

ABSTRACT

Title of Dissertation: ESSAYS ON ENTREPRENEURIAL THEORIES OF
VALUE UNDER UNCERTAINTY: ADVICE,
LEARNING, AND STAKEHOLDER EVALUATION

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This dissertation views entrepreneurship as a socially embedded process in which interactions with diverse stakeholders shape how entrepreneurial theories of value (ToV) are developed, revised, and understood. Accordingly, this dissertation investigates how social exchanges influence both the development of theories of value from the perspective of entrepreneurs and the evaluation of those theories from the perspective of stakeholders.

The first essay develops a theoretical model of advice utilization under uncertainty. Extending absorptive capacity to the individual level, I conceptualize advice utilization as a three-stage cognitive process of comprehension, evaluation, and action. The model specifies the interpretive mechanisms through which entrepreneurs integrate external input (advice) with prior beliefs and knowledge and introduces evaluation as a distinct cognitive bridge between understanding and behavior. By developing the cognitive dimension of advice utilization and clarifying how action may involve implementation, testing, seeking clarification or deliberate rejection, the essay explains why identical advice can produce divergent yet rational entrepreneurial responses.

The second essay examines how mentorship acts as a form of social testing shaping entrepreneurial learning. Drawing on an inductive analysis of 190 mentoring sessions across two entrepreneurial support organizations, I develop a taxonomy of advice practices that reveals two types of mentoring support: theory refinement and theory execution. I then map these advice types to three types of learning: single-loop, double-loop, and anticipatory learning; showing that different advice practices activate distinct learning mechanisms. By conceptualizing mentoring (and advice-giving) as a socially embedded testing methodology complementing scientific experimentation, this essay clarifies how advice shapes entrepreneurial learning.

The third essay examines how stakeholders evaluate entrepreneurial ToV under uncertainty. Building on the Theory-Based View and philosophy of science, I introduce the lovely–likely matrix, which conceptualizes ToV evaluation along two epistemic dimensions: loveliness, capturing a theory’s economic potential and disruptiveness, and likeliness, reflecting its empirical plausibility and feasibility. I theorize evaluation as a socially mediated process shaped by entrepreneurial narratives and stakeholder heterogeneity, and I identify the structural sources of evaluation errors that produce both overinvestment and missed opportunities.

ESSAYS ON ENTREPRENEURIAL THEORIES OF VALUE UNDER UNCERTAINTY:
ADVICE, LEARNING, AND STAKEHOLDER EVALUATION

BY

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LIST OF ABBREVIATIONS

AI: Artificial Intelligence

ACT: Absorptive Capacity Theory

CDL: Creative Destruction Lab

ESO: Entrepreneurial Support Organization(s)

HMRC: Her Majesty's Revenue and Customs (UK tax authority)

KPI: Key Performance Indicators

MVP: Minimum Viable Product

NGO: Non-Governmental Organization(s)

PoS: Philosophy of Science

SME: Small and Medium-sized Enterprise(s)

TBV: Theory-Based View

ToV: Theory of Value

UK: United Kingdom

US: United States

VC: Venture Capitalists

CHAPTER 1: A COGNITIVE MODEL OF ADVICE UTILIZATION UNDER UNCERTAINTY: HOW ENTREPRENEURS COMPREHEND, EVALUATE, AND ACT ON ADVICE

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Abstract

Despite receiving similar advice from similar advisors, entrepreneurs may respond to it in different ways. Some follow it, others dismiss it, and others acknowledge it without acting on it. Existing research has explained this variation through advice quality, advisor credibility, and advisor-advisee relational dynamics; yet none of these factors account for the heterogeneity in advice utilization outcomes. This chapter argues that the explanation lies in the cognitive processes through which entrepreneurs make advice meaningful and actionable. Drawing on absorptive capacity theory and entrepreneurial cognition research, I develop a three-stage cognitive process model that conceptualizes advice utilization as unfolding through *comprehension*, *evaluation*, and *action*. The model explains how entrepreneurs first *comprehend* advice by acquiring new knowledge and broadening their perspectives, then *evaluate* it through interpretive judgment of its coherence, feasibility, and contextual fit, and finally *act* on it through implementation, testing, rejection, or seeking clarification. From this model, I derive four theoretical propositions that specify the conditions under which advice utilization produces meaningful learning and action. The chapter makes three theoretical contributions: it develops a receiver-centered cognitive process account of advice utilization, introduces *evaluation* as a previously undertheorized cognitive stage that bridges comprehension and action, and extends absorptive capacity theory to the individual level in entrepreneurial context, reframing it as an interpretive cognitive process.

1.1 Introduction

Entrepreneurs routinely seek advice to navigate the uncertainty of venture creation, validate emerging ideas, and interpret fast-changing environments (Chatterji et al., 2019; Cohen et al., 2019). Advice-givers offer external guidance that shapes how entrepreneurs identify opportunities, refine business models, and adjust their actions (Assenova, 2020; Miller et al., 2024). Yet despite receiving similar advice from similar advisors, entrepreneurs respond in strikingly different ways. Some integrate advice into their strategic reasoning; others dismiss it outright; still others acknowledge it without acting on it in any meaningful way. Existing research has examined advice quality, advisor credibility, and relational dynamics (Galloway et al., 2021; Grodal et al., 2015; Miller et al., 2024) as explanations for this heterogeneity, yet none of these factors explain why entrepreneurs may respond differently to the same advice, suggesting that the explanation could lie not in the advice or the advisor, but in the cognitive processes through which entrepreneurs interpret, evaluate, and decide whether and how to act on external input. This chapter develops a cognitive process model that explains advice utilization.

To theorize about the cognitive work entrepreneurs engage in when transforming advice into understanding and action, I draw on absorptive capacity theory (Cohen & Levinthal, 1990; Zahra & George, 2002).¹ Absorptive capacity theory conceptualizes learning as the ability to recognize the value of external knowledge, assimilate it, and apply it to decision-making.

¹ Sensemaking and absorptive capacity both describe how actors engage with external knowledge. Sensemaking centers on the *construction of meaning* from equivocal information (Weick, 1995), whereas absorptive capacity focuses on the *integration and application* of that meaning to guide learning and action (Cohen & Levinthal, 1990; Zahra & George, 2002). The framework developed here bridges these perspectives but anchors in absorptive capacity to highlight how interpretation becomes learning under uncertainty. This chapter bridges these perspectives by reframing absorptive capacity as an interpretive process, showing how entrepreneurs construct meaning from advice and translate it into strategic action under uncertainty.

Importantly, absorptive capacity was not proposed as a description of what all organizations do, but as a specification of the organizational conditions that make external knowledge integration effective; a conditional logic that informs this chapter's theoretical approach. Entrepreneurs face an analogous learning challenge: they must recognize the value of advice (i.e., external knowledge), integrate it with existing understanding, and apply it to their decision-making (Miller et al., 2023). However, entrepreneurial contexts differ fundamentally from the organizational settings in which absorptive capacity theory was originally developed. Rather than operating with structured routines and established schemas for knowledge integration, entrepreneurs learn and decide in environments characterized by high uncertainty, limited routines, and socially co-produced information (Alvarez & Sachs, 2023; Packard et al., 2017; Miller et al., 2024). Under these conditions, effective learning depends more on entrepreneurs' judgment.

Building on this absorptive capacity theory reframing, I develop a three-stage cognitive process model of advice utilization. The model conceptualizes advice utilization as unfolding through three interconnected cognitive stages: *comprehension*, in which entrepreneurs learn by acquiring and reinterpreting information and knowledge embedded in advice; *evaluation*, in which they judge its coherence, feasibility, and contextual fit; and *action*, in which they implement, test, reject, or seek clarification on advice. From this model, I derive four theoretical propositions that specify the conditions under which advice utilization produces meaningful learning and action.

This chapter makes three theoretical contributions. First, I develop a three-stage cognitive process model of advice utilization that generates four theoretical propositions connecting

cognitive process to variation in entrepreneurial action. By formalizing advice utilization as a sequence of *comprehension*, *evaluation*, and *action*, the model shifts analytical attention from the social exchange of advice to the cognitive work entrepreneurs must engage in. Second, I introduce *evaluation* as a distinct and previously undertheorized cognitive stage in advice utilization. Existing formulations of absorptive capacity move from assimilation and transformation directly to exploitation, implicitly assuming that understanding translates automatically into action (Zahra & George, 2002). By theorizing evaluation as the cognitive bridge between comprehension and action, the model explains why identical advice produces divergent entrepreneurial responses. Third, I extend absorptive capacity theory to the individual level by reframing it as an interpretive cognitive process rather than a routine-based organizational sequence. While prior work has acknowledged the microfoundations of absorptive capacity (Volberda et al., 2010; Lane et al., 2006), it has left largely implicit how learning unfolds when actors lack structured routines and operate in high uncertainty environments where individual judgment is critical.

