Strategy Science

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Abstract. Theories are foundational for decision making. We point to a normative agenda that emphasizes the need for decision makers—including managers, firms, entrepreneurs, and startups—to develop their own theories. Our argument is that decision makers should be like scientists and use the scientific method—theories, causal reasoning, and experimentation—to problem solve and generate new data and value. In this paper and special issue introduction, we discuss the foundations of the theory-based view (TBV), particularly as it relates to forward-looking reasoning and decision making under uncertainty. Rather than handing prescriptive theories to others, the goal of the TBV is to provide the scaffolding for economic actors themselves to develop their own, idiosyncratic theories. Theories are built on heterogeneous beliefs and causal reasoning that enable the generation of unique paths to value. We discuss the implications of this argument for key theories within strategy and economics, along with highlighting research opportunities at the nexus of the TBV and topics such as learning, entrepreneurship, finance, ownership and leadership. We also introduce the special issue papers and discuss their contributions to the TBV.

Keywords: theory-based view • decision making • strategy • entrepreneurship • causal reasoning • theories • governance

Introduction

The theory-based view (TBV) begins with the premise that unique beliefs and theories guide economic actors. To develop and test their beliefs and theories, economic actors—entrepreneurs, managers, innovators, startups, and firms—should act like scientists (Felin and Zenger 2009, 2017; Camuffo et al. 2020). The TBV provides normative guidance about how to utilize the scientific method, specifically emphasizing the roles of causal reasoning, problem framing and solving, and experimentation in the generation of economic value. Theories are practical instruments that enable economic actors to craft unique causal paths for value creation. Instead of the traditional academic approach of prescribing decisions, strategies, or universal theories to managers or entrepreneurs, the TBV provides economic actors with the scaffolding—tools and processes—they need to develop their own theory of value, which then guides their unique actions and decisions.

In this introduction to the *Strategy Science* special issue, we first offer an overview of the TBV. We specifically discuss the unique and differentiating attributes of the TBV, focusing on cognition, causal reasoning and its normative focus on actor-specific theories. Thereafter, we highlight the implications of the TBV for key theories within the field of strategy (like the resource-based view and positioning school) and also discuss opportunities for future research in domains such as learning, entrepreneurship, finance, and governance and ownership. We then introduce the special issue papers and point to the respective contributions that these papers make to the TBV.

TBV: An Overview

Theorizing is traditionally thought of as a cognitive activity performed by scientists. But the TBV builds on the idea that all human cognition—whether it involves scientists, infants, entrepreneurs or executives—involves theorizing and experimentation (Gopnik et al. 1999, Felin and Zenger 2009).[1]

The TBV sees theorizing as central for any decision maker. Perhaps the most ambitious claim of the TBV is that *everything* within the domain of economic decision making is theory driven. Theories shape what economic actors perceive and see, what they search for, how or

whether they learn, what experiments they engage in, and how they govern. Theories shape the engagement of actors with the world, whether the theory is implicit or explicit, shallow or profound, based on tight or weak logic. Theories can of course be tested and experimented on to assess whether they are plausible. But the TBV seeks to make theories and the theorizing of economic actors more explicit, rational and productive, enabling decision makers to compose better theories that are more unique and pragmatically useful in guiding decision making.

A central premise of the TBV is that economic actors—much like scientists—can be taught to be more effective in composing theories and utilizing the scientific method (Felin et al. 2024). Although humans have a natural capacity for theorizing, this ability can be enhanced and emphasized. Thus, the agenda of the TBV is normative. Accordingly, theory-based treatments and interventions can be compared with other treatments, and their efficacy tested in terms of the decisions and outcomes they yield. Existing empirical work—largely with randomized controlled trials (RCTs)—provides strong support for the theory-based approach (Camuffo et al. 2020), including a number of large-scale replications (Agarwal et al. 2023, Camuffo et al. 2024b, Coali et al. 2024, Novelli and Spina 2024).

Given the importance of theories in guiding strategic decision making, we turn now to an overview of the TBV. We emphasize the unique aspects of theory-based reasoning, and where appropriate draw links to related areas and perspectives.

Cognition: From Information Processing to Belief Heterogeneity

In terms of cognition, the TBV emphasizes heterogeneous beliefs—a sharp departure from traditional models of cognition in economics and strategy. Existing models are grounded in information processing and bounded rationality (Simon 1956, Kahneman 2003). They emphasize human cognition as constrained by computational limits. The central emphasis is on how the mind's capacity to process information is finite, leading to biases and bounded decision making. Bounded rationality has been a central pillar for large swaths of the judgment and decision-making literature across economics and management (for a review, see Chater et al. (2018)). The core concern in this literature is on how decision makers rationally handle information asymmetries and mitigate cognitive biases by processing more information, thereby becoming more rational within their local environments (Arrow 1986). The emphasis is on the quantity of information and the ability of economic actors to appropriately process it.

This work assumes that differences in economic performance arise from the ability to overcome cognitive constraints and biases through enhanced information processing. This literature is also intimately tied to artificial intelligence (AI) (Simon 1990), with cognition viewed as an exercise in increasing the amount and accuracy of information considered before decision making.

In contrast, the TBV shifts the focus from information processing to the generative aspects of cognition, especially in situations where decisions are not simply about the accurate processing of *given* information or data. Rather than emphasize the cognitive limits of human information processing, the TBV highlights the capacity of economic actors to generate novel beliefs. Belief heterogeneity and belief asymmetry, essentially, provide the raw material for new choice options. Although belief asymmetries—where beliefs might be contrary to existing data and evidence—are traditionally seen as biases (Benabou and Tirole 2016, Pinker 2021), in the TBV they are a central starting point for the generation of value. That is, contrarian beliefs enable economic actors to see value that others may not be able to see.

The TBV does not question that humans have cognitive and computational limits when it comes to decision making, but the perspective's focus is elsewhere. The focus of the TBV is the human capacity to "endogenously" generate information, knowledge and options that previously were not salient or obvious to others. Here the idea of heterogeneous beliefs is fundamental. Asymmetric or (in some form) contrarian beliefs are the cognitive raw material of theories and novel, economically useful knowledge. From the perspective of the TBV, the very notion of "information" is a black box that demands further specification. What becomes uniquely salient as *relevant* information is driven by the ex ante beliefs of economic actors. That is, beliefs condition the salience and value of information.

