Rethinking Entrepreneurs as Scientists: From Popperian Principles to Feyerabendian Freedom

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ABSTRACT

The analogy of entrepreneurs as scientists is rapidly gaining traction in entrepreneurship and management research, especially in work portraying entrepreneurs as formulating and testing theories of value. While this tradition has produced valuable methodological guidance, its predominantly Popperian emphasis on articulation and testing of falsifiable theories of value remains too narrow to capture important aspects of entrepreneurial practice. Drawing on Kuhn, Lakatos, and Feyerabend, we broaden the science analogy to also encompass persuasion and community formation, the preservation of core commitments through revisions of auxiliary assumptions, and the value of methodological freedom. This broader perspective sharpens a question that experimental evidence alone cannot settle: when outcomes disappoint, what should entrepreneurs change? We distinguish three loci of intervention that are analytically distinct but often intertwined in practice: the theory of value, the venture through which it is enacted, and the environmental conditions shaping the venture's intelligibility, legitimacy, and viability. We end by suggesting that entrepreneurial theorizing and experimentation ultimately serve the constructive task of venture design and, at times, environmental transformation. In sum, our account extends rather than rejects the theory-based view, retaining a central role for theorizing and experimentation while broadening its conception of entrepreneurial action and the purposes those activities serve.

INTRODUCTION

The notion that entrepreneurs ought to act like scientists by formulating and experimentally testing falsifiable theories of value is rapidly gaining traction among academics (Felin & Zenger, 2017; Camuffo et al., 2020; Wuebker et al., 2023). While the broader analogy between economic actors and hypothesis-testing scientists is longstanding (e.g., Hayek, 2002; Loasby, 1985; McGrath & MacMillan, 1995), the lean startup movement (Blank, 2003; Ries, 2011) popularized practical ways of applying the analogy, such as testing assumptions with customers using basic versions of products and pivoting when assumptions were challenged. Ries made the connection explicit: "just as scientific experimentation is informed by theory, startup experimentation is guided by the startup's vision" (Ries, 2011: 57).

Building on this, recent scholarship has sought to develop more rigorous methodological foundations for entrepreneurial[1] theorizing and experimentation (e.g., Chavda et al., 2024; Ehrig & Schmidt, 2022; Felin et al., 2024b). In particular, the theory-based view (henceforth, TBV) provides methodological guidance to help economic actors "develop their own, idiosyncratic theories" (Felin et al., 2024a: 297), through rigorous causal reasoning, problem framing, and experimentation (Camuffo et al., 2020; Felin et al., 2024a). At the heart of TBV lies a micro-foundational claim about belief heterogeneity—actors frame problems differently, notice different anomalies, and construct different causal theories about customers, technologies, complementarities, etc. (Felin & Zenger, 2009, 2017; Wuebker et al., 2023). The core methodological move entails entrepreneurs articulating a theory of value, identifying the causal chain linking activities to outcomes, isolating the venture's most consequential assumptions, and designing tests that discriminate between competing explanations (Camuffo et al., 2020; Zellweger & Zenger, 2023). A growing body of empirical research documents the effects of this approach on entrepreneurial decisions and outcomes (e.g., Agarwal et al., 2025; Camuffo et al., 2020), which explains TBV's prescriptive and pedagogical appeal: it provides methodological guidance for theorizing and learning when "facing low-frequency, high-impact decisions" (Camuffo et al., 2024: 384), where beliefs differ, information is limited, and past experience is a poor guide for action.

The ambition to use the analogy of entrepreneurs as scientists to develop rigorous methodological principles is promising. That said, while some contributions recognize that theories can also serve generative and persuasive purposes (e.g. Felin et al., 2020), TBV's heavy

[1] Advocates of this approach argue that adopting scientific decision making and belief revision has positive implications for *all* economic actors, including "managers, innovators, startups, and firms" (Felin et al., 2024a: 297). Entrepreneurship in this context should therefore be understood not only as venture creation but as the economic function of acting under uncertainty (e.g., Ehrig & Schmidt, 2022; Wuebker et al., 2023; Chavda et al., 2024).

reliance on the Popperian image of science (e.g., Chavda et al., 2024; Zellweger & Zenger, 2023) risks producing overly sanitized rational reconstructions that overlook key aspects of entrepreneurial practice. After all, in entrepreneurship, concepts such as testing, evidence, and learning are often inseparable from interpretation, persuasion, and the creation of shared meaning.

The purpose of this review essay is therefore to retain this methodological ambition while broadening the conception of science underpinning the entrepreneur-as-scientist analogy. We do so by engaging with three central post-Popperian philosophers of science. Drawing on detailed historical case studies, Thomas Kuhn (1962) famously challenged Popper's focus on logical analysis and systematic critique, arguing that exemplars and persuasion help establish new paradigms that redefine what counts as legitimate problems, methods, and evidence. Imre Lakatos (1980) sought to reconcile Popper's rational ambitions with Kuhn's emphasis on social forces through his notion of *research programs*. Responding to this, self-proclaimed methodological anarchist Paul Feyerabend (1993) denied the existence of general methodological principles, provocatively suggesting that in science, the only such principle is anything goes. Notably, these accounts of science resonate with a wide range of important entrepreneurial activities, such as 'Kuhnian' coalition building using persuasion and social proof (Felin et al., 2020; Gans, 2025), 'Lakatosian' processes of pivoting peripheral business model elements in order to protect core commitments (Kirtley & O'Mahony, 2023; Sergeeva & Zott, 2025), and 'Feyerabendian' semi-legal rule-breaking and hustling (Burnell et al., 2024; Fisher et al., 2020).

More generally, this broader account of science clarifies what entrepreneurs may do when expectations and experiences diverge. Specifically, we distinguish three loci of entrepreneurial response that are analytically distinct but often intertwined in practice: revising the theory of value, reconfiguring the venture through which it is enacted and tested, and transforming the

environmental conditions on which the venture's intelligibility, legitimacy, and viability depend. For example, weak initial demand might call for revising assumptions about customer value, redesigning the offering or its delivery, or working to legitimize an unfamiliar product category. Before asking how entrepreneurs should update their beliefs in response to disappointing outcomes, we must therefore ask what they should take those outcomes to be evidence of.

The focus on venture reconfiguration and environmental transformation also invites us to reconsider the role of entrepreneurial theorizing and experimentation. We therefore end by suggesting that the rigorous formulation, testing, and revision of theories of value ultimately serve the constructive task of venture design (Berglund et al., 2020; Simon, 1996). The question is not only how entrepreneurs can develop better theories of value, but how those theories can help them design ventures and sometimes shape environments in which such value can be realized.

ENTREPRENEURS AS POPPERIAN SCIENTISTS: A BRIEF RECAP

Popper's falsificationism provides the clearest philosophical foundation for work that asks entrepreneurs to formulate theories of value, identify critical assumptions, and expose them to discriminating tests. This literature also departs from strict falsificationism in several ways, and the resulting tension sets up the key question for the rest of the essay, namely what becomes visible once we move beyond a narrowly Popperian account of science.

Review of Popper's Philosophy of Science

Seeking to demarcate science from non-science, Popper proposed falsificationism, grounded in the logical asymmetry between verification and falsification. No finite number of confirming observations can conclusively establish a theory, whereas a genuine counterexample can logically refute it. This shifted the epistemological question from "how can I, having had the

experience S, justify my description of it, and defend it against doubt?" to "how do we test scientific statements by their deductive consequences?" (Popper, 2002: 79–80).

Popper set aside the psychological question of how theories originate, asking instead whether their deduced consequences could withstand rigorous tests. Rejecting induction as a means of validating theories, he advocated bold conjectures and critical testing, with the aim of developing theories closer to the truth by clarifying their assumptions and internal structures as clearly as possible, assessing their empirical testability, and comparing them with existing theories to assess their potential scientific contribution (Popper, 1963, 2002).