1.2 Definition and Types of Advice

Advice refers to “information provided by any party outside the firm drawn from their knowledge or experience intended to inform firm decisions” (Miller et al., 2024: 2). In entrepreneurial settings, advice enables learning and judgment under uncertainty by connecting entrepreneurs to external expertise that helps them interpret ambiguous conditions and refine their strategic reasoning and business ideas (Assenova, 2020; Markowska & Wiklund, 2020). This prospective and decision-oriented conceptualization distinguishes advice from feedback, which is retrospective and performance-focused (Drencheva et al., 2024; Lim & Busenitz, 2020),

and from mentorship, which entails broader developmental support and long-term relational exchange (Eby et al., 2007; Kram, 1985). Advice thus is a form of socially transmitted knowledge whose value depends not only on information given by external parties but also on how entrepreneurs *comprehend, evaluate, and act* on it.

Recent research emphasizes that advice is not a one-way transfer of knowledge but a socially co-produced process in which entrepreneurs and advisors jointly construct meaning through interaction (Grodal et al., 2015; Miller et al., 2024). Through iterative exchanges, advisors adapt their recommendations to the entrepreneur's situation, while entrepreneurs clarify assumptions, test interpretations, and integrate advice into their own reasoning (Miller et al., 2024). Co-production therefore enhances contextual fit and transforms generalized input into situated understanding. Yet even when advice is co-created, its value depends on the entrepreneur's cognitive effort to comprehend and evaluate it. Co-production establishes the social foundation for learning (Kuhn, 1962), but entrepreneurs' cognitive interpretation determines whether and how socially distributed knowledge becomes meaningful and actionable.

Despite the growing recognition that advice is relational and interactional, existing research has paid limited attention to the cognitive mechanisms through which entrepreneurs comprehend, evaluate, and act on advice once it is received. Prior studies focus largely on who provides advice (Galloway et al., 2021), how entrepreneurs access it (Cohen et al., 2019), or its performance implications (Assenova, 2020; Chatterji et al., 2019). Even studies examining co-production emphasize interactional dynamics rather than the mental processes through which entrepreneurs decode external input and translate it into their own reasoning (Grodal et al., 2015; Miller et al., 2024). However, empirical evidence shows that entrepreneurs may decide not to

follow the advice received (e.g., Miller et al., 2024). Addressing this requires shifting analytical attention from the social exchange of advice to the interpretive cognitive frames through which entrepreneurs make external input meaningful, transforming it into understanding and action.

1.3 Theoretical Anchoring: Entrepreneurial Cognition and Absorptive Capacity

Extending absorptive capacity theory to the individual level requires reframing its underlying logic. At the organizational level, absorptive capacity theory describes the knowledge-based and structural conditions that make external knowledge integration effective, including prior knowledge stocks, organizational routines, and knowledge processing capabilities (Cohen & Levinthal, 1990; Zahra & George, 2002; Todorova & Durisin, 2007). Entrepreneurs face an analogous learning challenge: they must recognize the value of advice, integrate it with existing understanding, and apply it to their decision-making under uncertainty (Packard et al., 2017). However, the routine-based logic that underlies organizational absorptive capacity theory does not transfer directly to entrepreneurial contexts. Recent work has begun to theorize the individual-level microfoundations of absorptive capacity theory, arguing that organizational absorptive capacity routines are grounded in individual cognitive processes including prior knowledge, managerial cognition, and interpretive capacity (Lewin et al., 2011). However, this microfoundational account assumes individuals operating within established organizational routines and structural frameworks that channel and support knowledge integration. Entrepreneurial contexts differ fundamentally. Entrepreneurs learn and decide in environments characterized by high uncertainty, limited routines, and socially co-produced information (Alvarez & Sachs, 2023; Haynie et al., 2010; Miller et al., 2024; Packard et al., 2017). Under

these conditions, knowledge integration depends on the entrepreneur's learning² and judgment, that is, their capacity to make sense of ambiguous input, assessing its relevance and applicability (Grodal et al., 2015).

Thus, the proposed model maps absorptive capacity's core logic onto the cognitive process of advice utilization. Whereas organizations acquire, assimilate, transform, and exploit external knowledge (Cohen & Levinthal, 1990; Zahra & George, 2002), entrepreneurs must *comprehend*, *evaluate*, and *act* on advice that is uncertain in meaning and applicability. *Comprehension* reflects the individual-level equivalent of assimilation and transformation, capturing the cognitive effort through which entrepreneurs integrate external knowledge from advice into their mental models (Nonaka, 1994; Shepherd et al., 2015). *Evaluation*, introduced here as a distinct stage absent from prior formulations of absorptive capacity, represents the interpretive judgment through which entrepreneurs assess advice for coherence, feasibility, and contextual fit (Grégoire et al., 2010; Lazarus, 1991). *Action* corresponds to exploitation, encompassing implementation, testing, rejection, or clarification seeking as distinct modes through which entrepreneurs apply their cognitive judgments in practice (Lane et al., 2006; Miller et al., 2024).

[Insert Table 1 About Here]

The proposed cognitive process model of advice utilization also builds on and extends research in entrepreneurial cognition, which shows that entrepreneurs rely on cognitive frameworks, heuristics, and scripts to make judgments under uncertainty (Baron, 2004; Bingham & Eisenhardt, 2011; Mitchell et al., 2007). Prior work has clarified how cognitive schemas

² Learning is understood as an active cognitive process of meaning construction rather than procedural absorption (Felin & Foss, 2005).

support opportunity recognition, risk assessment, and pattern recognition (Baron, 2006; Grégoire et al., 2010), and has emphasized the importance of metacognitive awareness in enabling entrepreneurial adaptive learning (Haynie et al., 2010). However, this literature specifies the cognitive structures and capacities entrepreneurs possess rather than the process through which external knowledge becomes cognitively meaningful and behaviorally consequential. I address this gap by theorizing advice utilization as a three-stage process model, and by identifying the conditions under which progression across stages succeeds or breaks down. In doing so, I shift the focus from static cognitive endowments to the deployment of those capacities when entrepreneurs engage with external knowledge under uncertainty (Packard et al., 2017).

The proposed model adopts an interpretive view of cognition as an active process of meaning construction (Helfat & Peteraf, 2015; Weick, 1995). Under conditions of Knightian uncertainty, the value of advice cannot be assessed *ex ante*, and learning requires reflective judgment (Felin & Zenger, 2017; Gavetti, 2012; Knight, 1921). Although entrepreneurs often rely on intuitive processing in familiar or time-pressured contexts (Busenitz & Barney, 1997), I theorize that advice influences behavior when entrepreneurs effortfully interrupt automatic processing responses and instead engage in deliberate interpretation of external input, assessing its relevance and integrating it into their ongoing reasoning (Evans & Stanovich, 2013; Kahneman, 2011). By specifying this cognitive process, the model clarifies when and how external knowledge translates into strategic action.

Yet this deliberate interpretive process unfolds under the constraints of bounded rationality (Simon, 1955), which shapes how each cognitive stage operates and explains why even effortful engagement does not guarantee that advice will be meaningfully comprehended or

evaluated. Bounded rationality encompasses two interrelated constraints: limited information, which restricts what entrepreneurs can access and process (i.e., comprehend) new information; and cognitive biases, which influence how entrepreneurs interpret and judge (i.e., evaluate) the information they do access (Kahneman, 2011; Simon, 1955). Critically, these constraints do not map cleanly onto separate stages of the model. Limited information impairs not only *comprehension*, by restricting the knowledge base from which entrepreneurs draw meaning, but also *evaluation*, by leaving entrepreneurs without the contextual reference points needed to accurately assess advice coherence, feasibility, and fitness. Similarly, cognitive biases threaten not only *evaluation*, through mechanisms such as confirmation bias or overconfidence in one's existing strategic logic, but also *comprehension*, as entrepreneurs anchored to prior mental models may fail to recognize the relevance of advice that challenges their beliefs (Grimes, 2018; Toivonen, 2023). Acknowledging bounded rationality as a cross-cutting constraint on both stages clarifies why comprehension and evaluation must be theorized as distinct, effortful processes, and why variation in their quality explains divergent entrepreneurial responses.