To illustrate this view of cognition, consider how it reshapes the notion of "search" in economics and strategy. Traditional models conceptualize search as initiated by a process of representing an environment, either partially or exhaustively (Simon 1955, Kauffman 1993, Gavetti and Levinthal 2000). In these models, search is largely about processing information to evaluate a predefined array of options, with scholars often urging a shift from "local search" to more expansive "global search" where untapped possibilities may be found. The focus is further on the efficiency of information gathering, as firms differ in how quickly and effectively they process data about potential resources (Makadok and Barney 2001; also see Lippman and Rumelt (2003)). Also, search is about refining the ability to capture and represent the environment accurately, assessing the value of resources based on the information at hand.

In contrast, the TBV shifts the focus away from search as information processing or representation of an environment. Instead, the TBV emphasizes the endogenous creation of salience for specific things in the environment, including latent sources of value. The emphasis is on how

actors generate the *awareness* for things to search for, which are not obvious to others (Felin and Koenderink 2022). Rather than exhaustively scan the environment for pre-existing resources, the TBV argues that value itself is generated through heterogeneous, often contrarian beliefs and theories that make certain resources or opportunities salient to some but not others. The environment—or strategic choices or resources—does not objectively present itself for evaluation; instead, what is salient in the environment is shaped and constructed by the heterogeneous beliefs and theories of the economic actor. Rather than emphasize bounded rationality, the TBV emphasizes "generative rationality." Search, in this sense, is not about accurately representing or mirroring what is already there, but about creating salience for something previously unnoticed or undervalued. This endogenous view of search, rooted in belief heterogeneity, reflects the TBV's focus on the generative capacity of cognition, where actors create rather than discover value (Felin et al. 2023) through the pragmatic deployment of the scientific method (Zellweger and Zenger 2023).

This generative feature of cognition is achieved as actors not only think with data and experience (i.e., process information) to predict a future state, but think past it to imagine the future, and then causally reason how this future state might logically be attained (Felin and Holweg 2024). Admittedly, envisioning the future through causal logic, rather than predicting it from past data or information may be an infrequent activity. More frequently, firms may simply update goals and set new benchmarks as linear extensions to existing metrics. But solely updating benchmarks is an admission to being inside an already existing performance frontier. The TBV advocates a different path of imaging a world that does not exist, composing a logical path to creating it, built with assumptions, subproblems, and premises, and then gathering data to test the validity of that causal logic.

Given the TBV's cognitive emphasis on belief heterogeneity—rather than mere information processing—there are useful connections between the TBV and Bayesian reasoning (Zellweger and Zenger 2023, Agrawal et al. 2024, Camuffo et al. 2024a). At the heart of Bayesian approaches is the idea that decision making under uncertainty can be structured by subjective probabilities, with "priors" representing the beliefs that decision makers hold before encountering new evidence (Savage 1972). These subjective priors align with the TBV's emphasis on the importance of heterogeneous beliefs, perhaps offering a way to formally model how theories and divergent perspectives shape cognition and decision making. In both approaches, an actors' beliefs—rather than an exhaustive processing of information—drive decisions, highlighting how beliefs are updated as individuals respond to new information or evidence.

Although Bayesianism provides a possible way to formalize belief heterogeneity in the context of the TBV,

there are active conversations about how well it operationalizes this idea and whether modifications are needed (Ehrig and Schmidt 2022, Camuffo et al. 2024a, Ehrig et al. 2024). A concern is that standard Bayesian models understate the generative aspects of belief formation emphasized in the TBV, particularly in situations of deep uncertainty where relevant data are scarce or nonexistent. Furthermore, the process by which the *relevant* evidence is identified, generated and incorporated into belief revision is not explicitly discussed within the Bayesian framework. The intuitive, broad logic is that a signal consistent with a belief or focal event (a "good" signal) updates positively the expected probability of the event, whereas an inconsistent signal ("bad" signal) updates it negatively. But Bayesian logic is more restrictive because Bayes' law has explicit rules about the posterior distributions of a Bayesian prior distribution. Bayesian posterior distributions, which update an initial prior distribution, are simplified when we use a conjugate prior—a prior distribution that matches the form of the posterior distribution produced by Bayes' law, combining the probability distributions of the signal and the event. What this means in practice is that there are substantial updates and learning that extend beyond formal Bayesianism (in highly uncertain or complex environments). De facto, this amounts to saying that not all positive or negative updates of a good or bad signal are consistent with Bayes' law, and we can update consistently with the broad logic above even if the update does not follow Bayes' law. More importantly, Bayes' law cannot deal with unknown events, and thus demands non-Bayesian logic to be incorporated.

Nevertheless, the TBV's emphasis on forward-looking beliefs certainly has some parallels with Bayesianism and offers a plausible mechanism for formally modeling aspects of this process, perhaps in amended form (Ehrig and Foss 2022, Zellweger and Zenger 2022b). In both frameworks, the diversity and heterogeneity of forward-looking beliefs are fundamental starting points for generating value in uncertain environments. But a central emphasis from the perspective of the TBV is placed on the causal reasoning and experimentation that enables the *generation* of new evidence (Felin and Holweg 2024).

From Data-Driven Decision Making to Forward-Looking Causal Reasoning

Existing theories of decision making place a significant emphasis on rationality, specifically defined as decisions driven by existing data and evidence (for a review, see Pinker (2021)). Thus, economists emphasize how decision makers are frequently "inattentive" to the right data or to sample sizes (Gabaix 2019) or how they engage in biases in probabilistic reasoning (Benjamin 2019). Behavioral biases and flaws in judgment and information processing are said to pervade human

cognition (Thaler 2016, Chater 2018, Kahneman et al. 2021). For example, Benabou and Tirole (2016, pp. 142–148) discuss how humans engage in "information avoidance" and are "resistant to many forms of evidence."

