also face significant time delays between ideation and realization, as the outcomes of research are integrated only intermittently into execution processes. And finally, there is a low yield on options, as the disconnect between R&D and the front line, a hypothesis-driven approach to innovation, and the time required to bring a product to market mean that most innovations will not meet the needs of future customers. Overcoming these constraints is possible, but it requires changing five implicit assumptions underpinning today's strategy-making.

1. From thinking *then* doing to thinking *while* doing.

Traditionally a gulf exists between the thinking of strategy formation or innovation and the doing of execution—activities almost invariably performed by different groups of people and on different timescales. This spatial, social, and temporal separation of centralized strategy and decentralized execution is valuable in a stable environment, as it allows for specialization toward analytical or creative or practical activities and ensures that executors do not lose focus by dividing their attention or by working on “fixing” things that are not broken.



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But compartmentalization increases the time delay in realizing new options and reduces their potential yield by creating distance between innovators and the market reality: When thinking is separated from doing, it risks becoming an exercise in guesswork or hypothesizing.

In a fast-changing and unpredictable setting, the wall between thinking and doing must be torn down. *Doing* must be recognized as a form of *thinking*—distributed and embodied: It involves asking questions, venturing answers that have not yet been internally vetted, turning unidirectional offers into dialogues, and creating and running low-cost experiments that are “off side” relative to the activity sets of the business.

Elon Musk’s much-criticized approach of tweeting out seemingly seat-of-the-pants ideas for reengineering Twitter—including a CEO poll—may, for all the resulting controversy and negative consequences, also contain a valuable hint. Under massive time and resource constraints it is possible to navigate a turbulent environment by thinking out loud, and thus turn a traditionally routinized activity (corporate communications) into one of prospecting and discovery (trying things out at the speed of thought).

2. From striving for fit to creating optionality. When the future state of the world is likely to be similar to the current one, or is at least somewhat knowable, it is efficient to tailor strategy to achieve optimal fit with the current or anticipated environment. But the efficiency gain of striving for fit comes at the cost of flexibility.

In times of uncertainty and change, optionality becomes critically important. Companies need to embrace more diversity and flexibility in their practices and approaches in the present, thereby keeping more future options open. For example, Alibaba noticed the potential trifurcation of the online shopping market—between a search-based model like Google Shopping, a mall-based (multishop) model like Alibaba’s Tmall, and an emporium (general store) model like Amazon—and realized it couldn’t predict the winner. So it decided to split the business and back all three options, with the intention of quickly remobilizing around the winning outcome as it became clear. In fact, each option was viable for a different part of the market, meaning that Alibaba’s decision not to pursue a best-fit strategy not only made it resilient at a critical juncture but also enabled it to remain a player in all three market segments.

Achieving optionality implies abandoning the winner-takes-all approach, which has long been central to strategy and innovation. The benefit of the optionality approach can be observed in biology. For example, viruses like Covid-19 and influenza persist precisely because they mutate so much, with new dominant strains successively arising from a diverse population of variants—frustrating their “competition,” the medical profession, as it attempts to control their spread.

To enhance optionality, firms need to keep around so-called losers, refraining from shutting down ideas that at first seem unsuccessful. They may become valuable if the environment shifts or in combination with other innovations.

It is no longer enough for firms to develop specific options that could secure advantage in a future scenario. They need to be able to adapt quickly to—and thrive in—any new reality.

The revival of Google Glass is a case in point. When initially released to the public, it was received poorly, primarily because of aesthetic issues and privacy concerns, and Alphabet quickly withdrew the gadget. However, internally, a group reconceived the product as a tool for the workplace, targeted at helping employees conduct their tasks more efficiently and safely while collaborating more easily. The enterprise edition is now used by many large manufacturers and logistics companies.

3. From exploring *versus* exploiting to exploring *while* exploiting.

Nothing in business stays constant. Even in a stable context, competition erodes advantages over time, requiring companies to invest in maximizing existing advantages and to search for new ones. Firms that manage to balance this trade-off are often described as ambidextrous, a term coined by Charles A. O'Reilly III and Michael L. Tushman. Ambidextrous companies typically run execution and innovation as separate, loosely connected processes. They are carried out by different parts of the organization and on different timescales, and capital and management attention are carefully balanced between them.

Achieving radical optionality requires breaking, rather than optimizing, the assumed ambidexterity trade-off by exploring *while* exploiting. Companies will need to achieve what might be called “polydexterity,” the ability to exploit existing advantages in current markets while working toward multiple unknown potential future states. The goal shifts from balancing apparently contradictory activities to integrating them in order to create

synergies that improve the economics of innovation, thereby reducing the costs, delays, and failures associated with separateness.