1.4 A Cognitive Framework for Understanding Entrepreneurial Advice Utilization

Receiving advice does not guarantee that it will be understood nor utilized (Bonaccio & Dalal, 2006; Hasan & Koning, 2019; Miller et al., 2024). Even when advice is accessible, credible, and contextually tailored, entrepreneurs vary considerably in whether and how they transform external input into meaningful understanding and action. This variation reflects differences in the cognitive work entrepreneurs engage in after advice is received (Miller et al., 2023). This cognitive work is neither automatic nor uniform, but deliberate, effortful, and shaped by the entrepreneur's interpretive capacity and prior knowledge (Helfat & Peteraf, 2015;

Zellweger & Zenger, 2023). Thus, understanding advice utilization requires a framework that specifies the cognitive process through which entrepreneurs make advice meaningful and actionable, and identifies where and why that process breaks down.

The proposed framework (Figure 1) conceptualizes advice utilization as requiring three interconnected cognitive stages: *comprehension*, *evaluation*, and *action*. Although these stages unfold sequentially, they are connected through recursive feedback loops in which action generates new information (and knowledge) that cycle back toward prior stages of comprehension and evaluation. Critically, each stage transition is a potential point of failure: lack of comprehension prevents evaluation; when evaluation is not triggered, action becomes systematically misaligned or null; and when action forecloses feedback, recursive learning is limited. The following subsections develop each stage in detail.

[Insert Figure 1 About Here]

1.4.1 Comprehending Advice

Advice utilization begins with *comprehension*, the phase of learning in which entrepreneurs decode, internalize, and reorganize the knowledge embedded in advice (Gavetti, 2012; Weick, 1995). Comprehension can also be constrained by identity-based factors. When entrepreneurs hold strong psychological ownership over their ideas, identity-threatening advice receives less attention before it can be fully decoded, limiting the depth of comprehension from the outset (Grimes, 2018). Through this step, entrepreneurs absorb advice into existing mental models, reconcile it with prior experience and knowledge, and extract meaning (Cohen & Levinthal, 1990; Zahra & George, 2002). While entrepreneurs may sometimes respond impulsively to advice, immediately accepting or rejecting it without deliberate engagement

(Busenitz & Barney, 1997), comprehension requires effortful interpretation that goes beyond automatic response (Haynie et al., 2010; Mitchell et al., 2007).

This *comprehension* stage is fundamentally shaped by the cognitive structures entrepreneurs bring to advice; the scripts, schemas, and heuristics through which they interpret and organize external input (Mitchell et al., 2007, 2011). The depth of comprehension depends on the entrepreneur's prior knowledge, scripts, interpretive capacity, and cognitive readiness, which determine whether advice is recognized as valuable and understood deeply enough to influence subsequent evaluation (Cohen & Levinthal, 1990; Lane et al., 2006).³ Through comprehension, entrepreneurs link new insights to prior experience, update their mental models, and refine their understandings of their ventures and environments.

1.4.1.1. Learning Mechanism of Advice Comprehension

This process of advice *comprehension* unfolds through two complementary learning mechanisms, knowledge acquisition and perspective broadening, which enable entrepreneurs to internalize advice and reinterpret it in light of their existing beliefs. Their activation produces two immediate cognitive consequences, error anticipation and uncertainty reduction, that prepare entrepreneurs to evaluate advice and translate it into action.

Knowledge acquisition (explicit and tacit knowledge). The first mechanism of *comprehension* is knowledge acquisition, which involves absorbing new knowledge in both explicit and tacit forms. Explicit knowledge includes codified information such as business literacy, market analysis, and management techniques, while tacit knowledge encompasses

³ Entrepreneur's scripts and schemas provide organized knowledge structures that enable entrepreneurs to recognize the relevance of advice and connect it to existing understanding; however, they also constrain comprehension by filtering advice through established assumptions that may not capture the full meaning or applicability of external input.

experience-based insights gained through observation and social interaction. Together, these forms of learning expand the entrepreneur's concepts, heuristics, and practices about business.

Explicit knowledge acquisition strengthens analytical understanding by providing structured cognitive frameworks that allow entrepreneurs to process and organize new information (Baron, 2004; Nonaka, 1994). This form of learning occurs through direct instruction and knowledge transfer in contexts such as mentoring, peer interactions, and accelerator programs that expose entrepreneurs to diverse expertise and contextualized insights (Assenova, 2020; Chatterji et al., 2018; Cohen et al., 2019). Tacit knowledge acquisition, by contrast, occurs through social modeling, observational learning, and entrepreneurial action, rather than direct instruction. By observing how experienced entrepreneurs diagnose problems, navigate uncertainty, and manage setbacks, entrepreneurs infer behavioral strategies and internalize practical know-how (Ozgen & Baron, 2007; Peterson, 1995; Rocha & van Praag, 2020).

Together, explicit and tacit knowledge acquisition constitute one pathway through which comprehension unfolds. This mechanism allows entrepreneurs to expand their knowledge base, update their mental models, and improve understanding of their ventures (Nonaka, 2017; Wuytens et al., 2025). The depth of knowledge acquisition shapes the entrepreneur's capacity to recognize the relevance of advice and to engage in the interpretive judgment that evaluation requires. When knowledge acquisition is limited, entrepreneurs lack the domain knowledge and conceptual frameworks needed to assess advice meaningfully, increasing the likelihood that advice will be dismissed without deliberate evaluation.

Perspective Broadening (Rethinking). The second mechanism of *comprehension*, perspective broadening, is activated when entrepreneurs consider ideas, assumptions, or strategic options that they had not previously taken into account. Through exposure to advice that introduces alternative viewpoints, entrepreneurs expand the range of possibilities they consider about their venture. This process prompts entrepreneurs to question taken-for-granted assumptions and to reassess their existing understanding of the venture in light of newly considered alternatives (Cohen et al., 2019; Felin & Zenger, 2017; Zellweger & Zenger, 2023).

Perspective broadening is often triggered when advice challenges established logics or exposes inconsistencies between entrepreneurs' intentions and external feedback (Grimes, 2018). Such disruptions to prior mental models prompt reflection that reshapes how entrepreneurs define opportunities and solutions (Toivonen et al., 2023), pushing entrepreneurs beyond their cognitive "comfort zones" as advice-givers present alternative interpretations of the market, product, or business model (Camuffo et al., 2020; Cohen et al., 2019; Grodal et al., 2015). Perspective broadening represents the process through which entrepreneurs update or reorganize their existing scripts in response to advice that challenges established assumptions (Mitchell et al., 2007, 2011) and encourages entrepreneurs to explore alternative ideas and strategies (Grimes, 2018; Zellweger & Zenger, 2023).

While knowledge acquisition deepens and expands the content of existing scripts and mental models by adding new domain knowledge and conceptual frameworks, perspective broadening operates at a higher level of cognitive abstraction; challenging the assumptions that organize scripts themselves and expanding the range of alternatives entrepreneurs consider when making sense of their venture and environment. These two mechanisms are thus complementary

but distinct. Within the absorptive capacity framework, knowledge acquisition and perspective broadening represent the individual-level equivalent of assimilation and transformation respectively (Zahra & George, 2002). Together, these mechanisms explain how entrepreneurs move from receiving information, to sensemaking and absorbing it.

1.4.1.2. Cognitive Consequences of Advice Comprehension

The activation of these learning mechanisms (knowledge acquisition and perspective broadening) produces two immediate cognitive consequences, error anticipation and uncertainty reduction, which shape the quality of subsequent *evaluation* by determining the accuracy and depth of entrepreneurs' mental representations of their ventures and the advice received. These outcomes represent shifts in cognition and understanding, not behavioral changes.

Error Anticipation (Cognitive Calibration). When entrepreneurs absorb new explicit and tacit knowledge and broaden their perspectives, they enhance their capacity to identify weaknesses or inconsistencies in their reasoning, business models, or strategic plans. This process reflects heightened metacognitive awareness (the ability to monitor and adjust one's own thinking; Haynie et al., 2010; Shepherd et al., 2015) which enables entrepreneurs to anticipate and prevent errors before they materialize (Bingham & Kahl, 2014; Cohen et al., 2019). Such awareness is activated through exposure to external perspectives that illuminate blind spots and challenge established assumptions (Grimes, 2018; Grodal et al., 2015; Villamor Martin & Cohen, 2025), enabling entrepreneurs to recognize flawed reasoning or inconsistent logics (Villamor Martin & Cohen, 2025). Error anticipation enhances *evaluation* by equipping entrepreneurs with a more accurate and critical understanding of their own flawed reasoning, enabling them to

identify potential misalignments between advice and their venture's vision before committing to action.

Uncertainty Reduction. A second cognitive consequence of comprehension is uncertainty reduction, which occurs as entrepreneurs integrate new information with prior knowledge to construct a clearer understanding of their knowledge, business ideas and operating environment (Knight, 1921). This learning transforms ambiguous situations into interpretable challenges by helping entrepreneurs identify relevant patterns, clarify relationships among variables, and make sense of previously confusing signals (Gavetti, 2012; Grégoire et al., 2010; Helfat & Peteraf, 2015; Weick, 1995). In Knightian terms, advice comprehension converts *unknown unknowns* into *known unknowns* or *known knowns* (Knight, 1921). Uncertainty reduction enhances *evaluation* by providing entrepreneurs with a cognitive map of their venture context, enabling more accurate assessment of advice coherence, feasibility, and contextual fit.