Of course, when the right data are available, economic actors should rationally update their beliefs. But as suggested by our discussion above, the TBV is more interested in decision making where data or evidence is not yet available, or where existing evidence is contested. The TBV is focused on asymmetric beliefs and their role in triggering what might be called forward-looking causal reasoning. From the perspective of the TBV, when data and evidence for a belief or some hypothetical future state are absent (or contested), economic actors can engage in actions that generate the requisite new data. In the TBV economic actors "intervene" in their surroundings to generate new knowledge and evidence, rather than passively "read" or scan their environments. Causal reasoning enables them to delineate a path—a set of actions, steps or experiments—that help them create the conditions for the realization of beliefs that previously appeared unwarranted and lacking in evidence.

The focus on causal reasoning in the TBV builds on and extends Pearl's existing work on causal inference (Pearl and MacKenzie 2018; also see Heckman and Pinto (2024)), particularly the emphasis on counterfactual reasoning and interventions that go beyond merely analyzing existing data. These causal models allow decision makers to understand the relationship between variables by imagining hypothetical interventions and observing their potential effects. However, Pearl's work largely emphasizes causal reasoning on the part of scientists and researchers—using data to understand past events. To illustrate, Pearl's most frequent example is about determining whether smoking causes cancer, which highlights how causal reasoning can be applied retrospectively to analyze data. TBV builds on and extends this framework to forward-looking decision making and causal reasoning by *all* decision makers, not just scientists or researchers. Emphasis is placed on forward-looking decision making by asking what should be done—how might we "intervene"—to achieve desired future outcomes. The TBV is not only concerned with understanding what has already happened but also in determining what could or needs to happen for a particular belief or outcome to be realized. In this forward-looking approach, the emphasis shifts to exploring what interventions, experiments, or conditions are necessary and sufficient to bring about some presently implausible sounding future state.

To offer an example of how the TBV's emphasis on causal reasoning provides a unique lens on central questions in strategy, consider its implications for "recombination" as an explanation for technological novelty and value creation (Schumpeter 1934, Weitzman 1998, Fleming and Sorenson 2004, Bresnahan 2012, Koppl et al.

2023). The central premise of recombination is that new technologies and innovations arise from novel combinations of existing components. Although this idea has been widely accepted, much of the literature lacks an explanation for how or why specific combinations are selected from an almost indefinite set of possibilities. If countless recombinations are possible—and searching through them is costly—then what drives economic actors to choose and pursue particular combinations over others?

The TBV offers a cognitive mechanism that explains how certain components and combinations become salient in the minds of economic actors. At the core of this process is the identification and formulation of a problem, which directs actors' attention to specific components that are relevant for solving it. Rather than searching through random combinations, economic actors are far more focused. They use problem solving and causal reasoning to identify which elements might be pragmatically useful with the selected problem. If existing solutions or components cannot be identified, decision makers may also create or modify components to develop solutions. Through active theorizing, actors recognize underappreciated possibilities, leverage their asymmetric beliefs to envision how interventions—such as recombining or altering existing technologies—could generate value. In this way, the TBV not only explains how certain combinations come into focus but also how individual components, even those requiring modification, become salient as part of a broader process of problem solving and value creation.

Consider the distinction between data-driven decision making and theory-guided causal reasoning in a context like mergers and acquisitions. Data-driven strategists might examine performance correlations with existing events or cases and from these make a conjecture about the attractiveness of acquisition targets. Firms might assess whether to embark on an acquisition by looking at the performance of cases that are as similar as possible to theirs. Or an opportunity for a merger might be analyzed on the basis of various financial metrics. Variables like "experience"—the number of times an activity has been performed—traditionally also play an important role in varied types of corporate transactions. But from the normative perspective of the TBV, any corporate action should be guided by a theory and associated causal reasoning. Theory-less decisions lead to needlessly costly mistakes and generic strategies, while theory-guided causal reasoning enables economic actors to identify and build unique, firm-specific sources of value.

Our point is not that some firms only observe correlations and make predictions, whereas others theorize and test. Most likely, firms will vary in the emphasis they give to each and may even match their use to the problems and opportunities they face. But our more general point is that the more firms engage in theory development and causal reasoning, the more likely they

will be innovative, push the frontier, and enjoy competitive advantages. The extent to which firms engage more with one or the other then depends on their attitudes toward risk and uncertainty, their time horizons, their ability to theorize, and their awareness of the benefits and consequences of these processes for different circumstances. As noted, the aim of the TBV is to be normative, providing guidance as to how to deploy a scientific, theory-guided approach to decision making.

What Is Strategy? One-Size-Fits-All vs. Idiosyncratic Theories and Decisions

A central premise of the TBV is that there is no one-size-fits-all theory, tool, or set of practices for creating economic value. Theories should be unique and idiosyncratic, built from forward-looking causal logic to enable the realization of future states. This need for economic actors to develop their own unique theories has interesting implications for the theories we as academics produce. Theories of decision making and strategy tend to—explicitly or implicitly—suggest one-size-fits-all normative prescriptions. For example, the resource-based view says that firms should "look inside" to find valuable resources, as buying resources is not plausible due to the efficiency of factor markets (Barney 1986, 1995; Denrell et al. 2003; Maritan and Peteraf 2011). The vast literature on open innovation argues that openness is the key to value creation and innovation (Chesbrough 2003, Laursen and Salter 2006). In entrepreneurship, a tool like lean startup's minimum viable product is said to be critically important (Blank and Eckhardt 2024).

The problem is that most academic theories in strategy and entrepreneurship draw conclusions from retrospective data, estimated from a common model, to empirically report average effects, essentially highlighting strategies that worked in the past—on average (Leiblein et al. 2018). But strategy is a forward-looking exercise that demands economic actors build their own unique models about what might drive performance. The problem is that estimates from one-size-fits-all theories simply provide a mirror on the past that necessarily delimits the range of plausible approaches for creating value. They leave little room for contrarian approaches that go against existing theories and frameworks. To illustrate, while openness was being lauded as a "universal" strategy for creating value, Apple maintained a closed ecosystem and achieved unprecedented success by focusing on integrated hardware and software. Similarly, at a time when Porter's Five Forces identified industries like retail or airlines as wildly unattractive (due to low profitability and intense competition), companies like WalMart and Southwest Airlines defied these predictions. Tesla, in an era dominated by outsourcing, pursues vertical integration, keeping production and innovation in-house to maintain control

over its supply chain and accelerate breakthroughs in electric vehicles. Contrarian strategies that run counter to existing theories and instead rely on firms' own idiosyncratic theories and causal paths can lead to significant value creation.

