## Strategy Science

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# On the Origin of Entrepreneurial Theories: How Entrepreneurs Craft Complex Causal Models with Theorizing and Data

**Timothy E. Ott,[a] Douglas P. Hannah[b,*]**

[a] Kenan-Flagler Business School, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27599; [b] Questrom School of Business, Boston University, Boston, Massachusetts 02215
*Corresponding author

**Contact:** timothy_ott@kenan-flagler.unc.edu, https://orcid.org/0000-0001-8646-1868 (TEO); dphannah@bu.edu, https://orcid.org/0000-0001-8544-4329 (DPH)

**Abstract.** The emerging theory-based view depicts entrepreneurs as sophisticated thinkers who form, update, and act on rich causal theories. In support of this view, recent empirical work has demonstrated both (a) the value of theories as well as (b) the importance of experimentation for testing and refining theories. Yet, the process by which entrepreneurs initially form these theories remains largely unobserved. To address this gap, we conduct a longitudinal study of nine consumer platform ventures over five years. Our primary contribution is to illuminate how entrepreneurs move from the spark of an initial idea to an actionable theory. This process begins with a thesis, which is an initial, poorly formed idea that guides subsequent learning and theorizing. To elaborate this thesis, entrepreneurs then knit together multiple distinct mental theorizing practices, as well as different approaches to generating new data. Extending prior work, we articulate the distinct roles these practices play in terms of adding novelty, identifying new subproblems, and explicating beliefs. We also add insight into the role of data generation in spurring further theorizing. Overall, we contribute empirical evidence and a rich processual understanding of how entrepreneurs articulate complex causal theories.

A rich literature centers on the interplay of cognitive structure and action for effective strategy (Ott et al. 2017, Valentine et al. 2024). One emerging strand of this work in strategy views entrepreneurs as sophisticated theorists (Felin and Zenger 2009, 2017). In this perspective, entrepreneurs form and refine theories about the world, much like scientists (Zellweger and Zenger 2023, Agarwal et al. 2024). *Entrepreneurial theories* are mental models of a business opportunity and how to organize to capture it (Felin and Zenger 2017, Ehrig and Schmidt 2022). Valuable theories embody novel or contrarian perspectives and beliefs, and can thus form the basis of differentiating strategies (Wuebker et al. 2023). A growing body of evidence suggests that adopting a theory-driven approach (i.e., articulating and acting based on theories) can lead to higher revenue (Camuffo et al. 2020), more effective pivots (Camuffo et al. 2024a), more coordinated business model changes (Agarwal et al. 2024), and growth (Novelli and Spina 2024).

Entrepreneurs are understood to form theories by engaging in *entrepreneurial theorizing*, which is the mental process of forming and relating beliefs into a novel, cohesive, causal understanding of the world (Felin and Zenger 2009, Felin et al. 2024). Theorizing combines "fragments" of experience and observation paired with imaginative leaps. In this way, it can allow entrepreneurs to extend beyond existing experiences and observations to posit entirely new possibilities and states of the world, and to then reason through these possibilities to create a cohesive understanding about how to act. When paired with subsequent testing and validation, entrepreneurial theorizing is thought to allow entrepreneurs to build theories that guide feasible strategic action—even when they reflect entirely new possibilities.

The process by which entrepreneurs form, elaborate, and refine their theories is central to the theory-based view. Yet, although this process has been described conceptually at a relatively high level (e.g., Felin and Zenger 2009, Ehrig and Schmidt 2022), there is an

opportunity for empirical exploration. This opportunity arises for several reasons. First, to be testable and guide action, theories need to be sufficiently articulated, with nested problems, assumptions, and causal linkages among concrete beliefs (Ehrig and Schmidt 2022). But although conceptual work proposes a variety of behaviors and thinking styles that may allow entrepreneurs to theorize beyond "*what is*" (e.g., Felin and Zenger 2009), we lack clarity and evidence around the specific practices that entrepreneurs might use to expand initial ideas into more detailed theories, or how these practices fit together. Second, and in line with other papers in this special issue, the nuances of this process (and how it manifests differently across firms) are likely to have significant implications for the viability and efficacy of entrepreneurial theories (Rindova and Martins 2024, Valentine et al. 2024). Finally, unpacking how entrepreneurs craft theories may identify managerial capabilities or behaviors, with normative implications for training entrepreneurs (e.g., Felin et al. 2021); this may also reveal underappreciated links to work on entrepreneurial learning and strategic cognition.

With this in mind, we ask, *how do entrepreneurs build actionable, testable theory from the spark of an initial idea?* Although we expect to expand on the model articulated in prior conceptual work, we also remain open to novel discoveries about how this process manifests in real-world contexts. We thus address this question using a multiple-case theory-building approach (Eisenhardt and Graebner 2007). Specifically, we track nine consumer platform ventures from prior to their founding through initial scaling (a period of up to five years), as their founders attempted to form, elaborate, and validate effective theories. Using extensive interview and archival data, we identify and relate a set of distinct mental practices that comprise entrepreneurial theorizing, identify different approaches to generating data to feed into these theorizing practices, and explore how the two interact as entrepreneurs craft theories.

Our study contributes to research on the theory-based view and entrepreneurial learning, and identifies normative insights for teaching and guiding entrepreneurs. Our primary contribution is to the emerging theory-based view, by illuminating how entrepreneurs move from the spark of an initial idea to a fully articulated, actionable theory through the tight interplay of theorizing and data generation practices. In doing so, we extend and add important nuance to existing conceptual work on the origin of entrepreneurial theories. First, we introduce the useful concept of a *thesis*, which is an initial, poorly formed idea that guides subsequent learning and action. Second, we identify a set of distinct theorizing practices (e.g., *thought experiments, empathizing*). These practices play distinct and complementary roles, draw on different underlying capabilities, and are used contingently by entrepreneurs in accordance with the theory

they are developing. Third, we confirm extant research which emphasizes closed, validation-oriented data generation as critical to refine existing beliefs. But we also find that open, discovery-oriented data generation is used to produce novel data for continued generative theorizing. Overall, we contribute by bridging the theory-based view and a process view of strategy formation (e.g., Hannah and Eisenhardt 2020, Ott and Eisenhardt 2020), detailing how entrepreneurs craft theories that are novel, cohesive, and lead to viable strategies.

## Background

Within the broader literature on the cognitive elements of strategy and strategy formation (Ott and Eisenhardt 2020, Zuzul and Tripsas 2020, Volmar and Eisenhardt 2024), the theory-based view contributes by focusing on effective theories (Felin and Zenger 2017, Agarwal et al. 2024). *Theories* are firm-specific points of view about a problem to be solved (e.g., a user need or value proposition), paired with beliefs about how to solve this problem and govern the overall process of value creation (Felin and Zenger 2017). *Beliefs* thus represent the "raw material" for hypotheses and theories (Felin et al. 2024): logical conjectures about the state of the world, the full scope of possible or desirable actions, and the mapping of possible actions to outcomes (Ehrig and Foss 2022, Ehrig and Schmidt 2022). The unique contribution of theory-based work, relative to work on cognition more broadly, is to foreground the interdependent, causal nature of these beliefs (i.e., to examine them as cohesive theories, rather than simply sets of beliefs), and to emphasize their dynamics and strategic impact.

A central argument in this work is that if firms are to execute novel strategies—that is, find new sources of opportunity and untapped combinations of resources, or take advantage of inefficiencies in the market— executives must necessarily hold theories that are both novel and contrarian (Felin and Zenger 2017). In other words, they must be premised on beliefs that are effectively bets "against the market," or contrary to common understandings of what is possible or potentially attractive. Otherwise, if a theory is widely held by others, it will be "logically unable to yield new insights" about how to succeed (Felin and Zenger 2017, p. 262).

This novelty presents a puzzle, however, because the drivers of entrepreneurial beliefs traditionally emphasized in the entrepreneurship literature—*prior experience* and *observation of the external environment*—are both rooted in *that which already exists*. To build a novel, contrarian theory, entrepreneurs thus need to (a) form idiosyncratic beliefs that are, by definition, both untested and unlikely to be widely accepted, as well as (b) understand the interplay and logical implications of these beliefs—that is, how they fit together. The theory-based view posits an answer to this gap in the form of *entrepreneurial theorizing*. Theorizing is the process by

which theories are formed and fleshed out (Felin and Zenger 2009). Whereas a *theory* reflects an actors' point of view (a noun) about how and why to organize, *theorizing* is a process (a verb). The output of the theorizing process is (or can be) a novel, contrarian theory.

In conceptual work on the theory-based view, the original description of the theorizing process can be found in Felin and Zenger (2009), with subsequent elaboration in a number of conceptual explorations, including Ehrig and Schmidt (2022), Zellweger and Zenger (2023), Ehrig and Foss (2022), and Felin et al. (2024). The process is described as an iterated sequence of steps. Entrepreneurs first begin with fragments of knowledge from observation and experience, which trigger the recognition of a contrarian belief—that is, a novel solution idea, or underappreciated "truth." Entrepreneurs then creatively imagine novel problems or novel solutions to old problems (Felin et al. 2024). This process is imaginative in that it necessarily entails a creative "leap" beyond the existing world as it is, with entrepreneurs envisioning various new possibilities (Kosslyn 1980, Weick 1989), potential futures (Rindova and Martins 2021), and conceptual combinations (Martins et al. 2015). These creative leaps may lead to the beginnings of a contrarian theory, but to fully understand and articulate a concrete, actionable theory, entrepreneurs must necessarily identify attributes or subproblems and causal linkages between them (Camuffo et al. 2024b, Felin et al. 2024), in this way deducing an increasingly complex theory about how to succeed (Ehrig and Schmidt 2022).