Empirical research shows that structured entrepreneurial support programs reduce uncertainty by providing frameworks for social testing, and experimentation that help entrepreneurs make sense of new information (Assenova, 2020; Camuffo et al., 2020; Cohen et al., 2019). Similarly, studies adopting a Bayesian view suggest that entrepreneurs update their beliefs as they integrate advice (Cohen & Koning, 2024; Zellweger & Zenger, 2023). However, uncertainty reduction is not guaranteed. When comprehension is superficial or fails entirely, entrepreneurs cannot identify the source of their uncertainty, increasing the difficulty of advice evaluation.

Together, error anticipation and uncertainty reduction constitute the immediate cognitive consequences of the learning processes activated during advice comprehension. These learning

consequences determine how accurately and precisely entrepreneurs can *evaluate* advice. When both are present, entrepreneurs are equipped to assess advice with precision and accuracy (Grégoire et al., 2010; Toivonen et al., 2023); when either is absent or weak, evaluation is impaired and advice utilization is more likely to produce suboptimal action. Thus, *comprehension* lays the cognitive foundation for *evaluation*, and variation in comprehension depth shapes the quality of the interpretive judgment that follows.

1.4.2 Evaluation of the Advice

The cognitive work of advice utilization does not end with *comprehension*. Following *comprehension*, entrepreneurs engage in *evaluation*, a distinct cognitive stage in which they assess the meaning, value, and relevance of advice to their venture before determining whether and how to act on it. *Evaluation* constitutes the second stage of the proposed cognitive process (Figure 1), in which entrepreneurs engage in interpretive appraisal to determine whether, how, and when advice should inform strategic action. In this stage, the quality of *comprehension* is leveraged and its implications for action are determined.

Positioned between *comprehension* and *action*, *evaluation* transforms understanding into judgment. Rather than assuming that comprehension automatically translates into action, the proposed theoretical model argues that entrepreneurs must engage in a deliberate cognitive stage of *evaluation*, judging the advice before acting on it. This stage draws on cognitive appraisal theory (Lazarus, 1991), metacognitive judgment (Flavell, 1979; Haynie et al., 2010), and research on interpretive reasoning under uncertainty (Gavetti, 2012), which together explain how actors assess the meaning and feasibility of new knowledge.

Whereas *comprehension* involves metacognitive monitoring, which refers to entrepreneurs' awareness of the accuracy and limits of their own reasoning (Flavell, 1979; Haynie et al., 2010; Shepherd et al., 2015), *evaluation* extends this reflection outward, from monitoring one's own understanding to appraising the external input (i.e., advice) itself.⁴ Through *evaluation*, entrepreneurs judge advice for its coherence, the degree to which advice is internally consistent and aligns with the entrepreneur's existing understanding of reality and the venture; feasibility, the extent to which advice is practically implementable given the venture's resources and constraints; and contextual fit, the degree to which advice is relevant and applicable to the entrepreneur's specific venture context (Gavetti, 2012; Gavetti & Levinthal, 2000; Helfat & Peteraf, 2015; Lazarus, 1991). These evaluative criteria connect directly to Grégoire et al.'s (2010) structural alignment theory, which argues that opportunity recognition involves assessing the structural correspondence between new information and existing knowledge structures. The proposed process model extends this logic to advice utilization by specifying coherence and contextual fit as the evaluative criteria through which entrepreneurs assess the structural correspondence between advice and their existing understanding and adds feasibility as a third criterion that captures the practical constraints under which that correspondence must be enacted. While Grégoire et al. (2010) focus on how entrepreneurs recognize opportunities through structural alignment, the proposed model specifies how entrepreneurs evaluate external knowledge for its relevance and applicability once it has been

⁴ When error anticipation is high, entrepreneurs enter evaluation with higher awareness of potential weaknesses in their reasoning, enabling more critical and precise evaluation of advice coherence and feasibility. When uncertainty reduction is deep, entrepreneurs possess a clearer cognitive map of their venture context, enabling more accurate assessment of contextual fit.

comprehended. The quality of this evaluative judgment is shaped by the depth of prior comprehension and in turn directly determines which action pathway entrepreneurs pursue.

This *evaluation* process involves comparative reasoning through which entrepreneurs weigh potential risks, trade-offs, and alignment with their goals, prior beliefs, understandings, and theories of value (Grégoire et al., 2010; Lazarus, 1991). The proposed model builds most directly on Haynie et al.'s (2010) metacognitive framework, which argues that effective entrepreneurial learning requires metacognitive awareness, the capacity to monitor and adapt one's own cognitive processes in response to changing conditions (Haynie et al., 2010). However, the Haynie et al. (2010) framework describes the cognitive capacity that makes learning possible without specifying the process through which capacity is deployed when entrepreneurs engage with external knowledge. The proposed evaluation stage addresses this gap by specifying what entrepreneurs do with metacognitive awareness when assessing advice, applying it outward from monitoring their own understanding to judging the coherence, feasibility, and contextual fit of external input (advice). When this deliberate cognitive engagement occurs, *comprehension* is converted into informed judgment; when it is bypassed or impaired, entrepreneurs act on advice impulsively, influencing decision-making (action) independently of advice quality. This stage clarifies that learning from advice is not complete once *comprehension* occurs but depends on an additional phase of *evaluation* (reflection and judgment) that determines whether advice should become actionable knowledge.

Although evaluation is fundamentally a cognitive process, affective and relational factors shape how entrepreneurs judge advice. Cognitive appraisal theory emphasizes that judgments involve simultaneous cognitive and emotional assessments of relevance, credibility, and trust

(Lazarus, 1991). In entrepreneurial settings, emotional attachment to ideas and psychological ownership can constrain both comprehension and evaluation: at the comprehension stage by limiting attention to identity-threatening advice, and at the evaluation stage by heightening sensitivity to advice that challenges core beliefs and reducing willingness to reconsider strategic assumptions (Grimes, 2018). Conversely, trust in the advice-giver enhances receptivity by framing challenging feedback as collaborative input rather than criticism (Galloway et al., 2021). Affective and relational factors therefore moderate evaluation quality, shaping how entrepreneurs assess advice.

Taken together, I propose that entrepreneurs' decisions to utilize advice depend not only on its informational quality but also on the cognitive, affective, and contextual conditions that shape its evaluation. *Evaluation* functions as the cognitive bridge between learning and behavior (*comprehension* and *action*), converting the understanding developed during *comprehension* into informed judgments about how to act. This evaluative bridging step is particularly critical in entrepreneurial settings, where epistemic uncertainty is high and the meaning and applicability of advice cannot be assumed but must be actively constructed through interpretive judgment (Gavetti, 2012; Knight, 1921; Haynie et al., 2010). Evaluation, shaped by the depth of prior comprehension and moderated by affective and relational conditions, determines which action pathway entrepreneurs pursue.

1.4.3 Acting on Advice

Acting on advice represents the behavioral expression of entrepreneurs' prior cognitive effort, in which judgments formed during *evaluation* are operationalized through *action*.

Action takes multiple forms, including direct implementation, testing, rejection, and clarification seeking (Miller et al., 2024). Each represents a different mode of knowledge exploitation that reflects the entrepreneur's interpretation of advice relevance, risk, and feasibility as shaped by its *evaluation*. Importantly, I argue that action on advice should be deliberate rather than automatic, reflecting the cognitive work of prior comprehension and evaluation rather than impulsive or unreflective response. This cognitive mediation connects directly to Baron's argument that entrepreneurs use cognitive frameworks to reduce the complexity of decision making under uncertainty (Baron, 2004; 2006). Baron establishes that cognitive frameworks shape how entrepreneurs perceive and respond to environmental stimuli; but does not specify how the quality of prior cognitive engagement shapes which response is selected. The proposed model extends this logic by connecting *action* pathway selection directly to confidence of the *evaluation* judgment. When evaluation yields a confident judgment, entrepreneurs implement or deliberately reject advice accordingly; when evaluation is triggered, but uncertainty remains, entrepreneurs are more likely to test advice or seek clarification before committing to action (Miller et al., 2023); and when evaluation is impaired or bypassed, advice is more likely to be non-deliberately rejected or dismissed without informed judgment. By conceptualizing *action* as the behavioral consequence of cognition, this framework clarifies how entrepreneurs translate interpretive understanding into practical outcomes and explains why identical advice produces divergent behavioral responses even when advice quality and source are held constant.