The TBV is a one-size-fits-all theory only in the metatheoretical sense that every firm needs to have their own theory. But what that theory is—what it implies for resources, positioning, the actions that need to be taken, or the extent to which the firm should be open or closed, or how it should govern itself—is highly idiosyncratic. A firm's theory offers unique guidance for downstream decision making related to these issues, as well as a wealth of other practical matters such as what assets to secure or combine, what type(s) of experiments to run, how to think about human capital, and the right forms of organizational governance (Wuebker et al. 2023). Overall, a firm's strategic theory is essentially an experiment in value creation.

Applying the TBV and Future Agenda

As a normative cognition- and action-oriented approach to exploring any uncertain future, the TBV's aspirational reach and ambition is substantial. We highlight here a range of topics core to the strategy and entrepreneurship literature around that we believe the TBV has much to contribute. For each core theory or topic, we highlight valuable insights or alternative framings that the TBV provides, and discuss important, unanswered questions. This also represents an implicit future agenda, as significant work in each of these domains remains to be done. We begin with a discussion of the TBV's connection to strategy's two most predominant theories, before turning to the topics of learning, valuation, entrepreneurship, and leadership.

Theories as the Origin of Resources

The underlying logic of the resource-based view rests on the assumption that competitive advantage either stems from (a) superior information about resource value that allows resource procurement at a discount (Barney 1986) or from (b) the unique possession of valuable resources that are difficult to imitate (Barney 1991). However, because the field has generally assumed that factor markets for resources are informationally efficient—that is, prices reflect all available information—securing discounted resources has been seen as unlikely (Denrell et al. 2003). Therefore, the field's focus has largely been on "looking inside" (Barney 1995) for unique resources that are already possessed by an organization.

The TBV begins from an alternative premise, namely, that "resources are an epiphenomenon of the theories that animate them" (2017, p. 259). In this way, the TBV solves a central puzzle related to resource-based arguments in strategy. Namely, idiosyncratic theories offer a

key mechanism for seeing value amongst the "a vast reservoir of unpriced resources and resource combinations" (Lippman and Rumelt 2003, p. 1085; Felin et al. 2023). Resource-based arguments emphasize search (which can be costly), whereas the emphasis in the TBV is placed on generating awareness of unseen states and potential problem solutions through theories (Felin and Zenger 2017, Ehrig and Zenger 2024). Furthermore, although the superior expectations that enable discovering resources in factor markets *may* reflect information differences (Makadok and Barney 2001), the TBV recognizes that actors with equivalent information, *but different theories* can routinely identify and fabricate valuable resources (Felin and Zenger 2017, Ehrig and Zenger 2024). The rational expectations assumption that undergirds the RBV assumes that markets are efficient, there are no $500 bills on the sidewalk. Essentially, all actors use the same model to interpret information; or as put by Thomas Sargent, "there is a communism of models" (Evans and Honkapohja 2005, p. 566). The TBV recognizes that divergent actors compose divergent models through which they perceive, process information, reason causally and evaluate resources. These actor-specific models animate otherwise inert resources and reveal previously unseen paths to value creation and rents.

Notably, with the TBV, the unit of analysis shifts from resources to a firm-specific theory and the problem it seeks to solve. This focus elevates the importance of classifying theories, as differences in theories can then be linked to differences in sources of rents. Thus, Rindova and Martins (2024) classify theories as analytic, reconfigurative, and projective, whereas Wuebker et al. (2023) classify theories based on the types of rents they seek: arbitrage rents, recombinative or Schumpeterian rents, and cospecialization or Williamsonian rents. There remains valuable theoretical work to be done in mapping theories to the formation or acquisition of resources and rents. We see considerable opportunity for further formal work linking concepts from the TBV to the value-added literature stream (Brandenburger and Stuart 1996, MacDonald and Ryall 2004, Bryan et al. 2022), such as the paper by Ehrig and Zenger (2024). Theories expand the state spaces visible to managers and entrepreneurs (Camuffo et al. 2024a) and fundamentally alter both the paths available for learning and bargaining leverage that actors possess. We also see additional opportunities to further classify theory types or forms of cognition and map these to rents and resources. An empirical agenda of equal importance might directly explore the origins of resources— whether they reflect serendipitous endowments or cognitive creations.

Research might also apply the TBV to work on resource fungibility and redeployment (Helfat and Eisenhardt 2004, Sakhartov and Folta 2015, Levinthal

and Wu 2024). Although this research ties resource redeployment to certain "intrinsic resource characteristics" (Anand et al. 2016), the specific mechanisms behind *how* a new use for a resource—or novel resource combination— is made salient has not been studied. Theory-based cognition and reasoning provides a plausible mechanism for explaining why and how some actors are able to "see" novel uses for resources (even if these resources are owned by others).

Theories as Causal Paths to Positions

The TBV also carries important implications for strategy's positioning perspective, as initially advanced by Michael Porter (1985, 1991). In contrast to the RBV's common focus on internal resources, in this perspective firms achieve competitive advantage through strategic positioning, selecting positions based on an analysis of industry factors that shape profitability. From a normative perspective, the task is to select from among rather generic strategy types that vary in focus from broad to narrow and in their emphasis either from cost or differentiation. The perspective also highlights the concept of fit among the choices and activities that support these positions (Ghemawat and Levinthal 2008, Porter and Siggelkow 2008).

Although critiques of this perspective focus on its static nature and neglect of internal resources, the theory-based critique is that it fails to articulate the *causal path* to generating these positions or activity systems that yield competitive advantages. The focus of existing work is on simply describing positions and the sets of choices, activities, and assets that support them. This approach effectively highlights what grants Southwest or Walmart its advantage, perhaps noting Southwest's remarkable fit among activity choices or Walmart's scale. And it provides a set of tools that help describe these valuable states (or positions) already achieved in an industry or illuminate those still available. But importantly, neither firm started from these positions. What the emphasis on positions or activities fails to provide is a mechanism or tool to guide the process of achieving these positions.