Once they are formed, theories and constituent beliefs are validated against environmental feedback (Felin et al. 2020, 2024). Testing against real-world data is important because intuition and logical deduction are frequently unreliable when faced with complex, novel problems (as often lie at the heart of entrepreneurial theories) (Ott and Eisenhardt 2020, Pillai et al. 2020, Tidhar et al. 2024). The emphasis at this stage is on clean experimental designs that allow the entrepreneur to isolate and assess individual beliefs for which uncertainty is relatively high (Zellweger and Zenger 2023, Agarwal et al. 2024). By identifying assumptions that are particularly critical or uncertain, and then engaging in targeted experimentation to (in)validate these assumptions, entrepreneurs can better understand the viability of the theory overall (McDonald and Eisenhardt 2020, Ehrig and Schmidt 2022, Valintine et al. 2024). As entrepreneurs conduct experiments, beliefs may be changed, leading to the revision or even abandonment of the original theory, and a return to theorizing (Felin and Zenger 2009).[1]

Yet, although the above process has been described conceptually, existing work to date does not directly observe either theorizing *or* theory testing, and recent papers have called for additional research (e.g., Wuebker et al. 2023). Indeed, this gap is notable given the richness of the empirical evidence that has been developed on the value of theories and theory-based reasoning (e.g., Camuffo et al. 2020, 2024a). Our aim is thus to complement existing work by providing empirical evidence and insight into the process by which theories are built.

## Methods

We have chosen a multiple-case, theory-building research design (Yin 1981, Eisenhardt and Graebner 2007). Multiple-case designs are particularly effective for addressing process questions and for studying hard-to-measure constructs like theorizing (Graebner et al. 2012, Eisenhardt 2021). Our perspective is one of theory elaboration (Edmondson and McManus 2007). That is, we are taking the existing model of the theorizing process described *conceptually* in research to date and extending it by empirically examining its constituent activities, as well as their interactions. We are also open to the possibility of identifying new constructs (Eisenhardt and Graebner 2007). We use an embedded design, with three primary levels of analysis. An embedded design facilitates more accurate theory building and can uncover important patterns across multiple levels (Yin 1981). First, we identify individual theorizing and data generation events that inform belief creation or updating, allowing us to categorize common practices or behaviors that comprise the theory crafting process. Second, we analyze individual decisions related to a particular topic or problem within the theory, which allows us to better understand how these practices interact. Finally, we look at a firm level to see how patterns unfold over time and with what implications.

The research setting is early-stage ventures with two-sided market business models. Our sample is nine entrepreneurial ventures based in the United States and Europe. These firms were originally identified in a larger project on entrepreneurial strategy formation (Ott and Eisenhardt 2020), but we observed theorizing in the data, motivating this project. We used theoretical sampling to choose firms that fulfilled two criteria: (1) the firm was pursuing seed or Series A financing, and (2) the founders intended to employ a two-sided market business model.[2]

Studying entrepreneurial firms is beneficial for two reasons. First, we are able to interview all members of the top management team and align reports from multiple respondents, mitigating some of the difficulty of studying theorizing processes in the field. Second, the uncertainty and ambiguity that are endemic to entrepreneurial firms increase the likelihood that teams need to engage in theorizing and are working to resolve key uncertainties. This is likely to help mitigate hindsight bias by placing our discussions more in the present. In the same way, studying ventures with two-sided market business models is useful because the platform business model provides a natural structure for entrepreneurs to understand and articulate the

**Table 1.** Description of Sample Firms

| Firm | Year founded | Thesis (i.e., initial marketplace theory) | Initial location | Total $ raised | Team size | Avg age | Startup exp. | Highest degree |
|---|---|---|---|---|---|---|---|---|
| Banquet | 2012 | Travelers would like to meet people and share meals while traveling; there should be an add-on service for Airbnb to meet this need | Europe (city) | $579K (seed) | 2 | 30 | No | MBA/MPA |
| Boxit | 2012 | Pack-and-ship stores have a hard time knowing how to ship big or oddly shaped items, and would pay to license a software tool that solved this | West Coast (region) | $6M (Series A) | 2 | 33 | Yes | BA/BS |
| Brushfix | 2013 | Finding painters and getting quotes is hard and opaque; there should be a trusted and easy online service | East Coast (city) | $9M (Series A) | 3 | 30 | Yes | BA/BS |
| Carport | 2013 | Many private parking spots sit empty; there should be a way to rent these to people who need them | East Coast (city) | $1.5M (seed) | 1 | 29 | Yes | BS |
| Helpout | 2011 | There should be a platform for people with free time and those needing small tasks done to connect | United States (city) | $15.2M (Series A) | 3 | 32 | Yes | MBA/JD |
| Localbites | 2013 | Western travelers have a hard time finding authentic food while traveling; there should be a way to connect with local hosts | India (cities) | $2.9M (Series A) | 2 | 32 | No | MBA |
| Parkshare | 2013 | Many private parking spots sit empty; there should be a way to share these with daily commuters | West Coast (city) | $200K (seed) | 2 | 28 | Yes | JD |
| Thriftshop | 2013 | Buying and selling furniture when moving is time consuming and wasteful; this is because there is no easy way to connect with people who want it | West Coast (city) | $11.8M (Series A) | 4 | 24 | No | MS |
| Trucksy | 2014 | Uber made personal transport easy; there should be a way to apply the same model in trucking | West Coast (city) | $10.6M (Series A) | 2 | 44 | Yes | JD |

*Note.* exp., experience.

theorizing process. In particular, the executives in our sample often discussed issues in terms of demand versus supply, or in terms of the specific technical architecture of the platform. These common approaches and language facilitate easier comparison across firms and decisions, and theorizing processes. See Table 1 for a description of the sample.

## Data Collection

We use several sources of data for this study: (1) historical archival materials including business publications and internet sources, (2) interviews with the top management team members, (3) interviews with other company informants, and (4) informal follow-up interviews with emails and phone calls to clarify details. Triangulation of data from multiple sources allows for more confidence that respondents are correctly recalling events (Jick 1979).

The primary data source is interviews conducted with informants at each firm. These interviews were collected in multiple waves (three or four), with each informant being interviewed once at the beginning of the study and follow-up interviews occurring with the informants most involved in strategic decision making at six-month intervals. We began building our pool of informants by interviewing all top management team (TMT) members at each focal firm. TMT members were initially defined as any founder or C-level employee; however, we also asked each informant which executives they thought were involved in strategic decision making. We adjusted the informant pool as necessary to capture all participants who could be helping to set the strategy of the firm. The size of each TMT varied between two and five. When the TMT was smaller than four, other informants such as principal investors and advisors were used to supplement the reports. Interviews lasted 60–90 minutes and were recorded.

We additionally collected archival material on each firm in our sample from a variety of sources. For example, we used LexisNexis and Factiva to find all press related to each firm from their inception through November 2017, at which time all nine firms either had developed a theory and strategy or had failed. These aggregators include sources such as newspapers, technology blogs, and analyst reports. We also used a web scraping tool to pull information such as investments and milestones from Crunchbase and AngelList. We supplemented these third-party sources with archival material from each company's website. See Table 2.

## Data Analysis

Our analysis consisted of a four-phase iterative theory-building process. In the first phase, we followed a typical multiple-case study approach (Eisenhardt and Graebner 2007) by preparing detailed case histories from each firm. These case studies traced the evolution of each venture, including key events in their founding, growth, and strategic trajectory over time. They also attempted to capture executives' descriptions of opportunities and needs to be addressed and their beliefs about how to organize to solve them. Despite entrepreneurs being untrained in the theory-based view, these understandings were often described by executives explicitly as assumptions, beliefs, or hypotheses—the building blocks of theories (Felin et al. 2024). For each firm we were able to discern an initial set of beliefs regarding a core problem and a rough idea for how the firm could provide value by solving the problem (Table 1). We refer to this initial, partially formed theory

**Table 2.** Description of the Data

| Firm | Number of interview waves | Titles of focal informants | Number of articles | Sample sources | Company blog and social media posts |
|---|---|---|---|---|---|
| Banquet | 4 | CEO/Founder, CTO/Founder | 51 | *Washington Post*, BBC, Huffington Post | 573 |
| Boxit | 3 | CEO/Founder, CTO/Founder, CEO Coach | 27 | Wireless News, TechCrunch, C-Suite Quarterly | 67 |
| Brushfix | 4 | CEO/Founder, COO/Founder, CTO/Founder | 29 | *Fortune*, Huffington Post, TechCrunch | 351 |
| Carport | 4 | CEO/Founder, Director of Business Development | 30 | *Boston Magazine*, TechCrunch | 150 |
| Helpout | 3 | CEO/Founder, CFO, international consultant | 194 | CNN, *The New York Times*, *San Jose Mercury News*, *Newsweek* | 143 |
| Localbites | 4 | Co-CEO/Founder, co-CEO/Founder | 52 | *Hindustan Times*, *India Today*, CNN, Huffington Post | 204 |
| Parkshare | 4 | CEO/Founder, VP Communication/Founder | 19 | Business Insider, SFGate, *USA Today* | 102 |
| Thriftshop | 3 | CEO/Founder, CTO/Founder, CMO/Founder, COO/Founder | 64 | *San Jose Mercury News*, TechCrunch, The Wire | 285 |
| Trucksy | 3 | CEO/Founder, COO/Founder | 89 | *Los Angeles Times*, *Wall Street Journal*, TechCrunch | 103 |

as a *thesis* because it lacked both the specificity (i.e., clarity around subproblems and constituent beliefs) and nested richness (i.e., detail regarding how beliefs fit together) that conceptual work has depicted in theories (Ehrig and Schmidt 2022). The cases then traced the events and considerations that led entrepreneurs to expand on their beliefs over time, allowing us to trace the process of moving from the thesis to a more elaborated theory.

This first phase sensitized us to the fact that elaborating on initial theses involved both mental activities *and* engagement with the world to learn and gather data. Thus, in the second phase we returned to our interview and archival data to code specific instances of theorizing and data generation. We define theorizing as creating, evaluating, or updating strategic beliefs. We define data generation as any action designed to elicit new information, beyond what executives already knew from prior experience and observation. These broad definitions allow us to see theorizing and data generation emerge from the data without preconceived notions about potential activities or practices involved in each. This exercise yielded 282 instances of theorizing and 226 instances of data generation across the nine firms. These theorizing and data generation instances constitute the primary pooled data set for this study (e.g., Kirtley and O'Mahony 2023). Intriguingly, we observe substantial heterogeneity across the nine ventures in terms of the practices employed. We also observed differences across decisions in the richness and diversity of practices employed (discussed in greater detail below).