These types of action capture unique ways advice can be enacted. Although at a decision level they are mutually exclusive, in practice, entrepreneurs may move between these responses over time as their understanding and *evaluation* of advice evolve (i.e., advice is re-evaluated).

Action is not the end point of advice utilization but the beginning of a new cycle of learning (Agarwal et al., 2025). This recursive logic builds on and extends Shepherd et al.'s (2015) work on entrepreneurial learning from outcomes, which establishes that entrepreneurs learn from the feedback generated by their actions (Shepherd et al., 2015; 2017). However, their framework treats action outcomes as the primary driver of learning without specifying how the quality of prior cognitive engagement shapes what is learned from those outcomes. The proposed model argues that the learning value of an action depends not just on the information it generates but on how thoroughly entrepreneurs engage in *comprehension* and *evaluation* before acting.

Following the Advice. Following advice represents the most direct behavioral pathway of action, in which entrepreneurs implement external guidance that they have judged as relevant, credible, and aligned with their venture's goals (Harvey & Fischer, 1997). This pathway is most likely when evaluation yields confident positive judgment; that is, when entrepreneurs assess advice as valuable and conclude that implementation is warranted given their venture's strategic logic and resource constraints. Within the ACT, this behavior corresponds to direct exploitation, in which assimilated and transformed knowledge is immediately applied to decision-making and practice (Cohen & Levinthal, 1990; Zahra & George, 2002). Although much of the entrepreneurship literature emphasizes the benefits of advice, implicitly treating advice-following as desirable (Assenova, 2020; Chatterji et al., 2019), following advice is a selective and interpretive act that reflects the cognitive work of prior *comprehension* and *evaluation* rather than passive compliance. Entrepreneurs who follow a piece of advice must still determine how to operate within their venture's constraints, balancing external guidance with internal knowledge and contextual realities (Barney et al., 1996; Galloway et al., 2021). Conceptualizing

implementation as interpretive exploitation clarifies that acting on advice does not imply passive adoption but rather the active translation of social knowledge into strategic behavior (Carlile, 2004; Miller et al., 2024). Even apparent compliance with advice therefore reflects the cognitive work.

Testing Advice. Testing advice represents a more selective and iterative mode of action in which entrepreneurs experiment with the advice received on a limited scale before committing broader resources (Miller et al., 2024). This pathway is most likely when evaluation is thorough, but uncertainty remains, that is when entrepreneurs have engaged in deliberate evaluative judgment but cannot yet confidently assess the advice's feasibility or contextual fit given the constraints and unknowns of their venture. Rather than accepting or rejecting advice, entrepreneurs use small-scale trials to assess its practical feasibility and strategic value in action (Miller et al., 2023). This behavior reflects an adaptive response to uncertainty, allowing entrepreneurs to gather evidence, reducing ambiguity and uncertainty through experimentation and feedback (Camuffo et al., 2020). Within the ACT, testing corresponds to selective exploitation, as entrepreneurs apply newly assimilated knowledge provisionally while monitoring its effects (Cohen & Levinthal, 1990; Zahra & George, 2002).

Testing generates recursive learning as it is designed to resolve specific uncertainties identified during *evaluation*. The outcomes of these trials may reinforce, contradict, or refine prior beliefs, understanding and knowledge, thereby triggering *comprehension* and subsequent refinement of evaluative judgment. In this way, testing advice illustrates the recursive nature of entrepreneurial learning, where action functions as a mechanism of inquiry that transforms tentative understanding into validated knowledge (Lane et al., 2006; Zellweger & Zenger, 2023).

Ignoring (or Rejecting) Advice. Ignoring or rejecting advice represents the decision not to apply the advice received. In ACT, this constitutes non-exploitation; entrepreneurs acknowledge the existence of advice but withhold its application. Under the proposed framework rejecting advice can take two forms: deliberate and non-deliberate rejection; each reflecting a fundamentally different cognitive state.

Deliberate rejection occurs when evaluation yields a clear negative judgment; when entrepreneurs assess advice as misaligned with their strategic vision, values, or contextual realities. In these cases, rejection reflects purposeful selectivity under uncertainty, not simple contrarianism (Grimes, 2018; Navis & Ozbek, 2016). Entrepreneurs may privilege mission or legitimacy considerations over market prescriptions or conclude that advice conflicts with strategic choices or resource constraints, leading them to withhold application despite recognizing its informational quality (Muñoz et al., 2018). Within the ACT, this is a selective form of non-exploitation in which external knowledge is acknowledged but not enacted because its value is judged as low or negative (Carlile, 2004; Cohen & Levinthal, 1990). Deliberate rejection therefore reflects a purposeful judgment about value, fitness, and feasibility that follows from thorough cognitive engagement with advice.

Non-deliberate rejection, by contrast, occurs when entrepreneurs fail to comprehend advice, preventing deliberate *evaluation* from being triggered. Because *comprehension* has not activated the knowledge acquisition and perspective broadening needed for interpretive judgment, entrepreneurs dismiss or ignore advice without deliberate evaluative engagement. Novel, complex, or poorly framed advice can exceed the recipient's (i.e., entrepreneur's) absorptive capacity, remain difficult to interpret, or resist translation across knowledge

boundaries, which leads entrepreneurs to ignore and reject advice without a definitive judgment (Carlile, 2004; Cohen & Levinthal, 1990; Miller et al., 2024). The likelihood of this outcome increases when advice is not understood, unsolicited, contradictory, or not contextualized; conditions that reduce attention and perceived relevance and thereby interrupt both comprehension and the evaluation process (Gruber, et al., 2008). Advice that is not understood (i.e., not triggering *comprehension*) is more likely to be ignored (Weick, 1995). Non-deliberate rejection signals a *comprehension* bottleneck rather than an evaluative judgment, it reflects bounded rationality (Simon, 1955) that prevents *comprehension* and impedes *evaluation*.

The distinction between deliberate and non-deliberate rejection has important theoretical implications. *Deliberate rejection* reflects evaluative engagement; *non-deliberate rejection* signals a *comprehension* bottleneck, or bounded rationality (Simon, 1955) that prevents adequate comprehension. The former is a judgment about value, fitness, and feasibility. The latter is a cue that learning, translation, or reframing is needed before meaningful *evaluation* and *action* can occur. Importantly, non-deliberate rejection is not always the terminal outcome of comprehension failure. When entrepreneurs recognize that their understanding is incomplete, comprehension failure may trigger clarification seeking (Miller et al., 2024).

Seeking Clarification. Seeking clarification occurs when entrepreneurs engage advisors in further dialogue to resolve ambiguities or deepen their understanding of received advice (Miller et al., 2024). This pathway can be triggered by two distinct cognitive conditions. First, it occurs when *evaluation* is thorough, but uncertainty remains; that is when entrepreneurs have engaged in deliberate evaluative judgment but identify specific gaps in their understanding that require further input from the advisor before action can be confidently pursued. Second, it occurs

when *comprehension* failed; when advice is too ambiguous, complex, or poorly framed to trigger deliberate *evaluation*, leading entrepreneurs to seek elaboration before meaningful evaluative judgment can occur (Miller et al., 2024). These two conditions produce similar behavior but reflect different cognitive states: the first reflects *evaluative* consciousness, while the second reflects a *comprehension* bottleneck that should be resolved for evaluation to be enacted.

By asking questions and soliciting elaboration, entrepreneurs co-construct meaning with their advisors, refining both advice itself, as well as comprehension and evaluative accuracy (Grodal et al., 2015; Harrison & Rouse, 2015; Miller et al., 2024). This process enhances AC by reopening the cycle of acquisition and assimilation, as entrepreneurs acquire additional information and reinterpret prior insights in light of new explanations (Cohen & Levinthal, 1990; Zahra & George, 2002). Seeking clarification triggers recursive learning as it targets the specific ambiguities and comprehension gaps that impaired prior comprehension or evaluation. This pattern reinforces the recursive, social nature of entrepreneurial learning and underscores why seeking clarification, alongside testing, generates stronger improvements in subsequent comprehension and evaluation than direct implementation (Lane et al., 2006; Miller et al., 2024).

In sum, the proposed framework (Figure 1) illuminates the cognitive dimension of advice utilization by specifying the cognitive process through which advice becomes meaningful and actionable under uncertainty. By distinguishing the stages of *comprehension*, *evaluation*, and *action*, the model advances a cognitive perspective that shifts attention from advice-givers to advice-receivers, emphasizing entrepreneurs' agency, cognition, and judgment. These three stages are deeply interconnected and mutually reinforcing: comprehension equips entrepreneurs

for evaluation, evaluation determines which action pathway is pursued, and action generates recursive feedback that reopens prior stages of comprehension and evaluation.⁵

1.5 Theoretical Propositions

The three-stage proposed model developed above generates a set of theoretical propositions that specify the cognitive conditions under which advice utilization produces meaningful learning and action, and identify the stage transitions, mechanisms, and feedback loops through which the quality of cognitive engagement shapes learning and action outcomes.