Unique activities and strategic positions are an outcome for the TBV. The TBV asks economic actors to identify contrarian or asymmetric beliefs about the future and to formulate the problems that stand in the way of realizing these future states. It is the process of reasoning and problem solving that enables economic actors to delineate their *unique causal path* to valuable positions and the relevant activities. But much work remains to be done here to build the normative tools that will help managers select targeted future states (as distinct problems to solve), build the causal logic to achieve them, and then test and update these theories, ideally building sufficient confidence in their usefulness to warrant their pursuit and funding. This suggests a

robust research agenda linking the positioning school and competitive strategy more broadly.

Learning with Theories

Learning is a central path to value creation for both entrepreneurs and strategists, with simple experience, repeated practice, failure, and various forms of experimentation seen as the central mechanisms of learning (Leatherbee and Katila 2020, Pillai et al. 2020). These processes lead to accumulating knowledge, often empirically captured as learning curves, where experience in a task reduces cost or improves productivity across time. These "well-known learning mechanisms" are also the central foundation of the literature on dynamic capabilities (Eisenhardt and Martin 2000, p. 1105).

But "learning" is not so straightforward (Levinthal and March 1993), as the plausible sources from which one might learn are highly varied and extremely heterogeneous. This is particularly evident in entrepreneurship. From whom or what should an entrepreneur or startup learn from: other entrepreneurs, customers, experts, experience, or "the environment"? For example, lean startup argues the answer is customers and therefore advises deploying minimum viable products (MVPs), which enable "validated" learning (Shepherd and Gruber 2021, Blank and Eckhardt 2024). Others emphasize learning from the "advice from peers" or "learning from mentors" (Chatterji et al. 2019, Cohen et al. 2019a, b). But peers, mentors, other founders, and investors all come with different advice. How should a startup decide which advice is correct, which to ignore, and which to learn from? For those deploying lean startup, which customers should be listened to? The problem is that using lean startup might lead decision makers to learn trivial things—reaching conclusions that are seemingly "validated" by customers but leading to incremental learning (Felin et al. 2024). In all, among the cacophony of heterogeneous advice and plausible sources of learning, economic actors need to avoid learning the wrong things.

The TBV advocates a completely different approach to learning. Learning is theory dependent. Theory-driven learning is more about validating the *underlying causal path* to value rather than gaining social validation or learning from others' advice. Social validation and advice can of course be vitally important, though it plays a different role within the TBV. But given that future states are inherently difficult to validate in the first place, the emphasis is on the causal reasoning itself. Perhaps a counterintuitive and provocative claim of the TBV is that while focal economic actors—like startups and firms—can certainly learn from others, it might be that others should just as readily learn from these economic actors. The learning literature has been overly focused on *exogenous* sources of learning (including peers, others, experts, and the environment), whereas learning might also be endogenous to the theories of economic actors. If this is the case, then a central issue is the ability of economic actors to "persuade" others about the plausibility of their theory and causal path (Ehrig and Schmidt 2022, Adner and Levinthal 2024).

Of course, the method the TBV advocates for economic actors is simply the scientific method that we advocate for and use ourselves. Theories guide the experiments and evidence gathering that we take up for validation. Rather than relying on simple trial and error, theories define hypotheses and premises to test. Through the scientific method, organizations test hypotheses in practice and gather data and feedback to refine their understanding of what pragmatically works. From this perspective, learning is an ongoing, iterative process of developing and testing theories to continuously improve decision making and organizational performance.

Many of the papers in the special issue directly connect to learning, highlighting ways in which a theory-based, scientific approach shapes and often accelerates the process of learning (Adner and Levinthal 2024, Camuffo et al. 2024a, Chavda et al. 2024, Ehrig and Zenger 2024, Hannah and Ott 2024, Sorenson 2024, Valentine et al. 2024). We see vast opportunities for continued theoretical and empirical progress, as future work either integrates theory-based learning with traditional approaches to learning or provides important contrasts. In addition, there is important work to do within the TBV to better integrate Bayesian learning and experimentation with concepts of belief revision (Ehrig and Schmidt 2022). The RCT work that has already emerged under the theory-based umbrella tests the comparative usefulness of two approaches to learning in an entrepreneurial setting. But the implications for learning extend far beyond entrepreneurship. Learning is central to performance in innovation, in organizational design, in strategy, and at all levels of an organization, and exploring the nature and usefulness of theory-based learning in these contexts remains a significant opportunity.

Financing and Evaluating Theories

The process of valuing companies, especially early stage ventures, remains a particularly challenging task. Venture capitalists and private equity of course exist for precisely this reason—they are in the business of evaluating, valuing and investing in companies which "otherwise have difficulty attracting financing" (Gompers and Lerner 2001, p. 145; Lerner and Leamon 2023). Much of this literature remains relatively descriptive, focusing on financing aspects such as how venture capitalists structure contracts to manage uncertainty (Ewens et al. 2022), cycles in venture capital investment (Janeway et al. 2021), and the critical role venture capital plays in fostering innovation (Lerner and Nanda 2020).

Other work has asked the important question of whether valuations should prioritize the management team (the "jockey") or the business idea and execution (the "horse") in their decision making (Kaplan et al. 2009), generally concluding with an answer of both (Gompers et al. 2020).

But, of course, evaluating the team is much easier than evaluating the business idea itself. There is enormous uncertainty involved in building a valuation model that captures the potential prospects for and payoffs of a new venture. Much of the uncertainty surrounds the theory that undergirds the venture, including the validity of its assumptions and the soundness of the logic that connects them. Inherent to the valuation task is an information asymmetry problem (Akerlof 1970). Founders seek to persuade investors of the soundness of their theory, whereas investors seek to evaluate it. Of course, as with any information asymmetry problem, there is the potential for an unfavorable "market for lemons" outcome to result. In this case, the quality of a venture's theory may be difficult to communicate, particularly because high quality theories are also unique and contrarian. Therefore, to elevate valuation, founders may choose to diminish the uniqueness of their theories, thereby lowering uncertainty and enabling easier evaluation of their ventures (Litov et al. 2012, Benner and Zenger 2016). This bias toward easy evaluation leads to more incremental value creation. Thus, this information asymmetry not only affects the flow of capital but also influences the very strategies firms are willing to pursue, potentially leading to suboptimal outcomes for both the entrepreneur and the VC.