In the third phase, we attempted to identify meaningful patterns in these codes. Doing so required us to iterate between our data and prior literature, including the theory-based view (Felin and Zenger 2009, Zellweger and Zenger 2023), entrepreneurial strategy (Bingham 2009, Kirtley and O'Mahony 2023), as well as other relevant domains (e.g., cognitive science and creativity), while of course also allowing these patterns to emerge from the data. One striking observation was the various roles that theorizing played in the entrepreneurial process. As such, we began grouping instances of theorizing into codes as a function of their role in allowing entrepreneurs to refine their theories. We came to see these as *practices*—specific, repeated (and repeatable) actions and mental exercises taken by entrepreneurs to build out their theories. Contrasting between our data and extant literature, we saw that some of these practices had been identified in existing literature, but others had not. For example, we observed practices related to understanding and empathizing with stakeholders such as customers and partners; these came to play a central role in our subsequent analysis.

In the same way, we also identified and attempted to categorize data generation practices. We began by trying to categorize these practices by *how* entrepreneurs generated data (e.g., prototyping versus interviews).

Yet, the distinctions between these were messy and overlapping, and the exercise largely failed to reveal a clear pattern. A clear pattern did, however, emerge in terms of *why* entrepreneurs generated data. Building on this insight, we coded our data to capture *learning intention*, which we define as executives' rationale for engaging with the world to seek more information. Specifically, we realized that data generation varied in terms of being either more discovery-oriented (open) or more validation-oriented (closed). We also observed that this distinction meaningfully shaped the interaction between data generation and theorizing.

In the fourth and final phase of analysis, we sought to examine these interactions in more detail, and specifically to understand the interplay of theorizing and data generation practices within the theory crafting process. To do so, we returned to our cases and mapped specific, individual instances of theorizing and data generation to key strategic questions or moments in the firms' histories. Examples include decisions around which markets to enter, which users to target, and how to manage partners. Aggregating instances of theorizing and data generation into strategic decisions in this way allows us to trace the connections between practices.

As is typical for this method, we used charts and tables to compare across constructs and refine our emerging understanding (Eisenhardt and Graebner 2007, Grodal et al. 2021). We iterated through these phases to strengthen the internal validity of our findings, sharpen construct definitions, and relate our theory to the literature. We continued to engage in iteration across these phases until we had a strong match between theory and data. The final result is a rich understanding and articulation of the theorizing process.

## Emergent Findings
### Common Theorizing Practices and Their Unique Roles in Theory Formation

Our interest is in how entrepreneurs move from the initial spark of an idea or opportunity (a thesis) to a fully articulated, actionable theory. Prior research depicts this process as incorporating both creative and rational thinking (e.g., Ott and Eisenhardt 2020, Rindova and Martins 2021, Ehrig and Schmidt 2022), and has suggested several behaviors that may be relevant (e.g., mental simulation, recombination), but has yet to observe them empirically. We thus begin by discussing the various theorizing practices we observe in our data (see Table 3).

*Theorizing Practices from Generative to Explicative.* We first identify a set of practices by which entrepreneurs use creative and rational thinking to build out the complexity of their theory. These practices range from more *generative*, which are those that add possibilities for action, thus introducing diversity, novelty, and uncertainty to an emerging theory, to more *explicative*,

**Table 3.** Theorizing Practices

| Role in theorizing | | Example practices | Definition | Illustrative quote |
|---|---|---|---|---|
| More generative | Expands the possibility space and aids in the formation of new beliefs. | Imagining possibilities | Creatively combining fragments of experience and observation to identify desirable futures or solutions. | *I was coming back from feeding my girlfriend's meter at 8:00 in the morning … and 10 out of the 20 parking spots behind my building were empty. And I was thinking, "Wow, what a waste of space. I'd gladly pay whoever's parking spot this is, 10, 15, 20 bucks to make sure that I don't have to run back and forth for my girlfriend's car." So, I thought, there has to be a better way. —CEO, Carport* |
| | | Empathizing | The act of feeling concern for others, understanding others' internal states, and feeling congruent emotion with others (Simon et al. 2022) to surface novel possibilities for value creation. | *[Thriftshop] says it takes the pain out of used furniture sales that many consumers deal with on sites such as Craigslist, where buyers or sellers may flake on a transaction, the advertisement posted online could be misleading, and trying to figure out a way to transport a refrigerator or dining room table can be a hassle. "We sell the things that if you buy them on Craigslist, you'd think, 'Wow this is going to be miserable,'" [CEO] said. —Major newspaper* |
| Mixed | Elucidates the various subproblems of the thesis and explores the interdependencies between them. | Thought experiments | Mentally simulating hypothetical scenarios to evaluate opportunities by exploring logical implications for other, interdependent pieces of the business. | *We did do some analysis upfront of like, "What would it mean if we launch this purely peer-to-peer versus something in a warehouse?," and we would think through, the different types of problems like that. It's like, "Well, we don't have the inventory, so we don't really know it's there. We've never seen it. We don't know what quality it's in." —CEO, Thriftshop* |
| | | Perspective taking | The cognitive process of imagining the world from another's point of view (Ng et al. 2021) to bring stakeholder obstacles to light and explore the dependencies of the business on stakeholder action. | *I'm like, "Well, no. We need this feature because every other one has the feature and if you don't have it, it's weird, people will get annoyed." —VP of marketing, Parkshare* |
| More explicative | Clarifies and adds detail around causal relationships of beliefs and activities. | Scenario building | Mental simulation which begins with an end state or goal in mind and then deducing which actions are necessary and how to prioritize among multiple choices to best reach that end state. | *Everybody knows what the goals are. We talk through the goals. We have to be at X revenue. What's gonna help us to get that revenue by that date? In terms of city, it's a little less quantitative and a little more qualitative. One of our goals is to have a model that's repeatable. So we wanted to do both. —COO, Brushfix* |
| | | Use-case analysis | Systematic analysis to understand how a product or service can technically be used by new and existing customers or partners (Jacobson 2004, Karp 2023). | *Shipping is relatively complex. There's a lots of factors that go into making a shipment happen. So, say there's a new request or feature, product feature, that we put into the product, we would say, "Will this force the shipper to do another step? Will it clog up the interface?" All of those product questions are taken pretty seriously. You just wanna keep it super simple. —CEO, Trucksy* |

which clarify assumptions and articulate the implications and interdependence among beliefs. Whereas more generative practices were key to moving beyond "what is," more explicative processes helped entrepreneurs build out relationships between beliefs. The varying roles of practices make them complementary to one another in aiding the formation of complex, causal theories that move beyond existing experience (Ehrig and Schmidt 2022, Felin et al. 2024). Importantly, we see that both generative and explicative practices are often used *throughout* theory development.

On the generative end of the spectrum, one common practice was *imagining possibilities*, wherein entrepreneurs combined (often mundane) observations or fragments of existing knowledge into novel beliefs about possible courses of action. These fragments included observation of underutilized resources, personal problems, analogies, and past experiences. For example, Trucksy's founders had experience in the technology industry and in trucking, and were intrigued by Uber's success in personal transportation (analogy). Putting these elements together, they imagined a similar service for commercial trucking:

> I loved the marketplace concept of Uber.… I was always thinking about it, how it worked, how the marketplace dynamics worked, and a friend of mine who I knew down here, when I first moved back here, he was in the logistics space. So we came up with the concept together based upon the challenges that he was facing at his own business. —CEO, Trucksy

Founders also sometimes engaged in more open-ended imaginative play, generating and entertaining a range of possible opportunities and thus deliberately creating a wider set of options to be considered. For example, after imagining the "Uber for trucking" concept, the founders imagined the various forms that their business might take. As the CEO explained,

> [We] started looking at the market, trying to think, figure out where in the market we wanted to be. In our case, it was the full truckloads, truckloads, is it, do we want to do long hauls? Do we want to do short hauls? Do we want to provide drivers? Do want to provide drivers with trucks? —CEO, Trucksy

As these examples illustrate, imagining possibilities sometimes occurred early, potentially even serving as the initial trigger for subsequent theorizing. In other cases, however, founders engaged in generative theorizing despite having relatively mature theories. This typically occurred when new problems or inconsistencies were discovered. Thriftshop illustrates. The founders' thesis held that an online two-sided market for used furniture could address the material waste and frustrating time spent disposing of furniture when moving, only to have to purchase new furniture in a new location. At first, they envisioned taking used

furniture on consignment, warehousing and listing it for sale, and then delivering it to new buyers. However, the founders soon discovered that moving—and thus the source of the used furniture to be listed on the platform—was quite seasonal. The Thriftshop founders thus imagined possible ways to address this newly discovered problem. The CTO asked, "*Do we get a bigger warehouse? Do we go peer to peer? Do we try to bring on third-party retailers to boost our inventory?*" The CEO similarly walked through potential ideas:

> We don't have as many furniture deliveries because people aren't buying used couches over the holidays, [but] we are still the delivery partner for people who are selling gifts? … And rentals, people do party rentals over the holidays. And July is a big wedding month … can we build out a rentals product that can help us level out expected sales? —CEO, Thriftshop

In this way, and across our data, we see founders expanding the possibility space by combining observation and experience, drawing on analogies, and asking what might be possible to posit new, previously unconsidered futures or paths of action.

On the other end of the spectrum, entrepreneurs used explicative theorizing to articulate and clarify the details of casual relationships in their theories. The most common practice we observed was *scenario building,* which is using mental simulation and logical deduction to reason backward from a *specific* outcome to clarify the actions necessary for that end state to be realized. Thus, whereas *generative* practices like imagining possibilities expand the possibility space, *explicative* practices like scenario building clarify individual possibilities.

Parkshare illustrates. Initially, the Parkshare founders' thesis was to develop a platform to connect owners of urban parking spots with people who need them. One idea was to partner with parking valet startups like Lux and Xerxes. These firms offered valet services to various businesses but did not own parking spaces themselves; a partnership might thus bring demand for spots to Parkshare's platform. As the founder explained,

> The way Lux and Xerxes work is that they go into public parking garages, they purchase in bulk. They get a discounted rate. Then they take your car and they park it in these public garages. The complaint [is that] it takes way too long in traffic for the car to get back to you … We can offer them an opportunity to bring it closer because we can offer them the residential parking at a fraction of the price … For us, it's instant transaction which is great. —CEO, Parkshare

Reasoning backward from this step, however, the founders realized that to entice Lux into a partnership, they first needed to build up their inventory of parking spots. This consideration then led to the idea of partnering with Zipcar and Lyft, two firms that either had parking spots under contract (Zipcar) or relationships

with drivers who owned their own residential spots (Lyft). Partnering with Zipcar or Lyft might allow Parkshare to approach Lux and Xerxes—but this prompted the question of how to best approach *these* firms.