Once a theory has been logically explicated and developed, the next step is to derive testable predictions and carefully compare them with experience. In Popper's idealized logic, failed predictions falsify the theory, whereas successful tests provide provisional corroboration (Popper, 2002). Popper's account thus accords scientific status only to theories that can, in principle, be empirically falsified. He therefore praised Einstein for clearly outlining how his theory could be refuted (Popper, 1963), a challenge it survived when Eddington's 1919 solar eclipse observations corroborated Einstein's prediction of starlight deflection near the Sun while appearing to falsify Newton's theory.

Popperian Entrepreneurship: Origins

The analogy between entrepreneurship and scientific inquiry has a long history (Loasby, 1985; Schumpeter, 1942). Hayek, who was greatly inspired by Popper, explicitly likened market competition to scientific discovery, but noted that "the former exhibits a method of discovering particular temporary circumstances, while science seeks to discover something often known as 'general facts'" (Hayek, 2002: 11). Similarly, management scholars (e.g., McGrath & MacMillan, 1995) maintain that Popperian ideas can help entrepreneurs plan and act with logic and rigor

despite facing true uncertainty. Sull (2004: 77) builds explicitly on Popper and, echoing Hayek, clarifies some key differences between science and entrepreneurship:

"While Popper's model provides insight into the entrepreneurial process, it requires adaptation to fit business. The stimulus for the process is […] a gap in the market that could potentially be filled at a profit by a novel combination of resources. It is also necessary to add a step in which the entrepreneur assembles resources to test a hypothesis."

Popperian Entrepreneurship: Recent Developments

TBV and the lean startup movement are clearly inspired by Popper, claiming that "the best economic theories, like the best scientific ones, will demonstrate … falsifiability" (Felin & Zenger, 2017: 265) and "strategists can learn that they are wrong, whereas they cannot learn that they are ultimately right" (Ehrig & Schmidt, 2022: 1289). In practice, however, entrepreneurial guidance places considerable emphasis on whether experimental outcomes provide sufficient *support* for continued commitment to a theory. Camuffo et al. (2020: 572), for example, urge start-ups to "formulate falsifiable hypotheses; and test them in a rigorous fashion (using data and experiments), including defining valid and reliable metrics and establishing clear thresholds for concluding whether a hypothesis is corroborated or not." Thus, while falsifiability guides hypothesis formulation and test design, the practical evaluation of outcomes centers on whether they meet pragmatic thresholds for corroboration and continued pursuit. While not strictly Popperian, this approach leverages the logical asymmetry between verification and falsification. Entrepreneurs are therefore advised to test the riskiest premises first because a single such failure may deliver more "validated learning" (Ries, 2011) than a dozen corroborations.

Theory-guided testing also informs Bayesian research on entrepreneurial learning, choice, and risk (Chavda et al., 2024; Camuffo, Gambardella, & Pignataro, 2024; Agrawal et al., 2021; Norton & Moore, 2002), where entrepreneurs update beliefs as evidence accumulates (Zellweger

& Zenger, 2023). Yet updating beliefs within a fixed theory cannot accommodate unimagined possibilities, nor can testing individual assumptions establish the broader theory's viability (Ehrig & Foss, 2022). This raises the question of "what stays and what goes, as entrepreneurs receive feedback that challenges their beliefs" (Zellweger & Zenger, 2022: 3).

The Limits of Popperian Principles

The question of what changes is further complicated once we acknowledge that entrepreneurs can also shape the conditions under which their theories are tested. Recent scholarship portraying entrepreneurs as scientists increasingly highlights such activities, which stretch or exceed the limits of Popper's framework. Many studies thus posit that consumer desire and other favorable conditions are not always present to be identified and exploited but rather have to be shaped (Felin & Zenger, 2009, 2017; Felin et al., 2024b). While Felin and colleagues prudently invoke Popper's argument that hypotheses guide attention and learning (Felin et al., 2020; Felin et al., 2024b; Wuebker et al., 2023), they also include, as part of experimental scientific practice, consensus-building efforts, in which entrepreneurs "*sell* their beliefs and ideas to others in an effort to ensure that a shared collective belief emerges" (Felin & Zenger, 2009: 138), such that "the experiment is whether a founder can persuade others of their theory" (Felin et al., 2020: 5). Such formulations suggest that entrepreneurs do not merely evaluate theories against environmental conditions but work actively to construct what their theories envision by "trying to render something true that currently is untrue" (Felin et al., 2024b: 3085).

At this point, the narrowly Popperian entrepreneur-as-scientist analogy appears to have reached its limit. Instead of force-fitting persuasion and coalition-building into experimentation and Popperian science, we propose to broaden our understanding of science by also considering the works of Kuhn, Lakatos, and Feyerabend. Our key insight is that empirical data alone do not

determine what entrepreneurs should change when expectations and experiences diverge. Rather, empirical evidence is one element within broader argumentative structures that also include values, emotions, goals, and other non-empirical considerations (Bhardwaj, 2025; Bhardwaj et al., 2025; Ketokivi et al., 2017). This is captured by Kuhn's paradigm-building, Lakatos's protection of core commitments through peripheral revisions, and Feyerabend's defense of rule breaking to give a nascent theory a fighting chance. We now turn to elaborating on these ideas.

ENTREPRENEURS AS POST-POPPERIAN SCIENTISTS

In this section, we trace how thinking in philosophy of science has evolved to embrace alternative perspectives on scientific practice and change, drawing parallels to advances in research on entrepreneurship. Although differing in key ways, Kuhn, Lakatos, and Feyerabend broadened the account of scientific inquiry beyond Popper's emphasis on hypothetico-deductive testing.

Insights from Thomas Kuhn

Here, we present three key Kuhnian ideas: paradigm creation, paradigmatic examples, and the role of persuasion in fostering community consensus, as well as their relevance for entrepreneurship research.

Paradigm creation

Kuhn's framework describes how science advances not linearly, but via periodic paradigm shifts that redefine the very concepts, methods, and problems of a field. A paradigm, in Kuhn's sense, is a comprehensive worldview encompassing fundamental assumptions, legitimate methods, and even what counts as truth for a scientific community (Kuhn, 1962). It sets the boundaries for what counts as normal science by determining which questions are worth asking and which methods count as valid. A new paradigm typically emerges when the old one cannot explain accumulating anomalies (e.g., the precession of Mercury's perihelion, which could not be

explained using Newtonian physics). The shift is radical: a *gestalt switch* in which scientists come to see their domain in a fundamentally new way. Importantly, adopting a new paradigm is not purely a logical choice, as it involves trade-offs among potentially conflicting epistemic values such as accuracy, consistency, scope, simplicity, and fruitfulness (Kuhn, 1977: 322).

Entrepreneurial innovation exhibits a closely parallel pattern. Visionary entrepreneurs do not merely operate within established market conditions; rather, they engage in creating entirely new market paradigms—new "games" with new rules (Berglund et al., 2020; Dosi, 1982; Spinosa et al., 1999). In economics, Schumpeterian entrepreneurs are distinguished from "Kirznerian" arbitrageurs precisely by this creative paradigm-building role (Schumpeter, 1942). A Schumpeterian entrepreneurial innovation introduces novel product categories and business models, establishes new standards or dominant designs, and even reshapes regulatory and cultural norms of an industry. For example, Starbucks or Airbnb did more than exploit existing demand—their innovations redefined what the industry was about and what consumers and firms imagined as possible or valuable. Such instances are analogous to Kuhnian revolutions: they redefine what problems are relevant, what solutions look like, and what metrics of success matter.

Moreover, just like in science, truly paradigm-creating entrepreneurship—akin to a Kuhnian "scientific revolution"—is relatively rare (Bianchi & Verganti, 2021; Spinosa et al., 1999). When it does occur, paradigm-creating entrepreneurship often involves not just competitive market entry, but also social and political action to establish a new order. Entrepreneurs must often lobby for new regulations (Sytch & Kallapur, 2026), educate consumers (Shepherd & Zacharakis, 2003), or build new ecosystems (Spigel & Harrison, 2018) to support their innovations, since existing structures do not automatically accommodate the novel paradigm. In summary, both

Kuhnian science and high-impact entrepreneurship involve the creation of new frameworks that upend prevailing wisdom about what is legitimate or possible.