In the TBV this asymmetry runs beyond pure information. It is not merely that the founder and financier possess different information, but rather that they possess different beliefs (Felin et al. 2024). In the TBV, the asymmetry arises not merely from differences in available data, but from fundamental differences in how investors and entrepreneurs understand the venture's theory of value. For example, entrepreneurs may have a contrarian belief about a causal path to some future state and they seek funding to pursue relevant experiments that test this causal path. The central valuation challenge is not really about information asymmetry or even whether these experiments will overcome it, but rather awareness asymmetry regarding the underlying causal logic and strategic narrative. This places a premium on the ability of entrepreneurs to persuade funders that their causal path is plausible—a task that becomes more challenging the more novel and complex the underlying theory. We see enormous opportunity to draw on the emerging TBV to build and empirically test normative solutions to evaluating and valuing theories in contexts such as entrepreneurship and finance.

Entrepreneurs as Theorists

The TBV has made its deepest inroads into entrepreneurship (Felin and Zenger 2009, Camuffo et al. 2024b, Coali et al. 2024). Early-stage entrepreneurs are a natural context for studying, analyzing and empirically testing the TBV (Camuffo et al. 2020). Entrepreneurs, at early stages, face rampant uncertainty. And the TBV is a normative approach that asks entrepreneurs and startups to utilize the scientific method to develop their own theory and path to value creation (Felin et al. 2024).

Some critiques of the TBV argue its link to the scientific method makes it poorly suited for understanding the uncertain process of entrepreneurship. As the argument goes, entrepreneurs aim to create uncertain futures, whereas scientists seek to explain the present or uncover truths (Sergeeva et al. 2022). Similar logic is often used to place the TBV and its application of the scientific method (Zellweger and Zenger 2023) within the discovery side of the creation versus discovery debate (Alvarez et al. 2024). Although the creation-discovery distinction is valuable, the pragmatist orientation of the TBV and the scientific method finds it less central to its agenda (see Zellweger and Zenger (2022a) for a more complete discussion). As the pragmatist philosopher Richard Rorty argues, scientists themselves "are better thought of as solving puzzles than as gradually disclosing the true nature of things" (2007, p. 77). The TBV simply sees entrepreneurs, like scientists, as problem finders and solvers (Nickerson and Zenger 2004, Felin et al. 2021), who pragmatically "fix" beliefs, which "if they work out well … count as discoveries" (Williams 2009, p. xxviii). Economic actors acting as pragmatist scientists simply have less need for this the made-versus-found distinction (Zellweger and Zenger 2022a; see also Dewey (1916)).

The TBV is most interested in the practical agenda of enabling startups and economic actors to create value through the development of unique theories and causal paths. Randomized control trials—thus far, largely with entrepreneurs and small firms—have offered unique insights into this process. For instance, research shows that entrepreneurs who adopt a theory-based, scientific approach terminate underperforming ventures earlier, thereby avoiding the unnecessary waste of resources. They also perform better conditional on their survival (Camuffo et al. 2020, 2024b). These firms are also more likely to avoid "false positives"—bad ventures or ideas—because the approach fosters skepticism and doubt, leading economic actors to more carefully assess their decisions and steer clear of poorly performing projects while still allowing them to exploit potentially valuable new ideas (avoid false negatives). A recent study by Coali et al. (2024) demonstrates that adopting a scientific approach to decision making leads to stricter project selection, with entrepreneurs terminating low-potential projects earlier. Although this might suggest

an increased likelihood of false negatives (discarding potentially viable projects), the evidence shows that these entrepreneurs are more accurate in identifying which projects to terminate. Over the long term, the scientific approach results in better economic outcomes, as resources are reallocated to more promising ventures that receive more external funding and survive longer.

A significant research opportunity lies in comparing how various treatments and interventions derived from alternate entrepreneurship theories fare and compete against each other (Felin et al. 2024). That is, we should allow varied entrepreneurial approaches to put forward their normative implications and treatments and then compare their efficacy. Some recent empirical work within the TBV has started this process. For example, Gambardella and Messinese (2024) study 308 early stage entrepreneurs in Italy and show that theory-driven entrepreneurs perform better on average than entrepreneurs who follow a design-based approach that puts actions before theories, although for more innovative projects the ideal approach is a combination of the two. Agarwal et al. (2023) run an RCT with Tanzanian entrepreneurs that compares a theory- and evidence-based approach with an approach that focuses only on the collection of evidence and find that the combination of theory- and evidence-based generates higher performance. In all, we see a need to better understand how and why theory-based approaches elevate performance, as well as further theoretical and empirical work comparing varied treatments and approaches. This might include "horse races" between various treatments as well as studies of their interrelation.

Ownership and Strategic Leadership
The TBV offers a unique perspective on ownership. Ownership is not merely a governance solution, but something that privileges one economic actor's theory over another. Consequently, setting aside the substantial issues of effective persuasion and related politics, competition for ownership is fundamentally a competition over theories. In this regard, the TBV relates to the recent literature on ownership competence. Decisions by the owner-leader are driven by a firm's unique theory about how to create value, with a firm-specific theory providing overarching guidance about what to own (matching competence), how to own (governance competence), and when to own (timing competence) (Foss et al. 2021). As this literature describes, ownership is not just about aligning incentives, as traditional agency theory suggests, but about exercising judgment and applying a theory of value creation to make decisions about assets and their use, combination and modification.

Of course, owner-leaders also compete based on their capacity to learn through a scientific, theory-based approach to decision making (Camuffo et al. 2023).