Again reasoning backward from their understanding of Lyft's culture (which emphasized community) and business model, Parkshare's founders mentally simulated how they could pitch Parkshare as a logical partner. The CEO explained,

> For Lyft, it was "you guys have drivers that have their cars parked someplace, and then afterwards [while they drive around], what's up with those spots? They're just sitting around. So why not have those spots be offered as well?" Now the Lyft driver is probably going to be driving around more because their spot is taken, so that means you guys have more Lyft drivers. But they're fine driving more because they're [also] making money off that parking space. —CEO, Parkshare

Thus, from an initial, specific goal (to partner with Lux), Parkshare's founders reasoned backward, iteratively deducing the steps necessary to reach this end state. Importantly, reasoning about how to approach Lux and build inventory required reasoning carefully about the world *as it was*—that is, understanding the distribution of parking spots, the business models and culture of potential partners, and patterns in driver demand—in order to understand how to get to a possible version of the world *as it might be*. This, in turn, led to operational insights, such as the realization that Parkshare's own emphasis on community made Lyft an attractive potential partner. In this way, we see scenario building leading to more (and more detailed) causal beliefs about activities and how activities should be sequenced over time.

Finally, we also observe that some practices mix generative and explicative theorizing to explore logical implications and interdependencies between beliefs and to articulate subproblems within theories. Here, a common practice was *thought experiments*, which are mental simulations of the problem and solution using hypothetical reasoning. Thought experiments mixed generative and explicative theorizing in that they expanded the set of subproblems to be solved or elements to be considered, but also helped entrepreneurs articulate specific beliefs and relationships around those core ideas. Thus, they were often a link between imagining possibilities and scenario building, and helped articulate the links between beliefs.

Trucksy again illustrates. After imagining possibilities as described above, the founders began to articulate the various subproblems of the emerging theory. They recognized that recruiting truckers who had empty space would be critical. They also knew the technology needed to work seamlessly, like Uber, and eventually they would need shippers to book on their platform. Verbally simulating (and drawing out) the various subproblems

of the business allowed them to identify logical links and implications between beliefs, as well as to begin building hypotheticals for different "Uber for trucking" concepts. For instance, they compared long-haul segments, regional shipping, and last-mile solutions. Within each hypothetical, they needed to identify and refine specific beliefs about what they needed to overcome subproblems, and how these needs might potentially be met. In some cases, this prompted them to consider subproblems that they had not initially considered. For example, they realized legal liability was an important consideration when thinking about shippers, whereas carrier liquidity might be one of the largest obstacles for logistically matching supply and demand. As the COO explained,

> We saw that getting big in there and owning the hearts and minds there would allow us to get into the long haul stuff anyway, but we would have more possibility of creating a marketplace that was liquid, and that people believed in, in the short haul space. Additionally, we felt there was less liability associated with transactions in the short haul space. So we're like, "You know what, we'll be okay…." It's not like a long haul drive, where somebody can pick up their goods and they go fishing for a month … So the marketplace [idea] … seems to lend itself to the short haul market as well as being a place where technology can truly make a difference. —COO, Trucksy

In this way, the founders' thought experiment combined abductive jumps with logical reasoning from data to elucidate the various subproblems of the thesis and how they related, allowing them to move from an initial, relatively amorphous idea (i.e., Uber for trucking) toward a more complex, detailed theory about how this could be achieved.

***Neglected Theorizing Practices.*** We also identify a set of theorizing practices that have received less attention in existing research. These practices deal directly with understanding stakeholders (e.g., customers, partners), what these stakeholders value, and how they might potentially interact with the firm or its output. Prior work on the theory-based view has highlighted the need to be able to "sell" theories to resource providers or potential team members (Felin and Zenger 2009, Felin et al. 2024). Yet, theories also incorporate assumptions about how actors (e.g., resource providers, customers, rivals, and regulators) will act. We observe three practices related to building out these assumptions.

One practice was *empathizing*. Empathizing refers to understanding actors' internal states, and feeling congruent emotion (e.g., Simon et al. 2022). Empathizing is generative in that it often spawned new possibilities, for example, around previously unconsidered avenues for creating value. Localbites illustrates. Localbites was founded by a pair of MBA classmates who loved food and travel. Their initial thesis envisioned a platform

that would connect Western travelers (who wanted to enjoy authentic culinary experiences but were often unable to find them on their own) with local hosts in Asia (who wanted to make money, and would be able to by sharing their culture and cuisine). Because the founders conceptualized the benefit to hosts in terms of financial rewards, they initially planned to target lower-income women. However, they also began to reflect on their own feelings about interacting with strangers. This led to the insight that their focus on financial gain was too narrow. The CEO explained,

> [People share food because] … the need to connect with the rest of the world, to have more friends, to not be as lonely. Those are some of the emotional things … because they love hosting people, they want to stay connected to the world … for their kids to meet kids from around the world because when they grew up they'd never met a single foreigner, you know? —Co-CEO 2, Localbites

This emotional connection allowed Localbites to generate new possibilities for who might host, and how these hosts could be recruited and retained. For example, they expanded their targets to include families and women with means. They also began to think deeply about how to foster community and moved their emphasis away from making sure hosts had consistent traffic, which was important if hosts participated to make money but not if they did so for social reasons.

We also observed entrepreneurs engaging in *perspective taking*, which is the cognitive process of imagining the world from another's point of view (Ng et al. 2021). In contrast to empathizing, which builds emotional connection and rapport with various stakeholders, perspective taking is used to "game out" these stakeholders' likely behaviors, based on a rational understanding of their preferences. Similar to thought experiments, perspective taking mixed generative and explicative theorizing to illuminate subproblems and explore the implications of these problems for the rest of the theory.

Banquet illustrates. Like Localbites, Banquet was launched to provide a way for individuals to host strangers for shared meals; unlike Localbites, Banquet's founder envisioned addressing this need through an add-on service to Airbnb. Initially the founder theorized the target customer would be international travelers, who might welcome an opportunity to meet new people and share a meal. She also wondered however about the possibility of hosting locals for shared meals. In considering the choice between these two groups, the CEO stepped back to consider the experience (and walk through the act of hosting or attending a dinner) from the perspective of both hosts and attendees. This exercise revealed several elements and needs she had not previously considered, such as how to manage recruitment, and the impact of recruitment on host

satisfaction. In particular, she realized that locals were more likely to have existing social networks in the area. And, comparing the hypothetical of 12 strangers each booking an event individually versus a single person booking a private party for 12, she realized that (a) she would be more likely to attend a dinner party herself if she had friends going, and (b) relying on attendees to recruit other attendees (e.g., their friends) would reduce the burden on hosts, possibly improving retention. She explained,

> A host will come back again and again if their event gets filled. Or at least meets the minimum required … that conclusion was wow, if we can fill up all twelve spots at once that is a lot less work for us – and it satisfies the host. And we get one person to bring eleven people from their network in. People would much rather take their friend's advice than some website's advice. So if their friend said "come, I'm organizing a dinner, it's this new concept and you should check it out," the friend will most likely say yes. [In contrast], if they see an ad on Facebook that's like "come try this new concept" … who knows.

Reasoning through the incentives and likely behaviors of potential users in this way led to the insight that targeting locals offered benefits for both hosts *and* diners.

Lastly, we also saw entrepreneurs theorizing using *use-case analysis*, which refers to reasoning about how users interact with the product or service, or associated objects and artifacts like websites and apps (Jacobson 2004, Karp 2023). This tight attention to the *use* of the product or service was explicative in that it allowed entrepreneurs to identify nuanced assumptions about customers, and to understand the links between user behavior, design features, and functionality. Use-case analysis often, but not always, relied on deep dives into data.

Carport serves as an example. Carport's founder engaged in use-case analysis to better understand who the early adopters were, and how the product might meet these users' needs. This involved parsing how users were interacting with the platform, and then trying to articulate more nuanced assumptions about what features were necessary (and which were inconsistent with their overall theory). A strategic advisor explained,

> We built a fairly exhaustive use case document from both the renter side and the owner side that we probably couldn't have done without the in-market experience. So I don't know if it's analytics. I wouldn't call it analytics but it's definitely analysis of the existing customer problems that we saw and what people were trying to do. It wasn't just directly, "Oh someone's trying to do this therefore we need that feature." It was interpreting what people were trying to do and projecting what features will be more in demand than

other features. So for example we learned parking overnight is a more complex use case. I wanna get this spot at 6:00 or 7:00 and leave in the morning. We didn't support that at all. We supported "You could rent by the hour or you can rent by the day. Day ends at midnight." Well that doesn't work. So you quickly get in to say, "Well it's a use case here that needs to be natural." —Strategic advisor, Carport

As this example illustrates, use-case analysis frequently led to more complexity among beliefs and assumptions (here, about previously unrecognized distinct segments within their user base, and the platform features needed to meet those users' needs) by identifying nuanced details and surfacing tacit assumptions about user interactions with the product and platform.