Paradigmatic exemplars

Exemplars are celebrated achievements that demonstrate a paradigm's concepts, methods, and potential, showing practitioners *"how it's done"* and what counts as a valid solution. Galileo's inclined-plane experiments, for instance, provided evidence for a new mechanics while educating scientists in its approach. Exemplars thus have an educational and normative function: they shape a community's expectations about legitimate problems, methods, and evidence (Kuhn, 1962).

In entrepreneurship, similarly, groundbreaking products and business models act as paradigmatic exemplars that establish new market norms and inspire imitation. A classic example is the Apple iPhone: it was not simply a successful product. It became a model that redefined user expectations for what a phone should be (multi-touch interface, app ecosystem, sleek design), and imposed new "rules of the game" on telecom carriers, software developers, and hardware manufacturers (cf. Parker et al., 2016). Such exemplars make abstract possibilities concrete while reshaping expectations about what is feasible and valuable.

Community consensus and persuasion

Neither a scientific paradigm nor a market innovation can take hold without community consensus. Kuhn (1962) emphasized that a new paradigm prevails not through logical proof or evidence alone, but also through persuasion and other non-rational methods. Factors like power dynamics, personal beliefs, generational shifts, and political context are integral to scientific revolutions. Kuhn's view highlights the community dynamics of science, including the role of influential elites or gatekeepers in shepherding new ideas. The formation of consensus around a paradigm is thus as much a sociological process as an epistemic one—scientists must often be

persuaded to *believe* in a new vision of reality before all the proof is in place. Here, evidence serves as only one element of the argument aimed at persuasion (Bhardwaj, 2025; Ketokivi et al., 2017).

Entrepreneurs face a strikingly similar challenge: to transform an innovative venture into a dominant new market paradigm, they must persuade a community of stakeholders—investors, customers, partners, even regulators—to embrace a vision that initially sounds improbable or alien. The entrepreneurial literature speaks of founders communicating a compelling vision and performing extensive legitimacy work to convince others that a new venture is credible, and the opportunity is real (Aldrich & Fiol, 1994; Lockwood et al., 2026). This persuasion frequently entails a degree of non-rationality on the part of both the entrepreneur and early believers. For example, Steve Jobs famously wielded a "Reality Distortion Field," a form of intense persuasion that inspired colleagues to achieve what they themselves doubted was possible (Isaacson, 2012). Persuasion in entrepreneurship goes beyond fact-based pitches; it involves storytelling, vision casting, and the strategic use of emotion and symbolism to cultivate belief in a future that does not yet exist (Barberá-Tomás et al., 2019; Logue & Grimes, 2022; Martens et al., 2007). As Felin and colleagues put it, startups themselves function as "social proof" of a future opportunity—they are experiments to test whether a founder can rally others to join a venture *"contrary to existing facts"* by sheer force of vision (Felin et al., 2020: 5).

Despite the key role of persuasion and other non-rational forces such as values and emotions, entrepreneurial success is often framed as ultimately "decided" by the collective rationality of the market. A Kuhnian lens complicates this sequence. In the formative stages of a new category, entrepreneurs are not merely competing within a settled evaluative frame. Rather, they are helping constitute the paradigm through which value becomes legible and viable. The success of a revolutionary venture thus depends not only on value creation, but also on crafting

compelling exemplars and narratives, generating social proof, and mobilizing a critical mass of support that reshapes collective perception and understanding of what is possible and worth pursuing (Berglund et al., 2020). However, such consensus-building is fragile, as the same collective dynamics that make novelty credible can also lead to inflated expectations and hype beyond what can be delivered (Garud et al., 2026).

Insights from Imre Lakatos

Here, we present three Lakatosian ideas: the nature of theories and their development, positive and negative heuristics, and progressive and degenerating research programs, as well as their relevance for entrepreneurship research.

Nature of theories and their development

Lest the Kuhnian pendulum swing too far toward irrational "mob psychology," as Lakatos phrased it, the Hungarian philosopher sought to explain scientific progress in rational terms while acknowledging the shortcomings of Popper's naïve falsificationism (Lakatos, 1968). His proposed middle way takes a *research program* as the primary unit of scientific development and evaluation. In contrast to Popper's focus on testing isolated theoretical predictions and Kuhn's broad notion of unquestioned paradigms, a research program consists of a sequence of closely related, successively revised theories organized around an unchanging hard core of fundamental assumptions (e.g., Newton's three laws of mechanics and the law of gravitation), surrounded by a protective belt of auxiliary hypotheses needed to generate specific predictions. In the Newtonian case, the protective belt includes assumptions about the planetary system, such as planetary masses and initial conditions, as well as theories and assumptions about the instruments and procedures through which it is observed.

Within a research program, the hard core is shielded from refutation by adjusting this protective belt. For example, when detailed observations revealed that Uranus did not move as Newtonian laws predicted, scientists did not abandon the Newtonian hard core. Instead, they proposed a new auxiliary hypothesis, namely the existence of an unseen planet, Neptune, whose gravitational pull could explain the anomaly.[2] Such discrepancies can also arise from how theories are operationalized and tested. During Eddington's 1919 eclipse expedition, apparent departures from Einstein's predictions were attributed to a problem in the test's practical implementation: the Sun's heat having distorted a telescope mirror.

The Lakatosian lens brings a similar conceptual hierarchy to TBV by locating theories of value within evolving research programs, with a hard core of non-negotiable beliefs and commitments and a protective belt of revisable auxiliary assumptions. Belt adjustments can here involve changes to peripheral business-model elements or the details of their practical implementation (e.g., Osterwalder & Pigneur, 2010). Blank and Dorf (2012: 34), for example, illustrate a pivot with "a pricing change from freemium to subscription model" and an iteration with "changing pricing from $99 to $79."

Recognition that development results not from discrete tests of isolated "critical" assumptions but from a series of small iterations and larger pivots over time is often implicitly acknowledged in work that is more Popperian (Felin et al., 2024b; Miller et al., 2024) and especially Bayesian (Chavda et al., 2024) in spirit. Here, the Lakatosian distinctions add value by making the structure of venture theorizing explicit and analytically tractable by distinguishing core commitments from peripheral assumptions and by highlighting how patterned changes in the latter shape venture evolution. The notion of sophisticated falsificationism may be particularly useful

[2] This strategy failed for anomalous movements of Mercury; the planet Vulcan was proposed but never found.

for understanding what from the outside may appear as unexpected pivots, which rarely stem from single decisive experiments (Kirtley & O'Mahony, 2023).

Positive and negative heuristics

The stories of Neptune and Eddington's photographic plates illustrate another key part of Lakatosian research programs, namely the negative and positive heuristics that guide their development over time. The *negative heuristic* forbids scientists from questioning the hard-core assumptions after an apparent falsification. Instead, they must "articulate or invent auxiliary hypotheses and redirect the *modus tollens* to these" (Lakatos, 1980: 48). Grounded in the hard core, the *positive heuristic* complements this by providing an "elaborate problem-solving machinery" (Lakatos, 1980: 5) that suggests which kinds of auxiliary hypotheses to construct, which experiments to design, and which avenues of inquiry to pursue. In the Newtonian research program, the positive heuristic directed scientists confronted with anomalies in planetary motion to search for additional masses whose gravitational influence, calculated using Newtonian mechanics, could explain the deviations. Scientists are thus not freely improvising but "following instructions which are laid down in the positive part of [their] programme" (Lakatos, 1980: 50). Positive and negative heuristics together make the development of a research program structured rather than random, yet more flexible than a strict Popperian logic would permit.