Concentrated ownership that enables the pursuit of rather contrarian theories may be of particular importance in uncertain environments where opinions about how to proceed are most varied. This dynamic may explain why concentrated ownership often outperforms more dispersed ownership models, particularly in environments where innovation and strategic flexibility are critical.

We see greater need for work that explores the linkages between ownership, leadership and types of theories. As noted, some theories demand tacit understanding and expertise that are particularly difficult to share without costly investments to persuade and build understanding (both cognitive and in terms of resources). These unique theories make decision delegation particularly difficult and elevate the need for owners to also be strategists (Camuffo et al. 2023). These owners may then recruit teams which share similar values and understanding of the underlying theory—an additional topic worth empirical inquiry.

Finally, there are interesting unexplored questions around how to motivate and incentivize the exploration of a theory. Incentives are effective when contracts are anchored to easily observed inputs or outputs. But in the case of exploring theories, correct inputs or outputs may be difficult to specify, in part because learning that a theory does not work may be as valuable as learning that one does. Another testable hypothesis is that recruiting teams that believe the owner's theory may be more important to performance than crafting the correct incentives.

Special Issue Papers
The papers in this special issue highlight both the expansiveness and the foundational nature of the TBV as a general perspective on value creation. In briefly summarizing the papers, we divide them into two categories: (a) papers focused on the theory formation processes and (b) papers focused on learning, competing, and persuading with theories.

Theory Formation Processes
One stream of papers tackles the important question of where theories come from and how they are developed. These papers highlight the role of cognition, imagination and analogy, and introduce various theory development practices. Two of these papers also frame a timely, yet foundational debate about the role that AI versus human cognition may play in generating theories that underlie valuable strategies.

Rindova and Martins (2024) argue that the process of developing a theory starts with a problem and its representation (Nickerson and Zenger 2004, Felin and Zenger 2017). They propose that the nature of the problem determines the type of theory required. For instance,

problems where current knowledge appears sufficient for a solution call for analytic theories based on deductive reasoning and hypothesis testing. By contrast, problems where current knowledge is deemed insufficient or inadequate demand constructive theories that define "steps or movements of transformation" (Shackle 1972, p. 51, as quoted by Rindova and Martins (2024)). Within this constructive category, they further distinguish between "reconfiguration theories"—theories that seek to reorganize or recombine existing knowledge—and projective theories that propose entirely novel new states of the world. The paper thus highlights three distinct paths to theory formation, each linked to specific problem types.

Carroll and Sorensen (2024) begin with the simple observation that while causal logic, as advocated by the TBV, is the optimal method for composing theories of value, developing causal logic "is a difficult and foreign way to think" and is not the way "most people naturally discuss strategy" (page xxx). Although the TBV is normative, admittedly what it asks of managers, executives, and entrepreneurs is difficult. Using different forms of logic "requires disciplined systematic thinking with detailed attention to unstated assumptions, logical fallacies, and the like" (page xxx). They argue that such an effort may "stymie rather than stimulate efforts to discuss and debate strategy." Carroll and Sorensen highlight analogy as a tool that can ease theory development and elevates its persuasive capacity. The paper proposes methods to strengthen analogical reasoning in strategy, including decomposing analogies into features or premises, considering both positive and negative analogies, evaluating both horizontal and vertical relationships in analogies, and assessing implicit background knowledge implicit in analogies.

Hannah and Ott (2024) begin with TBV's fundamental premise that valuable theories are novel and contrarian and formed from mere fragments of experience and observation that are then paired with imaginative leaps to form "novel, cohesive, causal understandings of the world" (page xxx). But, as they note, prior empirical work in the TBV has not focused on the practices associated with theory development and the formation of strategy. Through extensive interviews and archival data analysis, these authors provide a deep empirical examination of nine new ventures engaged in practices and unique processes of theory formation. They find that firms move from a spark of a new idea to a well-developed "actionable theory," by deploying a distinct set of theorizing practices, and by generating data to refine their theories.

Csaszar et al. (2024) explore how AI—particularly large language models—can impact the strategic decision-making process within firms. The authors examine whether AI could assist or even substitute human decision makers in generating and evaluating strategies,

presenting empirical evidence from two studies: one with a leading accelerator program and another from a startup competition. The results show that AI-generated business plans and evaluations are comparable to those created by human entrepreneurs and investors. Importantly, the authors link their work to the TBV of strategy, considering how AI might support or challenge core TBV principles, which emphasize the role of unique, idiosyncratic theories in guiding strategic decisions. The paper suggests that while AI could streamline strategy formation, there is a risk that it might reinforce conventional approaches at the expense of novelty. Overall, the authors propose a framework connecting AI use in strategic decision making to firm outcomes and explore how AI might reshape traditional sources of competitive advantage in strategy, potentially altering both the application and limits of the TBV.

Felin and Holweg (2024) criticize the common analogy between human cognition and computers, arguing that, although AI relies on backward-looking, data-based approaches that mirror past patterns, human cognition is fundamentally different. Human cognition involves theory-based causal reasoning that is forward-looking, enabling humans to theorize and experiment in order to generate new data and knowledge. The authors introduce the idea of "data-belief asymmetries," where beliefs often outpace available data and evidence, motivating individuals to engage in experimentation to create new knowledge. AI—including related computational and probabilistic models of cognition—lacks this ability. Felin and Holweg link their work to the TBV, emphasizing that in both strategy and cognition, theories guide individuals and economic actors to intervene and experiment to enable the generation of new data and novelty. Although AI excels at prediction (defined as the minimization of surprise based on past data), it cannot replicate the forward-looking, experimental approach that is essential to human reasoning and the creation of novelty. As a result, Felin and Holweg argue that the potential of AI, as currently instantiated, to replace human decision making in uncertain environments is fundamentally limited.

Learning, Competing, and Persuading with Theories

A second stream of papers takes up questions related to how strategic actors learn, compete, and gather resources when armed with theories. This stream explicitly links the consequences for action from possessing a theory, as well as the consequences for theory development from engaging in action. Several papers explore the role that theories play in learning. The TBV argues that the possession of a theory should accelerate learning. Rather than restrict learning to learning by doing, theories provide a structured and causal path to learning—revealing assumptions to test (and potentially revise), subproblems to solve, and necessary

conditions to make true. More broadly, this stream also tackles questions related to experimentation, data gathering, persuasion, and resource access.