*Summary.* Overall, we observe a set of distinct mental practices by which entrepreneurs build up from their initial thesis to a more complex, fully articulated theory. These mental practices differ in their role within the process of building out a theory: some expand theories by adding novelty and new possibility (generative), whereas others do so by clarifying the links and implications of beliefs, thus improving coherence (explicative). They also build on distinct styles of thinking and reasoning, as well as underlying capabilities (e.g., logic versus emotional intelligence). Our analysis highlights that th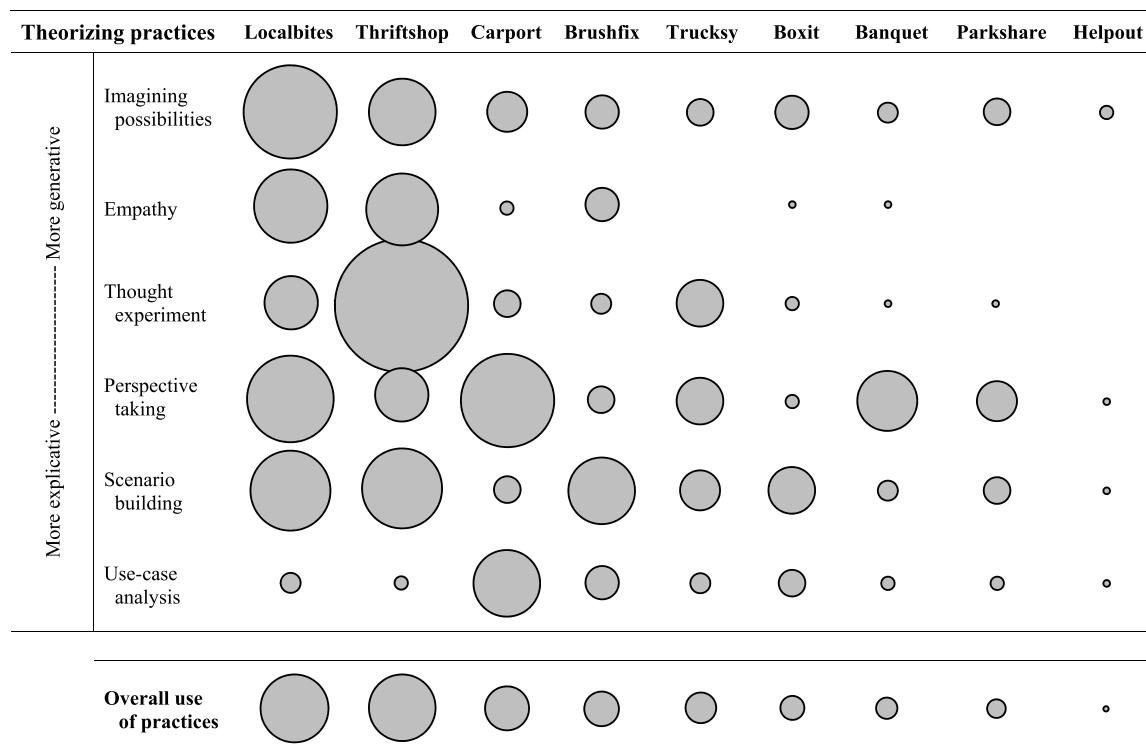ese practices are not abstract features of a theorizing process, but rather concrete activities undertaken by entrepreneurs.

We also observe that different teams used these practices to differing degrees (Figure 1), as their theories surfaced different problems and issues to explore. For example, empathy was the least common practice within the data overall but was used extensively by the Localbites founders to understand potential stakeholders and refine their beliefs about to whom, and how, their service might appeal. More broadly, those firms that saw themselves as cocreating new markets with stakeholders (e.g., Localbites) were more likely to engage in empathy and perspective taking. In contrast, Thriftshop and Trucksy—both of whose founders had developed theses about how to address unmet logistics needs—engaged in thought experiments more than other firms, as they wrestled with obstacles posed by interfacing with existing infrastructure. Overall, this highlights the important insight that (a) different founders are likely to use different theorizing practices to different degrees, and that (b) specific practices are likely to be more or less salient as a function of an entrepreneur's emerging theory.

## The Interaction Between Data Generation and Theorizing

Prior literature depicts entrepreneurs forming theories, then testing them using environmental feedback

**Figure 1.** Variation in Theorizing Practices by Firm

(McDonald and Eisenhardt 2020, Ehrig and Schimdt 2022). Much of this work emphasizes scientific experiments (i.e., falsifiable hypotheses, representative samples, unambiguous tests) which provide clear feedback and minimize inference error (Zellweger and Zenger 2023, Agarwal et al. 2024). In line with this work, we observe entrepreneurs articulating beliefs and validating them against feedback as a critical piece to theory building. Yet, we observe a wider range of data generation activities, driven by different underlying learning intentions. That is, while entrepreneurs gathered data to validate beliefs, they also sought to learn more broadly on topics they believed to be important in the context of their theory—yet without a strong prior or specific hypothesis in mind. And, these instances of open "discovery" were more often accompanied by subsequent theorizing via a variety of practices. Table 4 illustrates this pattern. In contrast, we did not observe a clear relationship between learning intention and the means by which the data were generated (e.g., prototypes, advice, or interviews).

We define an entrepreneur's *learning intention* as their rationale for engaging with the world to generate new data. We code intentions as *more closed* when entrepreneurs attempted to generate data about a specific hypothesis, or to validate an assumption. Boxit illustrates. The founders' initial thesis envisioned building a software tool for pack-and-ship stores that would facilitate pricing and shipping unusual and hard-to-ship items. A key assumption was that they would be able to build the software inexpensively enough, given the limited size of the pack-and-ship market. With the explicit intent of validating this assumption (*more closed*), they interviewed software developers. Through this exercise they generated data that allowed them to determine that although building the tool was *technically* feasible, it was also prohibitively expensive, such that they would not be able to recoup their costs. In doing so, they invalidated a central assumption on which their theory was built. The CTO explained,

> Once we completed the requirements document we shopped it around to two or three software development firms and they told us it was going to cost … Based on what they said and what we knew we estimated it would cost somewhere around $800k to $1M to create the software. So we did some very simple math and realized that was never going to be economically feasible. Just because there is a limited market for that software … You'd just never make your money back. And if you did you'd take on all the risk of putting a million dollars into it and you might make a 20% return or something if you're really lucky. Or you might fail and lose it all. So that was a pretty clear strategy that wouldn't work. —CTO, Boxit

In other cases, entrepreneurs approached data generation with a more open learning intention. We code

intentions as *more open* when actors sought to learn about a topic indicated as important within the context of their theory, yet without a strong prior or hypothesis in mind. Trucksy illustrates. Having articulated their initial "Uber for trucking" thesis, the founders set out to learn more about the market (like Boxit). Yet, unlike Boxit, they approached data generation without looking to validate a specific hypothesis, intending to learn more broadly about how carriers worked and what frictions existed in the market. For example, they interviewed carriers, observed load boards (marketplaces that serve as matchmakers between shippers and carriers), and purchased industry research. The CEO described,

> We did everything from going and looking on the existing load boards that were out there for trucking to see what the supply and demand balance was for local trucking, long haul, seeing what the numbers were, getting the numbers from DEA, getting the numbers from the American Trucking Association, making sure that in our minds, huge addressable market was there. —CEO, Trucksy

A key feature of this data generation was that the founders approached it without the intention of validating or invalidating expectations; instead, they were engaging in *exploration* of key questions highlighted by their theory. Thus, whereas Boxit generated critical, specific feedback which led them to update their theory, Trucksy generated data around their initial thesis which gave them a broad base level of knowledge around which to theorize later.

Across our data, we observe all founding teams engaged in more open and more closed data generation at different times, and throughout the theory development process. We also observe that across the strategic decisions in our sample, open data generation was more often followed by thoughtful theorizing, including a greater diversity of theorizing practices. Theorizing around geographic expansion at Banquet and Brushfix illustrates. Both teams were faced with the question of how best to scale, and how to demonstrate scalability to investors. Banquet's founders generated data around this question with a closed approach. Banquet's emerging theory held that a platform to connect locals in cities for dinner parties represented an unmet need and profitable growth opportunity. Initial tests in a European capital city had produced very positive results, and they believed they could scale to the United States using the same model. To validate this scalability assumption, the founders selected and performed a limited-scale launch in Washington, DC. Selecting Washington allowed them to minimize the amount of adaptation required, and presented the cleanest test. The CEO explained,

> So we were raising money on the basis that we could prove that our model worked in the US. So I thought it would be wise to pick a city that was as similar to

**Table 4.** Data Generation, Learning Intention, and Subsequent Theorizing

| | Issue suggested by theory | Hypothesis to be tested | Primary activities | Outcome | Subsequent theorizing | Illustrative quote |
|---|---|---|---|---|---|---|
| More closed (validation) | How to prevent off-platform transactions | A one-sided fee structure helps keep users on the platform | Advice seeking / Online research | Hypothesis is validated / Firm implements a one-sided fee structure | **PT** / Limited theorizing around user behavior | *I'm going to my mentors. [I also want to] look at how other players have dealt with this … Airbnb pushed the fee to one side, to one player. Because when you put the burden on both sides, now you have two players that are kind of in cahoots with each other. —CEO, Banquet* |
| | How to grow the user base | Events are a good way to get people onto the site | Live experiment | Hypothesis fails / Events are discontinued | — | *When we decided to start building demand in February, I formed a list of 35 things to experiment with in groups of five … We [learned] events are really bad for us. Events attract deal-hunters, and we don't want deal hunters. —CEO, Helpout* |
| | Market size | There is a large unmet need for day-use parking spots | Stakeholder interviews | Hypothesis is validated / Founder decides to build app | — | *I started doing research and understanding if there were any other players out there. I needed … to see if the market was actually big enough to substantiate this type of investment in this type of business. Shortly after that I saw that there was a huge opportunity, I contracted a team and started building the app. —CEO, Carport* |
| More open (discovery) | Marketplace dynamics/ network effects | — | Advice seeking | Rich learning about various growth strategies / Broadly positive feedback | **IP, SB, EM, PT** / Extensive theorizing on how to recruit hosts | *[We asked about platform dynamics] and he told us, "Don't try and get 10,000 customers to like you, get 100 customers to love you and the rest will follow." That definitely stuck with us and guided a lot of our thinking early on … Like who are the people who we think are doing this incredibly well and let's get their advice. —Co-CEO 1, Localbites* |
| | Operational issues around a full-service business model | — | Live experiment | Identification of unexpected issues related to warehousing, demand, and labor | **IP, PT, SB, EM** / Extensive theorizing about implications of test | *The quickest way to do it was develop it as an experiment. Looking back on it we could have been a lot better about recording all the data and decisions and thought that went into each experiment … But even lacking that … You gain knowledge of what it means to pick up, store, and deliver a piece of furniture. —CTO, Thriftshop* |
| | What problem would an Uber-type platform solve in trucking | — | Stakeholder interviews / Online research | Surprise discovery that trucking supply was not on load boards / Positive feedback | **TE, IP, PT** / Extensive theorizing about identity of users | *From there, we spent a couple of months thoroughly vetting the idea: researching the market, networking with people in the industry to see what the appetite would be for this solution, reading market studies, digging deep to make sure that this was a viable marketplace. —CEO, Trucksy* |

*Note.* IP, imagining possibilities; EM, empathizing; TE, thought experiments; PT, perspective taking; SB, scenario building; UA, use-case analysis.