Take the example of Google. Its main product is search, monetized through advertising. But every time it executes a search, it also improves its ability to search. We could say that Google is searching in two domains simultaneously—for words and ideas (the specific search) and for better ways to search, using the accumulated data (the meta-search). Thus it is exploring while exploiting.

This idea is not limited to digital offerings. Any products or services that, as they are used or consumed, generate information about existing or new needs—whether captured remotely by digital sensors, during live or virtual interactions with customers, or by some other means— can enable a tighter integration of execution and propel the search for new sources of value. For example, EllisDon, the multinational construction company, has moved from delivering buildings on spec to nurturing multidimensional relationships in which it builds and manages a project, providing ongoing services as needed and in return obtaining important information about how tenants interact with their spaces.

4. From market segments to mass customization. Successful businesses have always endeavored to satisfy customers. But the customer was traditionally treated as a separate entity whose needs were knowable only partially and episodically. Since physical and informational limitations made it infeasible to address each customer—or each usage episode—individually, companies typically aggregated customers into market segments according to features such as age, social status, gender, and geography. The tastes and interests of each group were averaged: All working-class male teenagers in Cleveland were assumed to have similar preferences, which were constant over time.

Today digital market platforms can help overcome those limitations: Platforms such as Amazon can address the needs of each customer and each occasion individually and immediately, eliminating the need to predict preferences on the basis of averages alone. They can make sharper individual predictions by looking at behavioral data such as clicking patterns, search histories, and the conditional probability that the customer goes to any part of the site from any other part of it.

Companies will need to achieve “polydexterity”: the ability to exploit existing advantages in current markets while working toward multiple unknown future states.

Companies are not competing for theoretical market segments anymore but rather for the attention and expendable cash of the individual consumers or organizations that they target. Doing so means emphasizing personalized and tailored offerings. For example, the San Francisco-based start-up Unspun manufactures jeans to order using a 3D body scan of the customer, conducted either in-store or remotely using an iPhone. This approach requires a much closer integration of sales and manufacturing processes than that of conventional apparel brands, but it results in enhanced customer satisfaction, reduced waste, and significant cost savings because the company keeps less inventory and sees fewer returns.

Mass customization also means proactively executing on customers' potential needs. For example, both HP and Brother automatically ship replacement toner to customers when their printers send out a “low ink” signal.

In this race, companies are not necessarily competing against firms with similar products and services but often against completely different companies offering quite different goods and services: a night in with Netflix may be competing with a night out at Legal Seafoods. They both provide leisure experiences with a certain value and time profile.

5. From enterprise to ecosystem. Business strategy has been predicated on the individual firm as the unit of competition, within relatively stable industry boundaries. Companies made strategies and developed products and services internally, only occasionally and selectively partnering with specific customers and suppliers. This approach ensured that their offerings, capabilities and assets, and competitive advantages were proprietary and unique.

But in a more dynamic and uncertain era of competition, owning a proprietary asset can easily turn into a liability; there's a higher risk of obsolescence, and companies have less flexibility. Therefore, the ability to build or leverage digital platforms and ecosystems is key to achieving high optionality. Firms can multiply their options by complementing their capabilities with those of other ecosystem participants, which means that they can avoid being locked into a specific offering. For example, the video-conferencing platform Zoom has developed a base of applications such as meeting recorders, white boards, and lighting detectors, supplied by companies that vied with one another for fast integration into Zoom's ecosystem.

This strategy is not limited to digital natives. Many predigital incumbents, such as John Deere, with its smart-farming ecosystem, Walmart, with its digital marketplace offering, and Maersk, with its digital logistics platform, have also embraced this approach.

Putting Radical Optionality into Practice

Overturing the inherited tenets of strategy is a daunting proposition. What could a model of radical optionality look like in practice? While no company we are aware of has yet perfected such a model in all respects, some firms demonstrate the feasibility of different aspects of it and can thus serve as orientation points for operationalization.

Embrace external complexity. In a stable context, it is efficient to strive for standardized offerings in order to achieve economies of scale and experience. However, creating optionality for an uncertain future means turning variation from an expensive inconvenience into a valuable source of information, leading to greater optionality and differentiation.

Companies need to treat the execution of routine tasks and customer interactions as opportunities for learning. Standardizing tasks or offerings becomes counterproductive since it suppresses variance, which is the grist for new ideas. Instead, firms need to leverage their digital presence and use learning algorithms to capture and process lessons from each interaction.