A Lakatosian perspective suggests that entrepreneurial theory development is similarly structured by implicit negative and positive heuristics. The *negative heuristic* in a venture corresponds to those commitments that entrepreneurs treat as beyond question, even in the face of disappointing results. In addition to commitments to a central value proposition or core technology, hard-core elements can also stem from founders' identities and values (e.g., social or personal identities, political convictions, religious beliefs) or from more concrete constraints such as key

partnerships or resources (Bhardwaj & Sergeeva, 2023; Grimes, 2018). For example, the Airbnb founders persisted in their core conviction that people would rent out their homes despite repeated dismissals from investors and limited traction. Similarly, a social enterprise committed to paying living wages may change pricing to achieve financial viability yet never consider lowering wages. Hard-core commitments thus provide a logic of pursuit (Bhardwaj et al., 2025): when experiments fail, entrepreneurs are inclined to adjust peripheral elements rather than question, say, the decision to pursue a given technological path or a mission they regard as morally non-negotiable.

The *positive heuristic* in entrepreneurship is similarly grounded in the venture's hard core, which provides direction for developing the venture while preserving its core commitments. Popular tools and scaffolds, such as the Business Model Canvas (Osterwalder & Pigneur, 2010), Opportunity Navigator (Gruber & Tal, 2017), and Value Lab (Felin et al., 2024b), can support this process by helping entrepreneurs articulate assumptions and structure their development. Such tools, however, do not themselves constitute the positive heuristic or determine its direction. Rather, this direction comes from the venture's core commitments, which guide how entrepreneurs revise the protective belt in response to feedback from experiments and market engagement.

Progressive and degenerating research programs

While Popper relied on logic and Kuhn on historically contingent paradigms to determine what counts as science, Lakatos formulated a processual demarcation criterion. The crucial question is not whether a single theory is refuted at a given moment, but whether the research program over time is *progressive* or *degenerating*. A program is progressive when adjustments to the protective belt yield theoretical growth (novel predictions) followed by empirical growth (new confirmed facts). It is degenerating when theoretical adjustments merely serve to defend the hard core after the fact. In this way, Lakatos argued that we can retain and fruitfully combine the most

valuable insights from both Popper and Kuhn: “the Kuhnian 'Gestalt-switch' can be performed without removing one's Popperian spectacles” (Lakatos, 1968: 182).

This processual approach cannot determine by logic alone when a research program should be abandoned. Programs with a track record of theoretical and empirical success accumulate “money in the bank,” earning them greater “credit” in the face of failed predictions (Meehl, 1990). Programs without such a record are more vulnerable. Ultimately, however, the decision to persist with a struggling research program is always a matter of judgment and conviction, which for Lakatos also requires intellectual honesty: “It is perfectly rational to play a risky game: what is irrational is to deceive oneself about the risk” (Lakatos, 1971: 104).

There are many historical examples of both futile and profitable persistence. Fred Hoyle defended steady-state cosmology—an eternal universe with unchanging large-scale properties—using continuous matter creation and other auxiliary assumptions to reconcile this view with cosmic expansion (Moskowitz, 2013). Even after the 1965 discovery of cosmic microwave background radiation, as predicted by the rival Big Bang program, Hoyle continued refining his position until his death in 2001. In contrast, artificial neural networks endured decades of limited progress (Stokel-Walker, 2024), but the program was kept alive by a handful of committed researchers, including Nobel laureate Geoffrey Hinton, who noted: “Everybody else said this was a ridiculous thing to study. And it turned out we were right” (Hinton, 2024).

A Lakatosian lens sees entrepreneurs following positive heuristics to adjust non-core aspects of their business models in pursuit of traction and financial performance. When progress remains elusive, persistence rests on seemingly irrational beliefs in the venture’s hard core. The early years of Airbnb provide a striking example of persistence despite sluggish growth and repeated dismissals from investors who regarded the core idea implausible. For a period, survival

depended on relentless hustling, including the selling of "Obama-O's" cereal during the 2008 U.S. presidential campaign. In the words of cofounder Joe Gebbia: *"We'd been working so long and felt like we had so little to show for it. […] 2008 had been the worst year of my life"* (Lassiter & Richardson, 2011). Refusing to abandon their core idea, they kept experimenting and gradually realized that New Yorkers were early adopters, that manually onboarding listings was necessary for initial traction, and that high-quality photographs were key to a listing's success. Viewed through a Lakatosian lens, these belt adjustments—shifts in market focus, onboarding practices, and representation of listings—gradually transformed a stagnating venture into a unicorn, even though, at many points, continuing could not easily be justified.

By contrast, BlackBerry's attachment to tactile typing feedback illustrates a degenerating program. Cofounder Mike Lazaridis regarded the tactile experience of the physical keyboard as central to the appeal of its devices. In response to the iPhone, the company introduced the BlackBerry Storm, whose clickable touchscreen sought to preserve the experience. When the Storm disappointed, Lazaridis attributed its problems to implementation and continued developing clickable screens, including the Storm 2. These efforts failed to restore competitiveness (McNish & Silcoff, 2015). As Kirtley and O'Mahony (2023) note, pivots can be driven by both opportunities and threats. In Lakatosian terms, changes that merely defend the core in reaction to threats without improving revenue, usage, or other relevant metrics are symptomatic of a degenerating venture, whereas changes that improve relevant performance indicators indicate a progressive venture. Here, Lakatos' processual analysis of progress under uncertainty invites deeper inquiry into how entrepreneurs and investors decide what counts as progress and when persistence and pivots become blindness and stagnation, while also underscoring the inevitability of judgment and inertia in entrepreneurial decision-making (Foss & Klein, 2012; Zellweger & Zenger, 2023).

Insights from Paul Feyerabend

Here, we present three Feyerabendian ideas: methodological pluralism, propaganda and trickery, and anti-scientism, as well as their relevance for entrepreneurship research.

Methodological pluralism

Feyerabend argued that methodological monism privileges incumbents, forecloses rival theories, and silences novel ideas precisely when they are most fragile. However, theoretical innovations are essential to scientific progress since they can expose weaknesses in established views and uncover evidence that would otherwise remain unnoticed. As he put it, "the advice (which goes back to Newton and which is still very popular today) to use alternatives only when refutations have already discredited the orthodox theory puts the cart before the horse" (Feyerabend, 1993: 20–21). He therefore urges scientists to "adopt a pluralistic methodology" (1993: 21) and to actively develop and compare competing views.

This carries immediate implications for how we understand entrepreneurial judgment (Foss & Klein, 2012). The Popperian demand that entrepreneurs formulate coherent and falsifiable hypotheses and submit them to rigorous market tests imports precisely the kind of methodological monism and conservatism Feyerabend opposed; many of the theories that ultimately prove most generative are those that would fail tests under dominant evaluative standards. A classic example is Bohr's atomic model, which was inconsistent with classical electrodynamics but nevertheless spectacularly generative. The value of pluralism is seen also in the small group of artificial intelligence (AI) researchers who kept working on artificial neural networks through AI winters (Stokel-Walker, 2024). The early cases of Airbnb, platform businesses, and transformative general-purpose technologies also illustrate the pattern: they survive not because they satisfy existing criteria, but because their champions resist those criteria long enough to reshape them.

Feyerabend's argument for methodological pluralism is not, however, a license for epistemic relativism or willful self-deception. His pluralism is normatively demanding. It requires entrepreneurs to remain reflexively aware of which evaluative framework they are applying and why, to actively seek out rival theories capable of generating genuine criticism, and to resist insulating a core commitment from all possible challenge. The danger he identified is what he called the "totalitarian element" (Feyerabend, 1999: 243) in any doctrine that presents itself as a single uniform entity that should be universally accepted. In entrepreneurship, this danger manifests when a dominant methodology—business planning, lean experimentation, or evidence-based pivoting—suppresses the full repertoire of legitimate entrepreneurial action, crowding out the coalition-building Kuhn emphasizes, the principled tenacity Lakatos illuminates, and the creative rule-bending Feyerabend himself sees as necessary.

Propaganda and trickery

While methodological pluralism is valuable for science as a whole, it requires innovative scientists able and willing to pursue nascent theories in the face of powerful incumbents. As Feyerabend put it, pitting an upstart theory against a well-developed one is "like arranging a fight between an infant and a grown man" (1993: 108). Since nascent theories cannot "win" by working within established rules, subterfuge and propaganda are part and parcel of innovative science.