[launch city] as possible. Rather than go to the most different place imaginable like New York. Similar in size, similar in that they are both capitals. They have a lot of people working in government jobs where they are decently to well-paid and they don't work 80-hour workweeks … [So] the biggest thing was to be able say, OK investors we've proven we can do it in another city. —CEO, Banquet

The subsequent test, conducted over a period of about three months, was perceived as successful: despite some issues identifying and onboarding hosts, they saw the model work and gained confidence that they could expand into the United States.

In contrast, Brushfix approached the same geographic expansion question with a more open learning intention. Brushfix's emerging theory envisioned a platform to connect homeowners and painting contractors. Like Banquet, they wanted to understand where to scale and demonstrate scalability to investors; unlike Banquet, they did not formulate a specific set of hypotheses to test at this point. As the CEO explained,

> The next question was like, how big can this thing be? Does this work in other cities? Does our quoting work in other cities? How much will it cost to launch another city? And so on and so forth. —CEO, Brushfix

To answer these questions, the founders embarked on a limited launch in San Francisco, a city that they thought would complement their initial setting in New York. As at Banquet, there were some issues, but overall it was a success: they were able to onboard painters and sell to customers, and got positive feedback from investors. Yet, having approached the exercise with a more open learning intention, they then engaged in further theorizing about what they had learned—for example, how the housing stock (apartments versus homes) affected the quoting algorithm, the role of partners, and the importance of word of mouth. The CEO recounted,

> What have we learned … A lot about quoting, and how every city is a little bit different. Pricing is a little bit different in a new city. Transportation is a little bit different in a new city. A lot of similarities with customer acquisition, across the cities, which is good for us. —CEO, Brushfix

Contrasting these two examples, and across our data more broadly, we see that generating data with both *closed* and *open* learning intentions held benefits for entrepreneurs in building theories, but the relationship with theorizing differed (Table 4). With closed intentions, outcomes were typically interpreted in terms of success or failure. And, consistent with prior research, this provided the benefit of rapid confirmation or invalidation of assumptions and a subsequent transition to exploring other elements of the theory (e.g., Zellweger and Zenger 2023, Camuffo et al. 2024b). For example,

having discovered that the pack-and-ship store market was too small to recoup the cost of developing software (example above), Boxit pivoted to targeting the same tool to the larger end-user B2C market. In contrast, open intentions sometimes led founders into an overall assessment of success or failure, but *also* more often prompted subsequent mental theorizing as founders puzzled over what they had learned, and what the information generated meant for their theory.

Open data generation is more likely to be associated with further mental theorizing for two main reasons. First, in line with arguments in both the attention-based (Ocasio and Joseph 2018) and theory-based (Felin and Zenger 2017) literatures, perception is highly selective, and individuals perceive that which they are looking for. To the extent that entrepreneurs engage in testing and exploration expecting to learn more broadly, they are likely to generate a wider range of information with which to subsequently theorize. This supports the idea that, especially early, as entrepreneurs are explicating and expanding their initial thesis, *more* and *more diverse* information is likely to facilitate creative recombination and imagination of novel possibilities (Hargadon and Sutton 1997, Dahlander et al. 2016). Open data generation may also increase the probability of generating surprise. For example, when Brushfix approached the geographic expansion question, the founders had not previously considered the impact of differences in housing stock (apartments versus houses) on their quoting algorithm. The unexpected discovery that (a) San Francisco had a higher proportion of larger houses, and (b) their algorithm was less effective at quoting these properties, prompted extensive thought experiments around whether to revise or keep a core element of their emerging theory (that any quote provided would be fulfilled regardless of realized costs). More broadly, surprise observations and "unknown unknowns" are understood to play a central role in theory building by unearthing new beliefs and previously untheorized connections (Ehrig and Foss 2022, Zellweger and Zenger 2023), especially early, when theories are less fully articulated (Novelli and Spina 2024).

Second, approaching data generation as an exercise in *discovery* may be more likely to prompt subsequent reflection and inquiry. In particular, whereas closed *validation* of specific assumptions is more likely to produce a clean signal of success or failure (as in the Boxit and Banquet examples above), the informational outcomes of open discovery are messier and harder to interpret. This messiness is likely to leave room for more extensive and purposeful sensemaking (e.g., Weick 2015, Levinthal and Rerup 2020), with the outcome that entrepreneurs apply more theorizing practices and spend more time to do so.[3] The theorizing that accompanies this reflection is also likely to be impactful. In particular, research in cognitive neuroscience argues that although

fast, automatic information processing is valuable, learning often requires more effortful forms of analysis as well (Hodgkinson and Healey 2011). Recent work in strategy makes a similar argument, with the finding that deliberate "pauses" facilitate consolidation of learning and serendipitous insight from passive learning (McDonald and Eisenhardt 2020, Ott and Eisenhardt 2020, Crosina et al. 2024). Reflection and open data generation are likely to be particularly relevant both early in the theorizing process (when tests are likely messier or more inconclusive) as well as when engaging with stakeholders (as contrarian beliefs may increase the probability that poor feedback reflects a false negative).

## Crafting Novel, Viable Theories: From Initial Thesis to a Complex Causal Model

Our analysis thus far identifies distinct practices for both theorizing and data generation. As a final step, we examine how entrepreneurs combine and sequence these practices to build theory. A key insight that emerges from our data is that the initial theory crafting process is characterized by tight interplay of theorizing and data generation practices. That is, entrepreneurs do not just validate their theories once formed, they also engage with the world continuously as they theorize to uncover information that will help elaborate their theories. Specifically, when entrepreneurs theorize from an initial thesis, they may reveal gaps in their knowledge, prompting efforts to gather data and learn. New beliefs formed from these practices often spark new questions, potentially leading to the identification of new subproblems and previously untheorized interdependencies. This, in turn, may spur additional open data generation (e.g., to better understand areas or topics understood to be important in the context of the emerging theory) as well as more closed (in)validation of specific beliefs. In this way, entrepreneurs move from an initial, often poorly formed, thesis to a richer theory that is not only more complex, but also more solidly grounded in real-world data and possibility.

Interestingly, because the practices used and the questions and problems to which they are applied depend on entrepreneurs' idiosyncratic, often contrarian initial thesis, the practices that are useful for elaborating a thesis and the sequence of the practices applied are unique to each firm and theory. Figure 2 contrasts the idiosyncratic sequences and interplay for two specific questions, and we illustrate with a single detailed example from Localbites.

Localbites was founded by two friends who met in business school. While reflecting on their shared love of food and travel, they realized that they had both experienced the same problem of not being able to find authentic, local cuisine while traveling in foreign

countries. Building on this insight, they decided to build a business that might address this need.

Their initial thesis framed the problem (an unmet market need) as Western travelers needing a way to find "authentic" culinary experiences while traveling in Asia. They sketched a solution (a platform) that could connect these travelers with local hosts—that is, women who could host travelers for meals, thus sharing their knowledge of cuisine and culture and earning an income from doing so. By conducting thought experiments and walking through what the business might look like, they began to see their theory as consisting of interrelated subproblems including (a) management of hosts, (b) recruitment of Western travelers, (c) geographies in which to operate, and (d) features and technology of the platform. Within these subproblems, the founders articulated some initial beliefs, such as "impoverished women may make good hosts because they could earn money," but for the most part the theory remained vague.

In order to better articulate the elements of their theory around recruitment of Western travelers, the founders began with some simple tests to validate willingness to pay. For example, they asked a friend who lived in India to host a dinner, and recruited MBA colleagues planning to travel to India over break to see if they would pay for the event. Although this prototype confirmed the viability of the platform, the founders also realized that they understood relatively little about traveler behavior and the travel industry; thus, their thought experiments and subsequent test revealed an area of their emerging theory that was underdeveloped.

With this in mind, the founders set out to learn. Rather than articulating and attempting to test a specific hypothesis, they instead engaged in open, discovery-oriented data generation. They interviewed friends who were avid travelers, formed relationships with mentors who had expertise in the industry, and attended industry conferences to sit in on sessions and speak with other companies. These activities led to the identification of tour operators (companies that provided prepackaged tour experiences) as an important industry actor about whom they had previously not theorized. One of the founders explained,

> So early on we started talking with tour operators … It was pretty early on that we talked to the first people and it was just about gaining insight about the industry. You know, learning who their partners were. Neither of us came from the travel industry and there's a lot of nuances to the travel industry. We initially talked to them, it was very much about getting advisorship and advice and telling people about our ideas and things like that. —Co-CEO 1, Localbites

This open data collection allowed them to elaborate on their theory by generating new possibilities (e.g.,

**Figure 2.** Examples of Elaborating Theories by Knitting Together Different Sets of Practices



| Example 1: Thriftshop | | Example 2: Brushfix | |
|---|---|---|---|
| *Topic: How to expand geographically* | | *Topic: Recruiting painters to the platform* | |
| *Initial belief: Geographic expansion will occur by duplicating infrastructure in each city* | | *Initial belief: Professional painters will be easy to vet (and of the same quality), but hard to recruit* | |
| **Coded practices over time** | **Description** | **Coded practices over time** | **Description** |
| Open | Launched Raleigh to **explore** expansion – it worked, but was slow. Could it be faster? | EM | **Empathizing** with customers about who they would trust coming into their home. |
| IP | **Imagine possibilities** about how process could be better. Launch new cities without a warehouse? | Open | Realization that they did not know about painting prompts open **exploration** via trade association and a relationship with a single painter. What is different from the cleaning business (initial analogy)? |
| PT | **Perspective taking** to understand why warehouse owners were reluctant to rent space. | | |
| Closed | Similarities to Amazon / Walmart prompts targeted research to **validate** hub & spoke through analogy. | PT / TE | **Perspective taking** to understand painter behavior and how customers will react to painter behavior. |
| TE | **Thought experiment** explores the obstacles of not opening a new warehouse (e.g. need a small space for short term storage, logistics between cities, smaller teams, etc.) | | **Thought experiment** to explore the obstacles to onboarding good painters prompts subproblems: a) quality varies, and b) train painters around customer interactions. |
| | | Open | Realization of knowledge gaps prompts open **exploration** around training with painter partners. |
| Closed | **Experiment** to validate viability of carting inventory back and forth to Charlotte from Raleigh. | Closed | **Validation** using mock interviews of new assumption that the firm can screen for customer interaction skill. |
| Open | Launch Charlotte to **explore** more. What was different than Raleigh? | | |
| PT | **Perspective taking** about user experience reveals the possibility of an e-commerce play. | SB | **Scenario building** around growth of supply side for 100% fulfillment – put recommended painters in an onboarding queue and set specific steps for onboarding. |
| TE | **Thought experiment** to explore obstacles of being more e-commerce-oriented leads to belief changes in marketing and operations activities. | UA | **Use case analysis** around how painters best interacted with the booking system and vetting system. |
| SB | **Scenario building** to set new prioritization of cities, expansion goals, and steps to reach them | | |
| *Elaborated beliefs:* | | *Elaborated beliefs:* | |
| - Hub-and-spoke expansion around "core" cities is faster and operationally easier.<br>- Identification of obstacles posed by logistics between cities and being a pure e-commerce play.<br>- Identification of concrete expansion goals around "high priority" cities. | | - Painters vary in quality, and interpersonal skills are central to customer experience.<br>- Training for customer interactions is a major obstacle for onboarding painters.<br>- Set path for managing supply side pipeline and expansion goals. | |