First, the proposed model argues that *evaluation* is not automatically triggered upon receipt of advice but depends on whether comprehension has occurred with sufficient consciousness and depth to equip entrepreneurs for interpretive judgment. When comprehension fails to activate knowledge acquisition and perspective broadening, entrepreneurs lack the domain knowledge and conceptual frameworks needed to assess advice for coherence, feasibility, and contextual fit. Under these conditions, advice is more likely to be dismissed without deliberate evaluative engagement.

Proposition 1: The greater the depth of an entrepreneur's comprehension of advice, as reflected in knowledge acquisition and perspective broadening, the more likely the entrepreneur is to engage in deliberate evaluation (and action) rather than non-deliberate rejection of the advice.

Second, the model's central theoretical claim is that evaluation is the cognitive bridge between comprehension and action. Prior accounts of advice utilization have implicitly assumed that understanding advice is sufficient to enable its implementation (i.e., following the advice

⁵ Through implementation, testing, and clarification seeking, entrepreneurs generate new information that reopens prior stages of comprehension and evaluation, sustaining an iterative cycle of interpretation and action (Camuffo et al., 2020; Crossan et al., 1999; Weick, 1995). This recursive process distinguishes the proposed framework from linear information processing models and aligns it with research that views entrepreneurial learning as an ongoing cycle of interpretation and action.

received) (Bonaccio & Dalal, 2006; Zahra & George, 2002). The proposed model challenges this assumption by arguing that comprehension alone should not determine action outcomes. The evaluative judgment that follows comprehension determines whether comprehension translates into informed and purposeful action or not.

Proposition 2: The relationship between advice comprehension and action outcomes is mediated by evaluation quality and confidence, such that comprehension translates into informed and purposeful action only when followed by deliberate evaluative judgment of the advice's coherence, feasibility, and contextual fit.

Third, not all action pathways reflect equal levels of evaluative engagement. The model predicts that entrepreneurs' confidence in their evaluation judgment determines which action pathway they pursue. When evaluation yields a confident judgment, entrepreneurs implement or deliberately reject advice accordingly. When evaluation is conscious, but uncertainty remains (yielding low confidence in the evaluation assessment), entrepreneurs recognize their knowledge limitations and are more likely to respond through testing or clarification seeking to resolve remaining uncertainties before committing to action.

Proposition 3: When evaluation is conscious, but uncertainty remains, entrepreneurs are more likely to respond to advice through testing or clarification seeking rather than direct implementation or deliberate rejection, because the deliberate evaluation identifies the uncertainties that remain unresolved, prompting further inquiry rather than premature closure.

Fourth, the model's recursive logic implies that action pathways differ not only in their immediate behavioral consequences but in their capacity to generate learning that improves subsequent comprehension and evaluation. Testing produces tailored feedback allowing entrepreneurs to update their *comprehension* and *evaluation* stages. Clarification seeking reopens the social co-production loop, enabling advisors to address the specific comprehension or evaluation gaps that prompted inquiry (Miller et al., 2023). Direct implementation, by contrast,

generates feedback that is confounded by execution quality, resource constraints, and environmental factors, making it harder to isolate what was learned about the advice itself.⁶ Rejection, whether deliberate or non-deliberate, forecloses further learning from that advice entirely. These differences in recursive learning value follow directly from the cognitive logic of the model: testing and clarification seeking are designed to resolve specific uncertainties identified during evaluation or comprehension, while implementation and rejection are not.

Proposition 4: Among the four action pathways, testing and clarification seeking generate stronger improvements in subsequent comprehension and evaluation, because they target and resolve the specific uncertainties that remained after prior comprehension or evaluation, whereas implementation and rejection do not.

Together, these four propositions advance a cognitive process model of advice utilization and explain variation in entrepreneurial learning and action. Proposition 1 establishes comprehension as the necessary cognitive gateway to evaluation, explaining why advice is sometimes dismissed without deliberate judgment. Proposition 2 positions evaluation as the central mediating mechanism that converts comprehension into informed action, explaining why identical advice produces divergent outcomes even when comprehension occurs. Proposition 3 connects evaluation itself (and entrepreneurs' confidence in this assessment) to action pathway selection, explaining why conscious engagement with advice does not always produce immediate implementation but can generate inquiry-oriented responses that reflect epistemic discipline. Proposition 4 closes the recursive loop by establishing that action pathways differ in their capacity to improve subsequent comprehension and evaluation, explaining why some entrepreneurs learn more effectively from advice over time than others. These propositions shift

⁶ Unlike direct implementation, which produces feedback confounded by execution quality and environmental factors, clarification seeking introduces new information directly addressing the source of uncertainty, enabling entrepreneurs to update their comprehension and evaluative judgment with precision (Lane et al., 2006; Miller et al., 2024).

the study of advice utilization from a focus on advice properties and advisor characteristics to the cognitive processes through which entrepreneurs make advice meaningful and actionable.

1.6. General Discussion

This chapter develops a cognitive process model of advice utilization that explains when and why advice produces meaningful learning and action under uncertainty. By theorizing *comprehension*, *evaluation*, and *action* as interconnected cognitive stages, the model advances absorptive capacity theory to the individual level (Cohen & Levinthal, 1990; Zahra & George, 2002) and specifies the cognitive mechanisms through which socially distributed knowledge becomes meaningful and actionable.

1.6.1 Theoretical Contributions

This chapter advances three theoretical contributions, shifting the study of advice utilization from a focus on social exchange to the cognitive processes through which entrepreneurs decode the advice. First, this chapter develops a three-stage cognitive process model that formalizes advice utilization as a sequence of *comprehension*, *evaluation*, and *action*, and derives four theoretical propositions connecting variation in cognitive engagement to variation in entrepreneurial action outcomes. Prior research has examined advice utilization primarily through the lens of advice quality, advisor characteristics, and relational dynamics, leaving the cognitive work of the advice receiver largely untheorized (Bonaccio & Dalal, 2006; Grodal et al., 2015; Miller et al., 2024). By shifting analytical attention from the properties of advice and advisors to the interpretive processes of entrepreneurs, the model advances a receiver-centered account of advice utilization that explains heterogeneous outcomes as a function of cognitive process. In doing so, the model extends the entrepreneurial cognition literature from a

focus on the cognitive structures and capacities entrepreneurs bring to decision making (i.e., cognitive scripts, heuristics, and metacognitive strategies) to a process account of how those capacities are deployed when entrepreneurs engage with external knowledge (i.e., advice) under uncertainty (Baron, 2004; Haynie et al., 2010; Mitchell et al., 2011).

Second, this chapter introduces *evaluation* as a distinct and previously undertheorized cognitive stage in advice utilization. Prior theoretical accounts of knowledge utilization move from understanding to application without theorizing the interpretive judgment that connects them (Todorova & Durisin, 2007; Zahra & George, 2002), implicitly assuming that comprehension automatically produces action. By theorizing evaluation as the cognitive bridge between comprehension and action, this chapter identifies the specific mechanism through which comprehension is converted into informed judgment and explains why identical advice produces divergent entrepreneurial responses even when advice quality and source are held constant. This contribution suggests that theories of knowledge application under high uncertainty contexts must account for the evaluative judgment that mediates understanding and action.

Third, this chapter extends absorptive capacity theory to the individual level by reframing it as an interpretive cognitive process rather than a routine-based organizational sequence. Extending this logic to entrepreneurial contexts requires not merely a change of level of analysis, but a shift from procedural to interpretive logic as entrepreneurs operating under uncertainty cannot rely on established routines to assimilate and apply external knowledge but must engage in deliberate interpretive judgment instead (Cohen & Levinthal, 1990; Zahra & George, 2002).

This reframing advances a cognitive microfoundations perspective on absorptive capacity theory that prior work has called for but not fully developed in entrepreneurial contexts. While

Lewin et al., (2011) theorize the individual-level microfoundations of organizational absorptive capacity by identifying the cognitive processes that underlie established routines, their framework assumes individuals operating within organizational structures that channel and support knowledge integration. The proposed model extends this microfoundational logic to entrepreneurial contexts by specifying the cognitive stages through which individual-level knowledge integration unfolds in the absence of established routines, under conditions of high uncertainty (Lane et al., 2006; Volberda et al., 2010; Felin & Foss, 2005).

1.6.2 Boundary Conditions

The proposed model applies most directly to entrepreneurial contexts characterized by high epistemic uncertainty, ambiguous information, and limited preexisting routines for interpreting external input. Under these conditions, the cognitive work of *comprehension*, *evaluation*, and *action* is non-trivial. Advice does not speak for itself, and its meaning, relevance, and applicability must be actively constructed through interpretive judgment (Felin & Zenger, 2017; Knight, 1921). Several boundary conditions define the scope of this argument.