To ground his arguments, Feyerabend suggested that Galileo, often seen as a paragon of rational science, broke rules and defied conventional standards of rationality to promote the claim that the Earth moves around the Sun, even though ordinary experience as well as the theories and evidence of the day refuted it. Under such conditions, it is perfectly legitimate to engage in quite a bit of "propaganda" and "trickery" in order to give seemingly "absurd and counterintuitive assertions … a just and attentive hearing" (Feyerabend, 1993: 65). He thus notes that Galileo

selectively curated evidence, introduced *ad hoc* hypotheses, used unreliable technologies, and relied on counterintuitive metaphysical assertions to promote unwarranted knowledge claims. Examples include unreliable telescope technology and the then underdeveloped state of optical science. He also used "guilt-by-association" (Feyerabend, 1993: 115), linking Aristotelianism to the Church and Latin-dominated scholastic establishment, both increasingly disdained by an emerging secular class to whom he appealed by writing in Italian. However, it was all appropriate since Galileo was vindicated. His ideas "survived because prejudice, passion, conceit, errors, sheer pigheadedness, in short because all the elements that characterize the context of discovery, *opposed* the dictates of reason *and because these irrational elements were permitted to have their way* […] Now, assuming that Copernicanism is a Good Thing […] we must further admit that it was a Good Thing that reason was overruled" (Feyerabend, 1993: 116).

The analogy with entrepreneurship is clear. Like Galileo, innovative entrepreneurs who believe in their visions often engage in propaganda, trickery, and even illegality to give their ventures a fighting chance. For example, Tesla CEO Elon Musk overstated his case to establish the infrastructure for electric cars and has repeatedly promised but not delivered full autonomy (Duggan, 2024). Encouraging or posting fake online reviews is quite common (Luca & Zervas, 2016). The use of copyrighted material by AI startups is another example where founders who are convinced that LLMs will generate transformative benefits, may see the violation of current copyright laws as a small price to pay for progress. The advice to "fake it till you make it" is indeed embraced as an important and even necessary tactic for early-stage entrepreneurs.

While not as detailed as Feyerabend's and Kuhn's case studies, recent research on "entrepreneurial hustle" (Burnell et al., 2024; Fisher et al., 2020; cf. Bhidé, 1986) describes in some detail how Richard Branson (Virgin), Joe Gebbia (Airbnb), Sara Blakely (Spanx), and other

well-known founders succeeded not through adherence to entrepreneurial methods but by bending rules and hacking the system. Steve Jobs's famous reality distortion field essentially boiled down to his "belief that the rules didn't apply to him" (Isaacson, 2011: 118–119).

While often praised as reflective of a rebellious and creative entrepreneurial spirit, embracing the "anything goes" attitude can have very negative consequences (Chase et al., 2026). Modeling herself on Jobs, Theranos founder Elizabeth Holmes reasoned similarly, but her rule bending crossed into outright fraud and ultimately landed her in prison (Liubertė & Dimov, 2021). Vexingly, whether hustling is celebrated as ingenuity or dismissed as recklessness depends on the outcome. It remains to be seen how the "tricks" used by AI boosters like Sam Altman will be regarded in the future (Bhardwaj, 2026). It is clear that anything does not go in the ethical or legal sense of breaking laws and cheating to achieve success (Gill, 2026). Anything does however go in Feyerabend's sense of being the only *methodological* principle that can be defended under all scientific and entrepreneurial circumstances.

Indeed, recent work on moral ambiguity and judgment in entrepreneurship takes this point seriously, insisting that "rebelliousness does not exempt entrepreneurs from moral responsibility" (Vorholzer & Brattström, 2025: 1). If rule-breaking, propaganda, and trickery are inescapable parts of entrepreneurship, our descriptions and prescriptions must go beyond methods and tools that help entrepreneurs assess the desirability and feasibility of action to also consider and cultivate moral judgments about what should (not) be done in complex and morally fraught situations (Brenkert, 2009; Vorholzer & Brattström, 2025).

Anti-scientism

Feyerabend's inclusive ideas substantially broaden the entrepreneur-as-scientist analogy. But his ultimate lesson is that even such an expanded analogy is limiting if the abstractions and

idealizations of science become the one privileged way of conceptualizing entrepreneurial action. In his last, posthumously published book, Feyerabend gives this argument a deeper philosophical grounding: "*understanding a subject means transforming it*, lifting it out of a natural habitat and inserting it into a model or a theory or a poetic account of it" (1999: 12). But this is only problematic if we forget that abstraction has occurred. Rational reconstructions offered by entrepreneur-as-scientist analogies—whether Popperian, Kuhnian, Lakatosian, or even Feyerabendian—help us see various aspects of entrepreneurship more clearly. But if applied and taught dogmatically, the analogy risks blinding scholars and entrepreneurs alike by pushing essential nuances and perspectives to the side. Here it is important to note that Feyerabend greatly admired innovative scientists like Galileo, Einstein, and Bohr. His is a staunch defense of intellectual and human freedom that must be protected against the tendency of science to dominate all spheres of life: "Scientists are not content with running their own playpens in accordance with what they regard as the rules of scientific method, they want to universalize these rules, they want them to become part of society at large" (Feyerabend, 1993: 163).

The implications for entrepreneurship are clear. The analogy with science is powerful but limited and must not be allowed to dominate scholarly descriptions of entrepreneurship or practical prescriptions for entrepreneurial action. This risk was noted already by Frank Knight: "We must beware of the temptation to judge the nature of our conduct by the way in which we think about it" (Knight, 1921: 54). Entrepreneurship scholars have also pointed to the limits of seeking to comprehensively explain entrepreneurial action under true uncertainty, since "all situational contingencies—as well as the entrepreneur's entire life-history of experiences and relationships—are of potential relevance" (Berglund, 2015: 479). This idea is also reflected in economics-inspired scholarship that emphasizes judgment (e.g., Foss & Klein, 2012) and in effectuation, which

similarly traces action under uncertainty to who entrepreneurs are, what they know, and whom they know, without unpacking what this entails (Sarasvathy, 2001).

Others reflect Feyerabend's insistence on the richness of being more directly. Spinosa and co-authors (1999) argue that human beings are not primarily detached thinkers applying theories, nor merely desire-driven actors pursuing given preferences. Here, innovative entrepreneurship is seen as the simultaneously existential and mundane matter of disclosing 'new worlds' of meaning and significance through attention to tensions in everyday practice. To illustrate, Airbnb did not simply create a platform for renting rooms but helped disclose a new world in which private homes could appear as hospitality assets and strangers could be guests. On this view, entrepreneurship is interesting not because it is a separate rational activity, but because it intensifies the general human capacity for sensing and responding to situations by changing what things mean and how they matter (Berglund & Dimov, 2025).

The final Feyerabendian implication is thus not that entrepreneurs should reject scientific principles, but that the entrepreneur-as-scientist analogy should itself be embraced in much the same way Feyerabend views science: as one very useful lens among many. Entrepreneurs may sometimes act like scientists, but they are never only scientists (Sergeeva et al., 2022), and so "science should be taught as one view among many and not as the one and only road to truth and reality" (Feyerabend, 1993: viii).

DISCUSSION

The entrepreneur-as-scientist analogy has made important contributions by outlining a normative research agenda that encourages entrepreneurs to articulate causal theories of value, derive testable implications, expose them to evidence, and revise their theories (beliefs) accordingly (Camuffo et al., 2020; Zellweger & Zenger, 2023). However, as our essay suggests, this perspective builds on

a powerful but incomplete image of scientific inquiry. Scientific progress is not reducible to the Popperian sequence of conjecture, test, and revision. Kuhn, Lakatos, and Feyerabend reveal a richer repertoire of approaches available to scientists and, by analogy, entrepreneurs. These include the creation of new paradigms, persuasion and community formation, commitment to core principles in the face of adverse evidence, and creative departures from accepted rules and standards. Crucially, elements of this broader repertoire are already implicit in TBV.