Sorenson (2024) explores how the internal structure of theories—such as their size, complexity, and the confidence actors place in their assumptions—affects the way individuals and organizations search for solutions to problems. Rather than relying on random or trial-and-error methods, the paper highlights how having a theory can guide exploration and experimentation. Importantly, the paper highlights that simpler, less confident theories can lead to more flexible and rapid learning, while more elaborate theories may restrict the range of potential solutions but improve efficiency and persistence in complex problem solving. These arguments contribute to the TBV by deepening the understanding of how theories, beyond just their predictive accuracy, shape decision making and strategic search, aligning with TBV's emphasis on actors developing their own theories to guide value creation.

Chavda et al. (2024) explicitly compare how learning processes differ for entrepreneurs who possess theories from those who lack theories. They distinguish between theory-based entrepreneurs or entrepreneurs who hold abstract understandings of their ideas, and what they term practice-based entrepreneurs—entrepreneurs who experiment on particular strategies rather than on underlying logic or ideas. They develop a formal model that suggests that theory-based entrepreneurs update their beliefs about the distribution of strategy outcomes as they search, while practice-based entrepreneurs maintain fixed beliefs about these distributions throughout the search process. They find that theory-based entrepreneurs, unlike practice-based entrepreneurs, may continue searching after finding a high-value strategy. Further, theory-based entrepreneurs may revert to a previously discovered strategy, whereas practice-based entrepreneurs always execute the last strategy found. Overall, their model shows theory- and practice-based entrepreneurs use different search behaviors that lead to different subjective valuations of entrepreneurial ideas. Their work bridges prior work on entrepreneurial search theory and the TBV of strategy and contributes to understanding how entrepreneurial mindsets shape opportunity discovery and exploitation.

Adner and Levinthal (2024) highlight two factors that make the process of scientific learning with theories particularly complex. First, many strategic experiments are simply nonrepeatable. The very act of experimenting alters the context in which the next experiment will be performed (Shelef et al. 2024). Second, many experiments must be jointly taken up by multiple actors, who must all be collectively persuaded that doing so is useful. These two properties pose challenges for learning and inference. Nonrepeatability of strategic actions hampers generalizations and learning across contexts,

conditions, and different types of experience. Joint experiments imply joint actions that require persuasion and alignment of multiple stakeholders. Their paper presents a simple two-by-two matrix of strategy contexts based on these dimensions and argues that as firms grow, they tend to shift toward nonrepeatable joint action contexts. Theories become more crucial for prediction and persuasion in complex strategic contexts, but the endogenous nature of strategic actions complicates learning and generalization, and theorizing in strategy differs from scientific experimentation due to these unique challenges.

Valentine et al. (2024) explore how adopting a more formalized approach to theory formation and experimentation shapes the type and nature of pivots that occur in the process of entrepreneurial learning. The study examines how formalization in cognitive processes (theorization) and evidence evaluation (experimentation) combine to shape entrepreneurial pivots. Their paper uses both quantitative analysis of human-coded and machine-learning coded measures, and qualitative case studies from a randomized control trial. A theory-based treatment increased formalization in both theorization and experimentation. Valentine et al. find that theorization and experimentation are strongly complementary in generating focused, radical pivots. The study contributes to research on theory-driven strategic decisions and provides practical implications for entrepreneurs and policymakers. It also demonstrates the use of AI-generated measures to complement human coding in strategy research.

Camuffo et al (2024a) develop a framework for theory-based strategic decision making under uncertainty. The paper represents causal links among the elements (attributes) of a problem as directed a-cyclical graphs (DAG, or Bayesian networks). They show that decision makers should experiment with more "surprising" theories, as these experiments produce greater learning. The framework also distinguishes between experiments to test theories within a given problem and experiments that test whether decision makers have chosen the right problem. In so doing, the paper tackles the type III error problem (model misspecification) and takes into account the non-Bayesian aspect of updating with unknown state spaces. This is equivalent to the call for starting the strategy formation process by first formulating problems rather than focusing on solutions for given problems (Nickerson and Zenger 2004, Rumelt 2012). The paper illustrates the framework using examples from Luxottica and PayPal. It contributes to the TBV by microfounding the concept of theory and providing a normative protocol for theory construction and selection.

Ehrig and Zenger (2024) explore how resource-poor entrants can secure resources and rents from incumbents by competing with their theories and awareness.

They develop a model that combines the TBV with value capture theory, particularly as extended by Bryan et al. (2022). Their model distinguishes between three types of rents that economic actors can generate: awareness rents, confidence rents, and resource rents. Awareness rents arise when entrants have superior awareness of future states due to novel theories; confidence rents can occur when actors share awareness but differ in confidence about theories' probabilities; and resource rents reflect traditional value added from unique and valuable resources. The paper employs the Tesla-Daimler partnership as an extended example to illustrate these concepts and shows how partial theory revelation can allow entrants to secure resources while maintaining an advantage. Overall, the paper challenges assumptions of factor market efficiency in the strategy literature and calls for rethinking rationality and disclosure in strategic factor markets given competing theories and levels of awareness.

Conclusion

The TBV offers a framework for understanding how economic actors can navigate decision making under uncertainty by developing their own unique and idiosyncratic theories. By embracing forward-looking causal reasoning, experimentation, and problem solving, economic actors are encouraged to craft causal paths to value creation. This approach challenges traditional models and theories—which often are prescribed to decision makers—by emphasizing the cognitive role of economic actors themselves in building their own theories. The papers in this special issue further enrich our understanding of the TBV, offering new insights and research opportunities across key domains like strategy, entrepreneurship, and governance.

Endnote

[1] This logic is also captured by John Dewey who saw "science as a practical art" and further argued that "the entities of science are not only from the scientist" and that "individuals in every branch of human endeavor should be experimentalists" (Dewey 1916, pp. 413, 438–442). For the evolutionary roots of human theorizing and "proto"-scientific reasoning, see Felin and Kauffman (2023, pp. 1382–1387).

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