First, the framework applies to advice that requires interpretation under uncertainty rather than routine procedural guidance. The cognitive stages theorized become consequential when advice concerns ambiguous strategic choices whose meaning, relevance, and applicability cannot be determined without interpretive cognitive effort. This includes advice where entrepreneurs must actively construct the meaning and relevance of external input in relation to their venture's specific context (Knight, 1921; Packard et al., 2017). When advice is purely procedural, specifying a technical task with a determinate answer and no meaningful strategic implications, the interpretive work the model theorizes becomes functionally unnecessary. Under these

conditions, entrepreneurs are more likely to process advice automatically and intuitively rather than through the deliberate cognitive engagement the model describes, because the advice does not require meaning construction but only execution (Evans & Stanovich, 2013; Kahneman, 2011). The model therefore applies when epistemic uncertainty makes interpretation non-trivial and when the relevance and applicability of advice must be actively judged rather than assumed.

Second, the framework assumes that entrepreneurs possess meaningful discretion over whether and how to act on advice. This assumption is theoretically necessary because the model's evaluation and action stages depend on the entrepreneur's capacity to exercise interpretive judgment and make consequential choices about advice utilization. When external constraints eliminate meaningful discretion, such as regulatory mandates, contractual obligations, or investor covenants that prescribe specific actions, the evaluation stage loses its function. Entrepreneurs may engage in comprehension by decoding and making sense of advice, but action is predetermined by external enforcement rather than individual judgment of evaluation. The degree of discretion entrepreneurs retain thus determines how fully the three-stage model applies: when agency is high, all three stages are consequential; when it is constrained, evaluation loses its function and the model reduces to comprehension and execution.

1.6.3 Future Research Avenues

This framework opens several avenues for future research to extend and refine our understanding of entrepreneurial advice utilization under uncertainty.

First, the proposed model assumes a solo entrepreneur, yet most new ventures are founded by teams (Aldrich & Ruef, 2006), raising important questions about how the cognitive stages theorized here unfold in collective settings. Team dynamics introduce theoretical

complexities that change how each stage of the model (*comprehension*, *evaluation* and *action*) unfolds. Teams differ in cognitive diversity and shared mental models, which may strengthen the comprehension stage by expanding the range of knowledge acquisition and perspective broadening but make alignment difficult during evaluation by creating divergent evaluative judgments across team members (Mathieu et al., 2008; Mitchell et al., 2011). Future research could examine when cognitive diversity among co-founders facilitates or hinders each stage of the proposed model, and whether the recursive feedback loops between action and comprehension operate differently in teams versus individual advice utilization contexts.

Second, the rise of AI tools (used as mentors and advice givers) presents an opportunity to test the boundaries of the proposed model in an emerging and rapidly evolving context. AI systems can generate personalized guidance but differ from human advisors in ways that have direct implications for each stage of the model. At the *comprehension* stage, AI-generated advice may facilitate explicit knowledge acquisition by providing structured, codified information efficiently, but may impair tacit knowledge acquisition and perspective broadening by lacking the experiential insights, contextual sensitivity, and relational cues that human advisors provide (Huang et al., 2019; Longoni et al., 2019). At the *evaluation* stage, the absence of relational cues and trust signals that human advisors provide may alter how entrepreneurs evaluate the advice (Huang et al., 2019; Longoni et al., 2019). At the *action* stage, the effects of AI advisory tools on clarification seeking are theoretically ambiguous. The absence of relational dynamics may reduce the quality of follow-up exchanges; simultaneously AI may lower the social barriers that often inhibit entrepreneurs from seeking clarification from human advisors, as AI-interactions reduce concerns about judgment, status, and relational dynamics. Future research could examine

how the substitution of human advisors with AI systems affects the quality of each cognitive stage, and whether entrepreneurs develop new comprehension and evaluation strategies when engaging with machine-generated advice (Otis et al., 2025).

Third, environmental dynamism represents another contextual condition that shapes how each stage of the model unfolds and deserves further exploration. In rapidly changing settings, advice that is coherent, feasible, and contextually fit at one point in time may become misaligned as external conditions shift, requiring entrepreneurs to revisit prior evaluations more frequently (Camuffo et al., 2020; McMullen & Shepherd, 2006). High dynamism may accelerate knowledge obsolescence during *comprehension*, impair contextual fit assessment during *evaluation*, and increase the relative value of testing and clarification seeking over direct implementation at the *action* stage (Shepherd et al., 2017). Future research could examine how environmental dynamism moderates the quality and speed of each cognitive stage.

Finally, the proposed model acknowledges bounded rationality as a constraint on both *comprehension* and *evaluation*, but leaves open the question of when and how each of its two dimensions, limited information and cognitive biases, dominates at each stage. Future research could examine whether the relative weight of these constraints varies systematically across entrepreneurial contexts, stages of venture development, or types of advice received. For instance, early-stage entrepreneurs with limited domain knowledge may be more susceptible to comprehension failures driven by limited information, while more experienced entrepreneurs with established mental models may be more vulnerable to evaluation failures driven by cognitive biases such as confirmation bias or overconfidence. Investigating these boundary

conditions empirically would refine the model's predictions and clarify when each dimension of bounded rationality poses the greater threat to advice utilization.

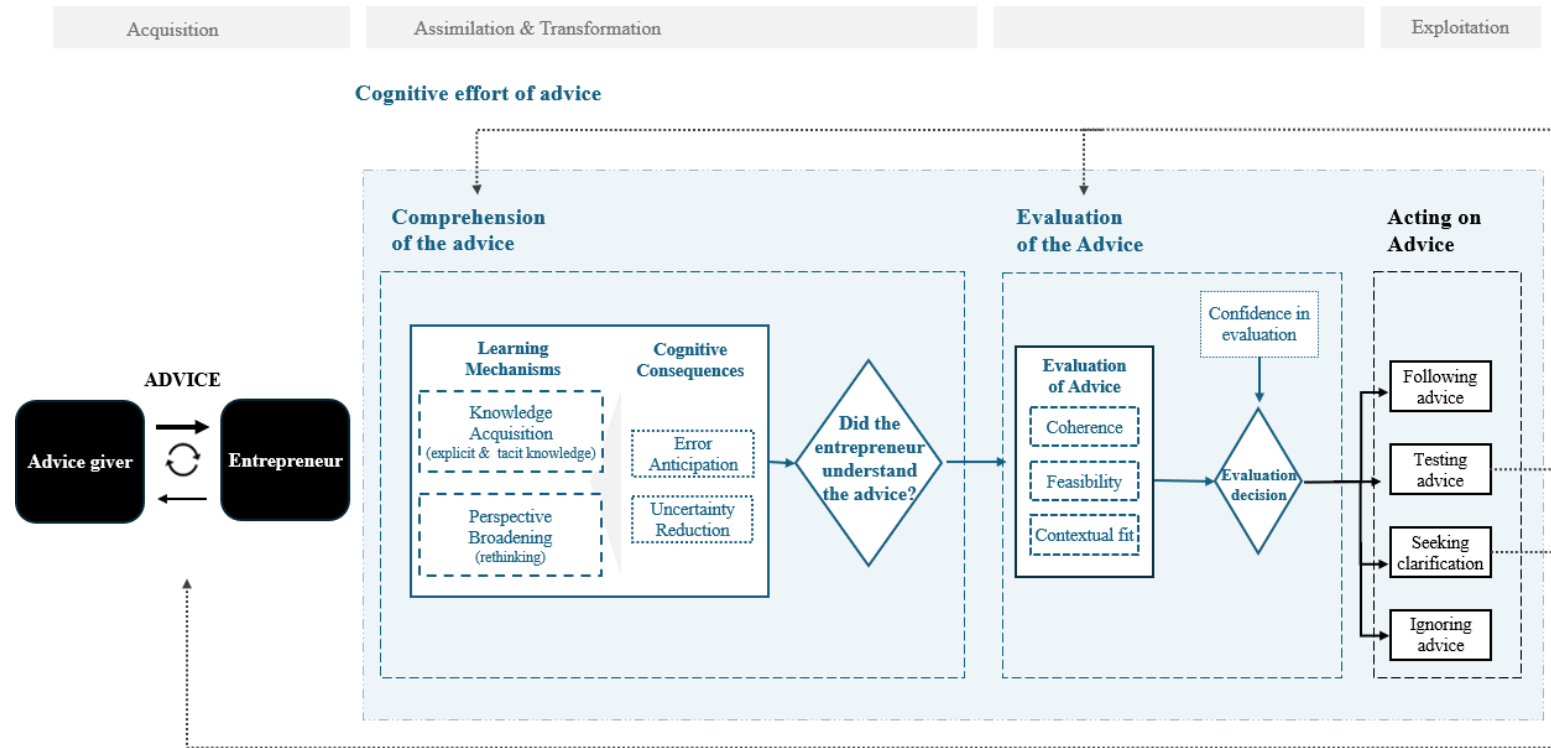
1.7 Conclusion

This chapter conceptualizes entrepreneurial advice utilization as an interpretive cognitive process, explaining divergent entrepreneurial responses to the same advice as a result of variation in the cognitive work entrepreneurs engage in when making advice meaningful and actionable. By theorizing *comprehension*, *evaluation*, and *action* as interconnected cognitive stages, the model advances the cognitive microfoundations of absorptive capacity and clarifies how individual-level learning under uncertainty depends on interpretive judgment. As advice becomes an increasingly central resource for entrepreneurs navigating uncertain and rapidly changing environments, understanding the cognitive processes through which it is utilized (or fails to be) represents an important research avenue for entrepreneurship research.