Our first contribution is to make this implicit pluralism explicit by connecting TBV to a richer philosophical tradition that brings into view how persuasion, tenacity, and even opportunism help novel theories of value gain traction. This extension also exposes a less obvious limitation of the emphasis on explicit causal theories and systematic testing. Clarity and testability are important virtues, but they may also become selection criteria for what entrepreneurs are encouraged to consider in the first place. Requiring ideas to be rendered as clearly articulated causal theories with testable implications risks privileging what is already explicable, operationalizable, and measurable. Possibilities that cannot yet be expressed in these terms may therefore appear less rigorous precisely because they resist established categories and forms of evaluation. Methodological discipline can, in this sense, become a constraint on imagination, particularly when entrepreneurs are creating products, categories, or forms of value for which the relevant language and evaluative criteria are themselves still emerging.

What Is Evidence Evidence Of?

Our second contribution is to distill from this broader philosophical repertoire a more focused extension of TBV. The central problem is that negative evidence from an entrepreneurial experiment *underdetermines its own implications for action*. A disappointing outcome reveals a divergence between expectation and experience but does not indicate what the entrepreneur should

do. Drawing on Popper, Lakatos, Kuhn, and Feyerabend, we can distinguish three distinct loci of entrepreneurial intervention: the underlying *theory* of value, the *venture* through which the theory is given practical form and tested, and the aspects of the *environment* that determine whether the venture can become intelligible, legitimate, and viable.

The first response is *theory* revision. Here, the entrepreneur concludes that the core causal theory of value is mistaken and should be modified or abandoned. This is the Popperian response and the one existing TBV addresses most directly: adverse evidence provides grounds for reconsidering the theory of value. The second response is *venture* reconfiguration. The venture is the concrete form that a core theory of value takes in practice and through which it is subjected to empirical testing. This follows from Lakatos's insistence that empirical tests never confront a core theory in isolation but also depend on auxiliary assumptions and arrangements connecting theory to observation. The parallel in entrepreneurship matters because not everything that constitutes a venture can plausibly be considered part of its core theory of value. Peripheral business-model assumptions, as well as specific implementation choices concerning target segments, price points, feature designs, onboarding processes, distribution arrangements etc., may all affect how a theory is realized and tested without constituting its core. Venture reconfiguration may involve revising peripheral assumptions as well as their practical implementation, while preserving the core theory of value. Indeed, treating every such change as a core theoretical commitment would make "theory" virtually coextensive with the venture itself. A Lakatosian perspective thus distinguishes revising the core causal theory from reconfiguring the venture through which it is given concrete form, adding theoretical precision to research on entrepreneurial adaptation and pivoting (e.g., Grimes, 2018; Zuzul & Tripsas, 2020).

The third response is transformation of the *environment*. Entrepreneurs may conclude that neither the theory nor its venture configuration is the primary problem, but that some of the conditions required for the venture to become intelligible, legitimate, or viable are not yet in place. Novel ventures often confront standards favoring incumbents, regulations premised on established business models, and norms that impede product acceptance (Bhardwaj & Sergeeva, 2023). This makes the Kuhnian and Feyerabendian extension particularly consequential for entrepreneurship. Strong social-constructionist or relativist readings of these philosophers are understandably controversial in natural science: the natural world cannot simply be changed so that a favored theory succeeds. In entrepreneurship and management, however, many consequential features of the environment are socially constructed and therefore at least partly malleable (McBride & Wuebker, 2022). Entrepreneurs may seek to change norms, expectations, standards, regulations, categories, and stakeholder commitments rather than merely adapt to them (e.g., Garud et al., 2002; Tracey et al., 2011). The implications of adverse evidence thus partly depend on whether existing environmental conditions are treated as fixed constraints or as possible targets of entrepreneurial action (Berglund et al., 2020).

The three responses identify progressively wider and often intertwined loci of intervention: revising theories of value, redesigning the ventures through which such value is pursued, and transforming the often-artificial environmental circumstances in which the venture operates. Before asking how entrepreneurs should update their beliefs in response to negative evidence, we must therefore ask what they should take it to be evidence of.

This framework also helps connect literatures that have largely developed separately. TBV focuses primarily on developing theories and updating beliefs; research on pivoting, business models, and adaptation examines changes to ventures; and research on market creation, category

formation, legitimacy, and institutional change examines interventions into surrounding environments. Together, these literatures address different loci of intervention when entrepreneurial expectations and experience diverge. Table 1 relates these loci to the distinctive emphases of Popper, Lakatos, and Kuhn, while highlighting how Feyerabend's methodological freedom cuts across all three.

TABLE 1. Philosophical Perspectives and Entrepreneurial Responses

Dimension	Popper	Lakatos	Kuhn	Feyerabend
Key philosophical ideas	Bold theorizing; testing and falsification; critical revision	Research programs; positive and negative heuristics; progressive vs. degenerating development	Paradigm creation; paradigmatic exemplars; persuasion and community consensus	Methodological pluralism; propaganda and trickery; critique of scientism
Distinctive analytical emphasis	Theory revision	Venture reconfiguration	Environmental transformation	Methodological freedom
Characteristic entrepreneurial response	Revise or abandon a theory when its predictions are not borne out by evidence	Preserve selected core commitments while revising peripheral aspects of the venture	Seek to reshape the conditions under which the venture is understood, evaluated, and able to succeed	Depart from established methodological prescriptions when they constrain potentially valuable action
Entrepreneurial practices	Explicit causal theorizing; discriminating tests; experimentation; belief updating	Iteration and pivoting; revision of peripheral venture elements, such as features, pricing, and channels	Category creation; exemplars and narratives; persuasion and coalition building; legitimacy and institutional work	Unorthodox approaches; challenging methodological standards; rule-bending; hustling
Characteristic entrepreneurial risks	Testability bias; premature rejection of difficult-to-test possibilities	Degenerating persistence; post hoc rationalization; protection of a failing core	Hype and manipulation; legitimacy without underlying viability	Arbitrary methodological choices; unbounded transgression; unethical or illegal behavior

From Testing Theories to Designing Ventures

The three loci of entrepreneurial intervention raise a further question about the entrepreneur-as-scientist analogy: what is entrepreneurial theorizing ultimately for? Our review of Kuhn, Lakatos, and Feyerabend broadens the Popperian emphasis on critical theory testing by highlighting the roles of persuasion, negotiation of standards, protection of core commitments, and methodological rule-breaking in scientific inquiry. In entrepreneurship, however, the three loci bring the constructive purpose of inquiry into sharper focus: the goal of inquiry is not simply to improve theories of value, but to use them to design successful ventures and sometimes reshape the environments on which their success depends.

To be sure, entrepreneurs can still benefit from causal theories, disciplined experimentation, and serious engagement with evidence. What changes, however, is the emphasis we place on their constructive role. Entrepreneurs need causal knowledge not only for the purpose of explaining and predicting, but ultimately to make something work: solve a problem, build a product, design a venture, reshape an environment (Berglund et al., 2020; Sergeeva et al., 2022). This constructive orientation has long been emphasized in work on technology, engineering, and design (Layton, 1974; Simon, 1996; Vincenti, 1990). Although these traditions differ, they share an orientation toward knowledge not merely as a means of explaining what exists, but as a resource for creating what does not. TBV can thus be situated within the broader design perspective (Berglund et al., 2020; Berglund & Dimov, 2025). Just as architectural plans and engineering models serve as conceptual artifacts guiding design work in these fields, theories of value can be understood as conceptual artifacts that guide venture design.

This perspective is already evident within TBV. Felin and Zenger (2017) portray a theory of value as a generative device that reveals and animates novel economic possibilities, while

Wuebker et al. (2023: 2926–2927) describe such a theory as "a forward-looking projection or 'presentation' of the causal solution structure" rather than a mirror of the world. Seen from this perspective, Felin et al.'s (2024b: 3085) claim that startups seek to "render something true that currently is untrue" points beyond testing theories against external facts to using them as guides to action in pursuit of entrepreneurial visions. Our proposal is therefore not to replace the entrepreneur-as-scientist analogy, but to broaden TBV's conception of science to clarify how formulating, testing, and revising theories of value—alongside persuasion, tenacity, and opportunism—serve the constructive task of venture design (Berglund & Dimov, 2025).