Take the example of call-center operations—a vast set of activities that spans many verticals, including automotive sales, telecom, software service, and energy distribution, to name a few. Each call center has a critical function: supporting clients by answering their questions, providing them with information, and registering and addressing their complaints. Simple operational stuff? No. Each call—recorded, analyzed, parsed, summarized, and encoded using algorithms that look for identifiable patterns—generates valuable data, which can be mined to inform the design of better client-support experiences, better training for call-center staff, and better offerings.



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Or consider cloud storage platforms like Dropbox and Box. Even as they are under attack by Microsoft's and Amazon's cloud storage services, they continue to differentiate and thrive. They do so by providing users with best-in-class integration with common software and collaboration tools, which smooth out users' workflows by knowing the types of documents and files users store and the kinds of activities they engage in with them.

Simultaneously search and execute. Improving the economics of

optionality requires firms to achieve simultaneous search and execution, not just a tighter integration of the two. The spatial and temporal boundaries between them must be dissolved. The aim is to achieve one continuous dynamic process; each employee is always both exploring and exploiting. That will require embedding components of search into execution and using the resulting insights to guide the search. Going beyond mining information from natural variation, companies can create artificial variation by leaving room in scripted processes for employees to test out new possibilities. This needs to be coupled with a thorough analysis of which deviations were successful, and why, and evolving the script accordingly. Companies can also utilize structured experimentation: For example, companies like Booking.com and Microsoft conduct thousands of online experiments a year to identify potential improvements to the user experience.

At the same time, companies must continuously feed ideas from search into execution to validate hypotheses and accelerate iteration (or attrition). One way to do this is to recruit field testers, as the New England-based apparel company Smartwool does. They buy and test new products, providing the company with crucial insights about their performance, suggestions for improvements, and ideas for new products. Another option is for companies to get customers involved earlier in their ideation process. For example, video-game studios often publish playable demos—essentially vertical slices of the core gameplay—early in the development process to gather feedback and stir up interest. In recent years some studios have even begun approaching customers with little more than a concept for a game or outlining their intentions on a crowdfunding platform to receive investments as well as feedback. Those lessons can shape the production process and enhance the popularity of the final product.

As companies transcend the barrier between search and execution, the delay between idea and realization is significantly reduced. Ultimately it may be eliminated, as firms integrate processes on timescales that are accessible only to machines, with small- and large-scale decisions being made by algorithms, based on a detailed and up-to-date understanding of customer desires and the current context. Think of Netflix's recommendation engine, which constantly updates its suggestions based on an evolving understanding of individual users' tastes.

Facilitate, shape, and monetize the customer's exploration

process. Most firms focus on satisfying the immediate and explicit needs of customers. Some go further and try to predict future needs using the techniques detailed above. But few companies interact directly with the customer's own process of exploration.

Serving the exploration needs of customers offers various avenues toward value creation. By facilitating the customer's search for products or services, companies can learn more about the customer's needs, which can serve as crucial input for their own search process (akin to Google's approach). Helping customers find the best solutions to their explicit needs has become the core business for some firms—think of metasearch engines that let users compare offerings, such as the travel firm Kayak. Others have found ways to enhance their core offering. Nike, for instance, has introduced a "Fit" function in its app that allows customers to measure their foot size and shape, helping them find the right shoe size, which may differ among sneaker models. Customers feel more secure in their purchasing decisions, and Nike improves its inventory management and reduces the number of costly returns.

The boundaries between search and execution processes must be dissolved. Each employee is always

both exploring and exploiting.

By interacting with the customer's search process directly, companies can also shape it. For example, fashion e-commerce websites like Zappos, through their "wear it with" or "complete the look" recommendations, nudge customers to purchase other items complementing a selected piece. In this way, companies can increase the potential yield of all options they are pursuing by increasing the probability that they will be desired by the customer. It has been reported that about half of all products sold on Amazon are presented to customers by its personalized recommendation engine (see "The Next Great Digital Advantage," by Vijay Govindarajan and N. Venkat Venkatraman, HBR, May–June 2022).

Some companies have turned the customer's search process into a product by providing search-as-a-service. NZXT, a computer-hardware manufacturer, offers a custom-PC building service, which differentiates itself from the competition by allowing customers to specify, alongside their budget, which games they want to play and what graphical performance they expect, before recommending a set of components that fits those requirements. This enhances convenience, as customers don't have to navigate confusing third-party performance benchmarks or reviews to select the appropriate hardware.