*Notes.* IP, imagining possibilities; EM, empathizing; TE, thought experiments; PT, perspective taking; SB, scenario building; UA, use-case analysis. "Closed" and "Open" refer to data generation.

partnering with tour operators) as well as articulating new subproblems (e.g., how to manage customers and contacts, how to cost-effectively advertise).

Their theory at the time called for a consumer (B2C) platform business model, and a value proposition that

emphasized authenticity and local connection. Tour operators thus seemed at first to be a poor partner choice, as their high-end, prepackaged experiences seemed inconsistent with this theory. However, as their conversations with tour operators led to (unsolicited)

partnership offers, the founders began to wonder if their theory had a gap in terms of strategies for reaching broader markets. In particular, the founders began to wonder (*imagining possibilities*) if partnering with tour operators might allow them to expand their reach while also generating much-needed short-term revenue. One founder explained, "Maybe we should actually be talking to them a little more strategically and figuring out if this is something their travelers would be interested in and if they could see us as a partner."

The interactions with tour operators also prompted the founders to try to better understand why Localbites was receiving so much inbound interest, a perspective-taking exercise that led them to realize that their platform represented a unique value and capability with respect to incumbents. One founder explained,

> Totally by accident a couple of them started calling us back and were like "Actually, could we have some of these experiences for our travelers?" That was a total unintended consequence, but we realized that there was a market in companies like this where it's not their core competency, finding local food places. And they were also seeing what we saw that those experiences are typically the most valuable part of any traveler's experience. —Co-CEO 1, Localbites

They also conducted thought experiments to simulate and use hypothetical reasoning to explore the logical implications of working with tour operators. This exercise sparked yet another unexpected realization, building on their interactions with operators over the preceding weeks: the different communication styles and cultures of the organizations might pose challenges for their small team. One founder explained,

> It is definitely a different business model in some ways. Like it's very old school. They are really basically not interacting with our website at all. Very telephone and email driven. And in person meetings. It's a different beast all together. So that played into our, not really hesitation, but sort of how much do we want to be focusing on that and is that a priority? —Co-CEO 1, Localbites

These thought experiments prompted the realization that there would be risks to working with tour operators beyond cultural compatibility. For example, they realized that operators might try to circumvent their platform and contract directly with hosts, and that relying on operators would reduce branding opportunities for Localbites. However, they saw the advantage that partnerships would bring additional volume, which would allow them to understand and validate other elements of their theory. As one founder described, "It allows us to test all the different experiences and get feedback so we can improve the experiences that we offer." In this way, the founders' thought experiments and perspective taking allowed them to make sense of

the rich information being generated through their interactions with tour operators, and to develop new beliefs about the possible roles tour operators might play.

As they theorized about whether and how to work with tour operators, the founders also worked to validate the assumption that the economics were actually attractive; they did so by offering a small number of tours through one partner and comparing these to their own, internally managed trips. This revealed that the economics were not only favorable, but actually more favorable than they had expected. One founder explained,

> We learned that actually the economics work out really well. Because these tour operators are working with larger scale clients, clients that are paying them $2000 for a full trip, they are not taking a commission from us because they are marking up the experiences. We're just an item on their list of many things. So the economics ended up making a lot of sense. —Co-CEO 1, Localbites

This experiment, and their preceding theorizing, confirmed that tour operators made sense as a short-term partner. Yet, the founders were confident in their original vision of a direct-to-consumer approach, and were hesitant to abandon it despite the unexpected interest from tour operators. With this in mind, they reasoned backward to clarify the specific steps needed to manage tour operators in a way that would eventually let them achieve their goal of becoming a standalone platform (*scenario building*). Doing so allowed them to identify specific targets and investments that would be needed. As one founder explained,

> We know that long term we hope to rely solely on travelers coming directly to the website rather than through these tour operators. So we're scaling up working with the tour operators in the near term. So right now it's like 50-50. By the end of the year we're hoping it will be 70% booking through tour operators and 30% directly through the website, and then by the end of next year we see a shift again where its more coming directly from consumers. —Co-CEO 2, Localbites

In this way, the Localbites founders merged multiple theorizing practices *and* open and closed data generation to build out an entirely new set of beliefs around tour operators as a (previously untheorized) partner, and to reason through the implications of these new beliefs for their theory more broadly. Within a few months, they had begun providing white-label (i.e., unbranded) experiences to tour operators at scale. As expected, this allowed refinement of other aspects of their theory, especially around experience design. It also allowed them to build their host network and refine their own operations and technology stack, in preparation for their eventual vision of being a

standalone platform. Within two years, the venture had expanded from a handful of hosts in three countries to 150 hosts across 15 countries.

***Expanding the Model of Entrepreneurial Theory Crafting.*** Our empirical analysis adds detail to the model of theory formation and testing developed in prior conceptual work (e.g., Felin and Zenger 2009, Ehrig and Schmidt 2022, Zellweger and Zenger 2023), especially with respect to how entrepreneurs build out the complexity and viability of their nascent theory from an initial thesis. We summarize our findings below.

1. In line with prior work, experience and chance observations trigger the recognition of an opportunity, often in the form of an unmet need or problem and a rough idea of how a firm might provide value by solving the problem. We describe this initial set of beliefs as a *thesis*, which is a partially formed theory that lacks both specificity (i.e., clarity around constituent beliefs) and richness (i.e., detail regarding how beliefs fit together).

2. This thesis provides an initial direction by highlighting issues to reason about, questions to ask, and areas of uncertainty to be explored. With a thesis in mind, entrepreneurs engage in theorizing (mental work to create, evaluate, or update strategic beliefs) and data generation (engagement with the world to generate new information). These activities begin to build out the complexity of the thesis, adding new beliefs, revealing subproblems, and building out logical linkages, such that the thesis begins to exhibit the richness and causal structure of a theory that will be actionable. In contrast to later testing, our analysis suggests that the early stages of this process are characterized by tightly integrated and largely simultaneous theorizing and data generation.

3. In theorizing, entrepreneurs rely on a set of distinct and complementary practices, which vary in both their roles and the underlying capabilities on which they build. Some practices add diversity, novelty, and uncertainty to an emerging theory (generative), whereas others clarify assumptions and interdependencies (explicative). Some practices rely on creativity, others logic and reasoning. Some practices are focused on understanding and reasoning about stakeholders and are grounded in emotional intelligence.

4. In generating data, entrepreneurs employ a variety of different tools to gather information and refine their beliefs (e.g., prototypes, experiments, interviews). A key distinction is, however, the *learning intention* that informs these efforts. Entrepreneurs engage in *closed* validation throughout the process. Yet, *open*, discovery-oriented exploration, where entrepreneurs explore areas or issues believed to be important within the context of their theories but without a priori, falsifiable hypotheses, also plays a central role.

5. By generating a *broader* range of information, including novel and surprising discoveries, open exploration is likely to be accompanied by rich, varied theorizing. Entrepreneurs may, for example, identify new actors or unexpected issues, which prompt a return to both generative practices (what possibility does this open?) and explicative practices (how do we integrate this?). In contrast, but equally important, closed validation is helpful because it generates a cleaner signal, often allowing faster, more focused learning.

6. As subsets of beliefs grow in complexity and specificity (i.e., more beliefs, richer interdependence of these beliefs, and more clarity in suggested action), there is a gradual but not deterministic shift from the use of practices that are more generative (e.g., *imagining possibilities, empathy*) to those that are more explicative (e.g., *scenario building, use-case analysis*), even as entrepreneurs iterate through the above process.

Overall, our analysis extends and complements existing conceptual work to show how entrepreneurs transition from their initial ideas to effective theories that are new to the world, logically cohesive, and also grounded within the realm of achievable possibility.

## Discussion and Conclusion
### Theoretical Contributions

Our primary contribution is to unpack the process by which entrepreneurs form theories: rich, causal, mental models of a business opportunity and how to capture it. The existing literature, which is largely conceptual, depicts theories as beginning with a triggering event such as a chance observation or unmet personal need (Felin and Zenger 2009). From this trigger, entrepreneurs form beliefs about the nature of the opportunity and how to address it; these beliefs comprise a theory, which is then validated and refined using experiments (Felin and Zenger 2009, Zellweger and Zenger 2023). Yet, theories are relatively complex cognitive constructs, consisting of interdependent and nested beliefs and assumptions (Ehrig and Schmidt 2022). Although prior work suggests that this complexity emerges from the combination of experience and observation with imagination and logical deduction, the process itself has remained largely unobserved.

Our empirical analysis offers insight into the emergence of this complexity. In doing so, we complement and extend prior conceptual work. We observe that the process of elaborating a theory often involves the rich interplay of theorizing and data generation practices. That is, entrepreneurs in our setting engaged with the world from the earliest phases of the theory-building process, uncovering information that aided directly in the mental work of theorizing. This allowed them to gain "intermediate validation" for their emerging beliefs, as suggested in recent work (Felin et al. 2024), as well as to

uncover information and new questions that supported further theorizing and allowed them to expand possibilities, explore subproblems, and clarify causal linkages within their emerging theories. Overall, then, the early process of building theories is richer, messier, and more simultaneous than has been depicted in the past.