In sum, our argument does not imply that TBV portrays entrepreneurs as too scientific in any general sense, but that its portrayal is scientific in too narrow a sense. By broadening the entrepreneur-as-scientist analogy through Kuhn, Lakatos, and Feyerabend and by making explicit how theorizing and experimentation serve venture design, TBV can retain its commitment to causal reasoning, systematic testing, and disciplined learning while better capturing entrepreneurship's constructive character. Entrepreneurs seek not only to understand the world, but to design ventures—and sometimes the worlds in which they can thrive.

REFERENCES

Agarwal, R., Bacco, F., Camuffo, A., Coali, A., Gambardella, A., Msangi, H., Sonka, S., Temu, A., Waized, B., & Wormald, A. 2025. Does a theory-of-value add value? Evidence from a randomized control trial with Tanzanian entrepreneurs. ***Organization Science***, 36: 601–625.

Agrawal, A., Gans, J. S., & Stern, S. 2021. Enabling entrepreneurial choice. ***Management Science***, 67: 5510–5524.

Aldrich, H. E., & Fiol, C. M. 1994. Fools rush in? The institutional context of industry creation. ***Academy of Management Review***, 19: 645–670.

Barberá-Tomás, D., Castelló, I., de Bakker, F. G., & Zietsma, C. 2019. Energizing through visuals: How social entrepreneurs use emotion-symbolic work for social change. ***Academy of Management Journal***, 62: 1789–1817.

Berglund, H. 2015. Between cognition and discourse: Phenomenology and the study of entrepreneurship. ***International Journal of Entrepreneurial Behavior & Research***, 21: 472–488.

Berglund, H., Bousfiha, M., & Mansoori, Y. 2020. Opportunities as artifacts and entrepreneurship as design. ***Academy of Management Review***, 45: 825–846.

Berglund, H., & Dimov, D. 2025. Grounding and developing the design perspective on entrepreneurship: From individual–opportunity nexus to artifact-centered triad. ***Journal of Management Inquiry***, 34: 272–285.

Bhardwaj, A. 2025. The art of persuasion: Theorizing as argumentation. ***Strategic Organization***, advance online publication. https://doi.org/10.1177/14761270251316028.

Bhardwaj, A. 2026. Revisiting Pascal's Wager: A pragmatist approach to scientific inquiry in the age of AI. ***Communications of the ACM*** (forthcoming).

Bhardwaj, A., & Sergeeva, A. 2023. Values-based trust as a shift parameter for collective organizing: The case of Magnum Photos. ***Journal of Management Studies***, 60: 2022–2059.

Bhardwaj, A., Sergeeva, A., Mahoney, J., & Nickerson, J. 2025. Theorizing as problem solving: A pragmatist perspective on the logic of pursuit. ***Strategy Science***, 10: 338–359.

Bhidé, A. 1986. Hustle as strategy. ***Harvard Business Review***, 64(5): 59–65.

Bianchi, M., & Verganti, R. 2021. Entrepreneurs as designers of problems worth solving. ***Journal of Business Venturing Design***, 1: 100006.

Blank, S. 2003. ***The four steps to the epiphany: Successful strategies for products that win***. Pescadero, CA: K&S Ranch.

Blank, S., & Dorf, B. 2012. ***The startup owner's manual: The step-by-step guide for building a great company***. Pescadero, CA: K&S Ranch.

Brenkert, G. G. 2009. Innovation, rule breaking and the ethics of entrepreneurship. ***Journal of Business Venturing***, 24: 448–464.

Burnell, D., Neubert, E., Fisher, G., Marvel, M. R., Stevenson, R., & Kuratko, D. F. 2024. Entrepreneurial hustle: Scale development and validation. ***Journal of Business Venturing***, 39: 106407.

Camuffo, A., Cordova, A., Gambardella, A., & Spina, C. 2020. A scientific approach to entrepreneurial decision making: Evidence from a randomized control trial. ***Management Science***, 66: 564–586.

Camuffo, A., Gambardella, A., & Pignataro, A. 2024. Theory-driven strategic management decisions. ***Strategy Science***, 9: 382–396.

Chase, S. R., Shepherd, D. A., & Souitaris, V. 2026. The underbelly of entrepreneurship: A multilevel perspective of destructive entrepreneurship. ***Entrepreneurship Theory and Practice***, 50: 150–191.

Chavda, A., Gans, J. S., & Stern, S. 2024. Theory-based entrepreneurial search. ***Strategy Science***, 9: 397–415.

Dosi, G. 1982. Technological paradigms and technological trajectories. ***Research Policy***, 11: 147–162.

Duggan, W. 2024. Elon Musk's record of overpromising and underdelivering. ***U.S. News & World Report***. https://money.usnews.com/investing/articles/elon-musk-track-record-overpromising-underdelivering (accessed 6 January 2025).

Ehrig, T., & Foss, N. J. 2022. Why we need normative theories of entrepreneurial learning that go beyond Bayesianism. ***Journal of Business Venturing Insights***, 18: e00335.

Ehrig, T., & Schmidt, J. 2022. Theory-based learning and experimentation: How strategists can systematically generate knowledge at the edge between the known and the unknown. ***Strategic Management Journal***, 43: 1287–1318.

Felin, T., Gambardella, A., Novelli, E., & Zenger, T. 2024b. A scientific method for startups. ***Journal of Management***, 50: 3080–3104.

Felin, T., Gambardella, A., Stern, S., & Zenger, T. 2020. Lean startup and the business model: Experimentation revisited. ***Long Range Planning***, 53: 101889.

Felin, T., Gambardella, A., & Zenger, T. 2024a. Theory-based decisions: Foundations and introduction. ***Strategy Science***, 9: 297–310.

Felin, T., & Zenger, T. R. 2009. Entrepreneurs as theorists: On the origins of collective beliefs and novel strategies. ***Strategic Entrepreneurship Journal***, 3: 127–146.

Felin, T., & Zenger, T. R. 2017. The theory-based view: Economic actors as theorists. ***Strategy Science***, 2: 258–271.

Feyerabend, P. K. 1993. ***Against method*** (3rd ed.). London: Verso.

Feyerabend, P. K. 1999. ***Conquest of abundance: A tale of abstraction versus the richness of being***. Chicago: University of Chicago Press.

Fisher, G., Stevenson, R., Neubert, E., Burnell, D., & Kuratko, D. F. 2020. Entrepreneurial hustle. ***Journal of Management Studies***, 57: 1002–1036.

Foss, N. J., & Klein, P. G. 2012. ***Organizing entrepreneurial judgment: A new approach to the firm***. Cambridge, UK: Cambridge University Press.

Gans, J. S. 2025. Experiments by “visionaries”. ***Strategy Science***, 10: 360–370.

Garud, R., Jain, S., & Kumaraswamy, A. 2002. Institutional entrepreneurship in the sponsorship of common technological standards: The case of Sun Microsystems and Java. ***Academy of Management Journal***, 45: 196–214.

Garud, R., Phillips, N., Snihur, Y., Thomas, L. D. W., & Zietsma, C. 2026. Hype in entrepreneurial settings. ***Journal of Business Venturing***, 41: 106559.

Gill, M. J. 2026. Rule breaking in organizations: An integrative review. ***Academy of Management Annals***, 20: 285–314.

Grimes, M. G. 2018. The pivot: How founders respond to feedback through idea and identity work. ***Academy of Management Journal***, 61: 1692–1717.

Gruber, M., & Tal, S. 2017. ***Where to play: 3 steps for discovering your most valuable market opportunities.*** UK: Pearson.

Hayek, F. A. 2002. Competition as a discovery procedure (M. S. Snow, Trans.). The Quarterly Journal of Austrian Economics, 5(3): 9–23. (Original work published 1968).