A customer's exploration—a journey of self-discovery and personal growth—can even be monetized directly. For example, purchasing a bottle of wine may be not only the expression of a desire to taste the beverage but a learning journey in winemaking and culture. The Raj Parr Wine Club is a subscription service that offers biannual shipments of six bottles of wine for a fee of \$500. While it is more expensive than some competing services, it includes sommelier Raj Parr's phone number and an encouragement to discuss the world of wines with him, which appeals to aspiring wine connoisseurs.

Organizational Implications

Strategy is not the only thing that is traditionally tailored toward maximum fit and alignment. The organization itself is most often designed for static efficiency—with employees in set roles following set processes. Organizational design must also reflect the new strategic approach. Thus firms pursuing radical optionality will be characterized by the following:

1. Organizational fluidity. To embrace external complexity and variation in their strategies, firms must reflect those traits in their organizational setup. This is consistent with the biological law of requisite complexity, which posits that the internal complexity of a system must match the complexity of the environment it confronts, if it is to adapt successfully. It doesn't need to become as structurally complex as its environment—that would dwarf its metabolic functions. But it needs enough complexity to allow it to make changes that matter to its survival. In a situation in which the nature, number, and importance of environmental variables change quickly, organizations cannot be structurally inert—as most hierarchical organizations are. Rather they need to be organized as networks of networks that are rapidly reconfigurable.

Take the example of Alphabet's approach to machine-learning development: There are several hierarchically independent groups within Alphabet (such as DeepMind and Google Brain) that alternately compete and collaborate to bring solutions to a rapidly evolving market for predictive and causal inferences. This approach not only keeps many options open, but it also increases the potential for creating options by leveraging learnings from different groups. Organizations cannot be designed as top-down, static hierarchies but must become continuously evolving models, leaving room for roles, structures, and processes to emerge bottom-up, tailored to the shifting context.

2. Human-technology partnerships. As boundaries between

thinking and doing and exploring and exploiting are torn down, more will be required of employees, who will be asked not just to execute but to innovate around their tasks.

They will need help from machines, which can take over routine tasks based on pattern recognition or optimization as well as assist in more creative efforts. Generative AI tools can, for example, spark new ideas for graphic designers or, through clever prompts, simulate likely responses to a marketer's communications drafts. That will let employees focus on tasks requiring human cognitive abilities, such as imagining entirely new possibilities or conducting activities requiring ethical reasoning or empathy. Amazon, for example, has automated decisions such as inventory management and pricing under a philosophy known as "Hands Off the Wheel." The company focuses its human talent on coming up with new ideas, such as cashier-less grocery stores.

To realize synergies between machines and humans, companies will need to fundamentally rethink organizational design to segment cognitive tasks appropriately, to create effective governance for algorithmic processes, and to create machine-human interfaces that are matched for the very different processing bandwidth and comprehension functions of each. Only by doing so will the full potential of what has been called the "bionic company" be achieved.

3. Forward-looking performance metrics. The value of options will only be apparent in certain states of the world, and usually over the long term. For this reason, short-term perspectives will always undervalue optionality. Thus new metrics are required that go beyond the traditional focus of exploitative proficiency, such as market share and profitability.

Although most companies don't do this, it is certainly possible to place greater emphasis on future option value. For example, 3M owes part of its innovative success to its "new product vitality

index,” a metric that tracks the share of sales from products that didn’t exist five years ago.

Thornton Tomasetti, the leading civil-engineering firm, offers another example. It leverages a vitality scorecard to assess and manage its growth potential and capacity for reinvention, relative to those of its competitors. This is complemented internally by a metric that rates project proposals on their contribution to overall firm vitality.



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There are, of course, limits to numerical quantification. Making decisions today on the basis of potential events in the far future is something that both organizations and markets have trouble with: There is no market for Caribbean cruise berths in December 2098. To bridge this gap of imagination, organizations can focus on developing technologies that are maximally evolvable—so that they work in as many conceivable worlds as possible. In a world in which probabilities become poor bases for predictions, we should use *conceivability* as a guide to possibility. In fact, we can make a strong argument for imagination being a competitive advantage.

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The next era of competition is at hand. To succeed in an environment of high uncertainty, greater short-term pressure, and tighter resource constraints, firms must become even better and more efficient at developing options for future advantage while continuing to perform in the present. To achieve a state of radical optionality, firms must overturn some of the core tenets of

strategy—by thinking while doing, exploring while exploiting, and striving for flexibility rather than fit. They must embrace complexity, learn to search and execute on ideas simultaneously, and engage with customers in their personal journeys. Accomplishing that will require new organizational forms and work practices, deeper integration between humans and technology, and next-generation performance metrics.

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