Our introduction of the concept of the "thesis" is important in this context. We define a thesis as an initial, poorly formed idea that guides subsequent learning and action. Thus, whereas prior work has described theories as both initial, amorphous beliefs *and* more complex constructs, our study suggests the value in differentiating between theories of differing degrees of development. In particular, we observe that the practices that are likely to be relevant (theorizing *and* data generation) are likely to depend on how fully articulated a theory is. Thus, increased precision in our discussion of the complexity of theories should allow us to better understand the process by which theories are built, and to direct entrepreneurs.

Our model also sheds light on how entrepreneurs balance novelty and viability when theorizing. Extant work argues that if theories are to provide a strategic advantage, they must be *novel* and *contrarian*—that is, build on beliefs that are not widely held, and thus provide unique insight into what is possible or profitable (Felin and Zenger 2017). However, theories must also be *viable*, in that they must eventually allow entrepreneurs to build products, mobilize resources, and recruit stakeholders. The need to balance these two prerogatives presents challenges, especially around how to engage with stakeholders. For example, contrarian beliefs may conflict with feedback and social pressure, so unlike "lean" processes, early engagement with stakeholders alone cannot drive pivots (Felin et al. 2024). Our analysis highlights that balancing this tension lies in the tight interplay between data generation and theorizing. In particular, we observe data generation (and engagement with stakeholders) being tempered by ongoing theorizing (and deep thinking) about stakeholders and their implications. Although feedback alone may lead an entrepreneur astray, feedback paired with further theorizing can help an entrepreneur build *their* future by fitting stakeholders (and the resources they bring) into the theory—an observation that aligns with other recent work (e.g., Valentine et al. 2024) highlighting the need to pair thinking *and* doing to achieve the benefit of either.

Both of these issues raise intriguing questions for future research. First, we observe entrepreneurs elaborating from an initial thesis into a more complex and richly articulated theory. What we cannot see is what degree of complexity is appropriate. Understanding this is important because although greater specificity (and complexity) may facilitate the articulation of falsifiable hypotheses, good theories also strive to "explain and predict more with less" (Felin and Zenger 2017,

p. 263). Indeed, an argument in work on entrepreneurial strategy more broadly is that "simple rules" can provide more robust guidance than complex analysis and often become more powerful when entrepreneurs stop elaborating them (Sull and Eisenhardt 2015, Bingham et al. 2019). Future research might therefore examine when to *stop* elaboration of a theory. Research might also examine the optimal degree of novelty. In particular, more novel theories may describe larger, more impactful economic opportunities. Yet, they may also incur greater challenges in terms of understanding and mobilizing stakeholders (Ozcan and Eisenhardt 2009), and may thus experience higher failure rates. Indeed, our observation that founders who saw themselves as "co-creating" new markets, rather than streamlining existing markets, relied more heavily on practices related to understanding stakeholders suggests this may be the case.

We also contribute to the theory-based view by expanding and clarifying the repertoire of practices used to build theories. One contribution is to identify a set of specific mental practices used by entrepreneurs to interpret and integrate information into an evolving theory (e.g., *thought experiments, scenario-building*). These practices differ in terms of their role within the theory-building process. Some are *generative*, which expand theories by adding novelty and new possibility, and some are more *explicative*, which do so by clarifying the links and implications of beliefs, thus improving coherence. The identification of these distinct roles is important because it implies they will be valuable at different times and be more valuable when used in some combination. We also identify several practices related to understanding stakeholders (e.g., *empathy, perspective taking*). In doing so, we address early calls in the theory-based literature to explore the role of emotional processes in entrepreneurial theorizing (e.g., Felin and Zenger 2009, p. 141). Indeed, an implication of our study is that practices like empathy and perspective taking are likely to be useful for firms whose theories require them to mobilize resources, achieve buy-in from partners, or achieve legitimacy in the eyes of stakeholders (e.g., Ozcan and Hannah 2020, Hannah et al. 2024b).

A second and related contribution is to distinguish between open, discovery-oriented data generation and closed, validation-oriented data generation as distinct practices. To date, the theory-based view has focused largely on understanding how theories, or constituent hypotheses, can be invalidated through (closed) experiments (e.g., Agarwal et al. 2024, Camuffo et al. 2024a). Our analysis highlights, however, that open discovery is also often valuable, including both early (when a theory has not yet been fully articulated) and when surprising discoveries push entrepreneurs to learn more about a given question or element of their

theory. This discovery is theory driven, in that the nascent theory points to areas or questions needing further investigation, but it is not intended to validate specific beliefs or assumptions. We interpret this observation as helping to align work on the theory-based view and scientific entrepreneurship with the broader literature on entrepreneurial learning (e.g., Cohen et al. 2019, McDonald and Eisenhardt 2020, Pillai et al. 2020), which highlights that open exploration and serendipitous discovery are essential to entrepreneurship (e.g., Cohen et al. 2019, Rindova and Martins 2021). We show that they are valuable early in the theorizing process as well.

In this respect, we see a clear link to Novelli and Spina (2024), who examine a randomized control trial of 261 ventures in the United Kingdom. This study finds, intriguingly, that training entrepreneurs to engage in explicit hypothesis testing is beneficial only if firms have relatively mature theories; if they do not, being trained to engage in explicit hypothesis formation and testing may actually *reduce* performance. It may be that when trained to undertake validation, these earlier firms do so at the expense of more open data generation and subsequent theorizing which would otherwise be beneficial given their earlier state of development.

By building on research that takes a process view of strategy formation (e.g., Ott et al. 2017, McDonald and Eisenhardt 2020, Kirtley and O'Mahony 2023), we are able to uncover important process aspects of theorizing. Yet, bridging these literatures allows us to contribute to work on strategy formation as well. Research in this area examines processes by which entrepreneurs can form effective strategies, particularly in nascent and dynamic environments. A central contribution of this work is to identify key sources of knowledge (e.g., prior experience, observation of rivals, or prototypes), as well as broad patterns of activity that lead to effective strategies, which are sets of interdependent activities by which firms create and capture value. A common theme in this work is the importance of holistic mental representations to guide learning. For example, in their study of six platform firms, Ott and Eisenhardt (2020) propose a model of "decision weaving" wherein executives focus iteratively on different domains or subproblems within their strategy to iterate on learn, while simultaneously maintaining a holistic view of their *overall* strategy. What is less clear (in Ott and Eisenhardt 2020, as well as other papers in this stream) is where these initial holistic understandings first come from. Our present study thus complements existing work by illuminating the specific practices, and the interplay of practices, by which entrepreneurs might form, expand, and make explicit holistic understandings like theories. Future research should further explore the link between theories and strategies by unpacking how theories are actually translated into effective strategies that underpin sustained competitive advantage.

## Practical Contributions

We also make two contributions to the practice and teaching of entrepreneurship, and more specifically to work on the theory-based view as a normative framework. A central tenet of the theory-based view is that training entrepreneurs to form and then test their theories will improve their subsequent performance. Our analysis highlights that because entrepreneurs *begin* their journeys with their own unique, often contrarian theses, the specific practices that they employ and the problems against which they deploy them vary. Yet, when we teach students who may one day become entrepreneurs, we are teaching theorists, *not* teaching to a particular theory. Thus, having the ability to apply a richer set of complementary practices *when needed* will unavoidably improve the efficacy of entrepreneurs' theory crafting, and subsequent performance. A key contribution in this regard is to highlight theorizing and data generation practices as specific, repeated (and repeatable) actions and exercises, rather than more amorphous thinking styles. We hope that this specificity might allow development of training and artifacts that facilitate effective theory formation, in line with the Value Laboratory (Felin et al. 2021) or templates like the "Double Diamond" in design thinking (Hannah et al. 2024a).

Our findings also suggest an important and possibly underemphasized role for taking time away from *acting* to reflect, and to think about thinking. In particular, we found entrepreneurs engaged in more theorizing when they were more conscious and deliberate in their theorizing. For example, they often described pausing or "taking a step back" in order to question their data and experiences, and to wonder what they needed to do to better understand the implications of these data. This was particularly important following closed tests, which typically generated a clean success or failure signal and (sometimes) allowed entrepreneurs to move quickly, without reflecting on what the test meant. This suggests that emphasizing *speed*, rather than thoughtfulness, may be detrimental to entrepreneurs. In this respect, our argument parallels work on managerial cognition that finds that managers with greater metacognition (i.e., awareness of one's own thought processes) make less erratic strategic decisions (Mitchell et al. 2011), and in entrepreneurship more broadly, which finds that deliberate "pauses" may facilitate consolidation of learning and serendipitous insight from passive learning (McDonald and Eisenhardt 2020, Ott and Eisenhardt 2020, Crosina et al. 2024).

## Conclusion

The theory-based view has emerged as a promising avenue to both theoretically understand entrepreneurship

and improve entrepreneurial outcomes. However, to date, the actual theorizing process itself is largely unobserved. To address this gap, we conduct an empirical study of the practices and process by which theories are built. Overall, our findings offer novel insight into how entrepreneurs generate effective theories that are new to the world, internally cohesive, and grounded within the realm of achievable possibility.

## Acknowledgments

## Endnotes

[1] Indeed, as Valentine et al (2024) find, the value of both theories and experiments lies in their joint use, and using theories without experimentation or experiments without theories can lead firms astray.

[2] Ott and Eisenhardt (2020) study six ventures using a matched-pair design. Here, our sampling criteria yield a larger sample, as more firms were appropriate for the present study.

[3] This often manifested in part in the language of the entrepreneurs, for example, the Trucksy founders, who described needing to pause to puzzle over a piece of discrepant information: "You wait a while, you kind of look at it and discuss it."

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**Timothy E. Ott** is an assistant professor in the strategy & entrepreneurship department at Kenan-Flagler Business School (UNC-Chapel Hill). He received his PhD in management science and engineering from Stanford University. His research uses longitudinal field studies and simulations to explore strategic decision making in entrepreneurial firms and nascent markets.

**Douglas P. Hannah** is an assistant professor at the Questrom School of Business at Boston University. He received his PhD in management science and engineering from Stanford University. His research examines entrepreneurial strategy formation and nascent industries, with an emphasis on platform markets and ecosystems.