Hinton, G. 2024. Interview with Geoffrey Hinton from the 2024 Nobel Prize banquet. https://www.youtube.com/watch?v=qlEMrGwIWuM.

Isaacson, W. 2011. ***Steve Jobs***. New York: Simon & Schuster.

Isaacson, W. 2012. The real leadership lessons of Steve Jobs. ***Harvard Business Review***, 90(4): 92–102.

Ketokivi, M., Mantere, S., & Cornelissen, J. 2017. Reasoning by analogy and the progress of theory. ***Academy of Management Review***, 42: 637–658.

Kirtley, J., & O'Mahony, S. 2023. What is a pivot? Explaining when and how entrepreneurial firms decide to make strategic change and pivot. ***Strategic Management Journal***, 44: 197–230.

Knight, F. H. 1921. ***Risk, uncertainty and profit***. Boston: Houghton Mifflin.

Kuhn, T. S. 1962. ***The structure of scientific revolutions***. Chicago: University of Chicago Press.

Kuhn, T. S. 1977. Objectivity, value, and theory choice. In T. S. Kuhn, ***The essential tension: Selected studies in scientific tradition and change***: 320–339. Chicago: University of Chicago Press.

Lakatos, I. 1968. Criticism and the methodology of scientific research programmes. ***Proceedings of the Aristotelian Society***, 69: 149–186.

Lakatos, I. 1971. History of science and its rational reconstructions. In R. C. Buck & R. S. Cohen (Eds.), ***PSA 1970: In memory of Rudolf Carnap***: 91–136. Dordrecht: D. Reidel.

Lakatos, I. 1980. ***The methodology of scientific research programmes***. Cambridge, UK: Cambridge University Press.

Lassiter, J. B., & Richardson, E. 2011. ***Airbnb***. Harvard Business School Case 812-046. Boston: Harvard Business School.

Layton, E. T., Jr. 1974. Technology as knowledge. ***Technology and Culture***, 15: 31–41.

Liubertė, I., & Dimov, D. 2021. "One tiny drop changes everything": Constructing opportunity with words. ***Journal of Business Venturing Insights***, 15: e00242.

Loasby, B. J. 1985. Profit, expectations and coherence in economic systems. ***Journal of Economic Studies***, 12: 21–33.

Lockwood, C., Soublière, J. F., & Gehman, J. 2026. The cogs and wheels of cultural entrepreneurship: The becoming of new possibilities. ***Academy of Management Annals***, 20: 76–120.

Logue, D., & Grimes, M. 2022. Living up to the hype: How new ventures manage the resource and liability of future-oriented visions within the nascent market of impact investing. ***Academy of Management Journal***, 65: 1055–1082.

Luca, M., & Zervas, G. 2016. Fake it till you make it: Reputation, competition, and Yelp review fraud. ***Management Science***, 62: 3412–3427.

Martens, M. L., Jennings, J. E., & Jennings, P. D. 2007. Do the stories they tell get them the money they need? The role of entrepreneurial narratives in resource acquisition. ***Academy of Management Journal***, 50: 1107–1132.

McBride, R., & Wuebker, R. 2022. Social objectivity and entrepreneurial opportunities. ***Academy of Management Review***, 47: 75–92.

McGrath, R., & MacMillan, I. 1995. Discovery-driven planning. ***Harvard Business Review***, 73(4): 44–54.

McNish, J., & Silcoff, S. 2015. ***Losing the signal: The untold story behind the extraordinary rise and spectacular fall of BlackBerry***. New York: Flatiron Books.

Meehl, P. E. 1990. Appraising and amending theories: The strategy of Lakatosian defense and two principles that warrant it. ***Psychological Inquiry***, 1: 108–141.

Miller, A., O'Mahony, S., & Cohen, S. L. 2024. Opening the aperture: Explaining the complementary roles of advice and testing when forming entrepreneurial strategy. ***Organization Science***, 35: 1–26.

Moskowitz, C. 2013. Oops! The 5 greatest scientific blunders. https://www.livescience.com/32051-greatest-scientific-mistakes.html (accessed 27 May 2025).

Norton, W. I., & Moore, W. T. 2002. Entrepreneurial risk: Have we been asking the wrong question? ***Small Business Economics***, 18: 281–287.

Osterwalder, A., & Pigneur, Y. 2010. ***Business model generation: A handbook for visionaries, game changers, and challengers***. Hoboken, NJ: John Wiley & Sons.

Parker, G. G., Van Alstyne, M. W., & Choudary, S. P. 2016. ***Platform revolution: How networked markets are transforming the economy—and how to make them work for you***. New York: W. W. Norton.

Popper, K. R. 1963. ***Conjectures and refutations: The growth of scientific knowledge***. London: Routledge & Kegan Paul.

Popper, K. R. 2002. ***The logic of scientific discovery***. New York: Routledge.

Ries, E. 2011. ***The lean startup: How today's entrepreneurs use continuous innovation to create radically successful businesses***. New York: Crown Business.

Sarasvathy, S. D. 2001. Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. ***Academy of Management Review***, 26: 243–263.

Schumpeter, J. A. 1942. ***Capitalism, socialism and democracy***. New York: Harper & Brothers.

Sergeeva, A., Bhardwaj, A., & Dimov, D. 2022. Mutable reality and unknowable future: Revealing the broader potential of pragmatism. ***Academy of Management Review***, 47: 692–696.

Sergeeva, A., & Zott, C. 2025. How founders' values enable business model innovation in new ventures: The case of Magnum Photos. ***Strategic Management Journal***, 46: 2492–2534. https://doi.org/10.1002/smj.3727.

Shepherd, D. A., & Zacharakis, A. 2003. A new venture's cognitive legitimacy: An assessment by customers. ***Journal of Small Business Management***, 41: 148–167.

Simon, H. A. 1996. ***The sciences of the artificial*** (3rd ed.). Cambridge, MA: MIT Press.

Spigel, B., & Harrison, R. 2018. Toward a process theory of entrepreneurial ecosystems. ***Strategic Entrepreneurship Journal***, 12: 151–168.

Spinosa, C., Flores, F., & Dreyfus, H. L. 1999. ***Disclosing new worlds: Entrepreneurship, democratic action, and the cultivation of solidarity***. Cambridge, MA: MIT Press.

Stokel-Walker, C. 2024. ***How AI ate the world: A brief history of artificial intelligence—and its long future***. Kingston upon Thames, UK: Canbury Press.

Sull, D. N. 2004. Disciplined entrepreneurship. ***MIT Sloan Management Review***, 46: 71–77.

Sytch, M., & Kallapur, A. 2026. Legal and regulatory entrepreneurship: A review of organizational tactics and their consequences for organizations and the law. ***Academy of Management Annals***, 20: 204–258.

Tracey, P., Phillips, N., & Jarvis, O. 2011. Bridging institutional entrepreneurship and the creation of new organizational forms: A multilevel model. ***Organization Science***, 22: 60–80.

Vincenti, W. G. 1990. What engineers know and how they know it: Analytical studies from aeronautical history. Baltimore, MD: Johns Hopkins University Press.

Vorholzer, M., & Brattström, A. 2025. Should I? How moral ambiguity shapes entrepreneurial action. ***Academy of Management Review***, advance online publication. https://doi.org/10.5465/amr.2024.0080.

Wuebker, R., Zenger, T., & Felin, T. 2023. The theory-based view: Entrepreneurial microfoundations, resources, and choices. ***Strategic Management Journal***, 44: 2922–2949.

Zellweger, T., & Zenger, T. 2022. Entrepreneurs as scientists, Bayesian inference, and belief revision. ***Journal of Business Venturing Insights***, 18: e00350.

Zellweger, T., & Zenger, T. 2023. Entrepreneurs as scientists: A pragmatist approach to producing value out of uncertainty. ***Academy of Management Review***, 48: 379–408.

Zuzul, T., & Tripsas, M. 2020. Start-up inertia versus flexibility: The role of founder identity in a nascent industry. ***Administrative Science Quarterly***, 65: 395–433.

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