Table 1: Mapping Absorptive Capacity to Cognitive Stages of Advice Utilization

Absorptive Capacity	Definition	Proposed Model	Cognitive Processes and Mechanisms in the Proposed Framework	Extension to Absorptive Capacity Theory
Acquisition	Recognition and acquisition of valuable external knowledge relevant to the organization.	Advice-seeking behavior (occurs outside the cognitive model)	Entrepreneurs engage in advice-seeking behavior to identify, access, and obtain external knowledge from diverse sources. This social process precedes cognition and provides the raw informational input that activates cognitive effort.	Repositions acquisition as <i>a social and behavioral antecedent to cognition</i> . Advice-seeking is part of absorptive capacity's boundary conditions, determining which inputs enter the entrepreneur's interpretive process.
Assimilation	Analysis and interpretation of newly acquired knowledge; linking new information to existing cognitive structures.	Comprehension - Knowledge Acquisition (Stage 1)	Entrepreneurs engage in knowledge acquisition, integrating explicit and tacit insights gained from advice into their existing mental models. This process expands knowledge base.	Clarifies assimilation as a micro-level process of knowledge acquisition, demonstrating how entrepreneurs <i>actively</i> connect advice to prior knowledge.
Transformation	Reconfiguration or revision of existing schemas in light of new insights.	Comprehension - Perspective Broadening (Stage 1)	Entrepreneurs engage in perspective broadening, questioning and reorganizing prior beliefs when exposed to alternative viewpoints. This enables the reinterpretation of reality and update of beliefs and venture logic.	Specifies transformation as perspective broadening, showing how entrepreneurs rethink their mental models and update their ideas through exposure to new advice.
Absent in Original Framework		Evaluation (Stage 2)	Entrepreneurs <i>evaluate</i> advice through cognitive appraisal, assessing its relevance, coherence, and feasibility within their venture context. This judgment phase determines next stage (action).	Introduces evaluation as a new cognitive phase, bridging comprehension and action and filling a missing link in absorptive capacity between learning and behavioral application.
Exploitation	Application of assimilated knowledge to decision-making, innovation, or performance outcomes.	Action (Stage 3)	Entrepreneurs <i>act on</i> advice through implementation, testing, rejection, or clarification-seeking, translating cognitive insights into behavior.	Recasts exploitation as a recursive, socially embedded process, emphasizing that advice utilization is iterative and co-constructed through ongoing interaction with advisors

Figure 1: A Cognitive Process Model of Advice Utilization



- Black** Represent observable stakeholders (financial investors, customers peers, former entrepreneurs, expert mentors, family members), actions or decisions made by stakeholders.
- Blue** Represent actions, decisions, or mechanisms associated with the cognitive efforts of the advice seeker, whether conscious or unconscious.
- Grey** Indicate mapping to absorptive capacity components (Zahra & George, 2002)

CHAPTER 2: ENTREPRENEURIAL LEARNING THROUGH SOCIAL TESTING: HOW AND WHEN ADVICE ACTIVATES SINGLE, DOUBLE, AND ANTICIPATORY LEARNING

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Abstract

Entrepreneurs are frequently advised to “test their ideas” using scientific experimentation or the lean startup methodology to generate feedback from customers. This chapter proposes an alternative way to test ideas: soliciting advice. Drawing on an inductive analysis of 190 mentoring sessions across two entrepreneurial support programs, we develop the construct of social testing through a taxonomy of nine types of advice which map onto three learning types: double-loop learning (via theorizing theories of value), single-loop learning (via executing theories of value), and anticipatory learning (via foresight-based advice). Using mentors to test ideas helps entrepreneurs (a) *theorize* their ToVs by uncovering and challenging assumptions or identifying logical flaws, and (b) *execute* them by guiding action, providing tools, or preparing for future contingencies. By opening the black box of advice-giving and linking the type of advice to both intended and achieved learning goals, our analysis reveals how advice and learning outcomes are interdependent. Our findings contribute to the literature on advice by conceptualizing social testing through mentoring as a complementary validation methodology to scientific testing, connecting entrepreneurial learning to social epistemology, and bridging the literature on mentoring, advice and organizational learning. This study advances a theoretical framework for how social testing supports entrepreneurial learning, theorizing, and action.

2.1 Introduction

It is common for entrepreneurs to test and refine their ideas with customers. Scholars and practitioners alike emphasize scientific experimentation as a rigorous methodology for entrepreneurial learning (Camuffo et al., 2020; Gans et al., 2019; Felin et al., 2024; Ries, 2011; Zellweger & Zenger, 2023). According to this view, founders develop and refine their Theory of Value (ToV) – beliefs, causal relationships between inputs, actions and outputs, or theories about how value will be created and captured (Coali et al., 2024; Valentine et al., 2024) – to make and implement strategic decisions under uncertainty (Coali et al., 2024). In other words, ToVs articulate the “why” behind strategy: they specify the hypothesized mechanisms entrepreneurs seek to validate or revise through testing.

Yet for many early-stage founders, testing begins not with customers but in conversations with mentors (Cohen et al., 2019; Grimes, 2018; Miller et al., 2024). Through this social testing, entrepreneurs test their emerging ideas, potentially shaping their ToVs (Toivonen et al., 2023).

Mentors guide, critique, and validate entrepreneurs’ ideas (Grimes, 2018; Miller et al., 2024). While existing research establishes that advice-giving shapes entrepreneurial cognition and action (Cohen et al., 2019; Hampel et al., 2020; Miller et al., 2024), it has not catalogued the content of their advice nor how variation in advice content corresponds to different learning outcomes. Advice has the potential to trigger different types of learning, including single-loop learning which adjusts actions without questioning core beliefs, double-loop learning which questions and updates beliefs, and anticipatory learning which enables proactive adaptation to anticipated challenges (Argyris & Schön, 1997; Bingham & Kahl, 2014). By unpacking the

heterogeneity in advice content, we can better understand the mechanisms through which mentoring catalyzes learning and shapes ventures.

Drawing on an inductive study of 190 mentoring sessions across two early-stage entrepreneurial support organizations (ESOs), one university-based program featuring one-on-one mentoring and a global program with multi-mentor panels, we examine how social testing (via mentoring and advice-giving) triggers entrepreneurial learning under uncertainty and develop a grounded taxonomy of types of advice produced through social testing. These types of advice fall into two broad categories: *theory refinement* (e.g., surfacing assumptions, reframing opportunity spaces) and *theory execution* (e.g., offering implementation advice, tools, or validation). We then link advice to intended learning and achieved goals to assess whether completion patterns differ based on the type of learning advice was intended to trigger.

Our study makes three contributions to entrepreneurship literature. First, we extend the TBV of entrepreneurship (Felin & Zenger, 2009, 2017) by conceptualizing mentoring as a form of testing, a socially embedded testing methodology that complements scientific hypothesis testing (Camuffo et al., 2020). This perspective reveals that theorizing about value creation is not an individual cognitive process but a collective, conversational one that enables entrepreneurs to refine their ToVs before committing to market experiments. Second, we advance research on entrepreneurial learning (Bingham & Kahl, 2014; Corbett, 2007) showing how advice-givers act as epistemic partners who help entrepreneurs both reconstruct and enact their ToVs through two distinct advice practices: *theory refinement* and *theory execution* advice, and we develop a taxonomy of advice practices used by mentors to guide entrepreneurs. Finally, we bridge the advice-giving and organizational learning literatures by specifying how advice content shapes

learning outcomes: theory refinement advice activates double-loop learning by prompting entrepreneurs to revise their ToVs, whereas theory execution advice activates single-loop learning by improving implementation without challenging core assumptions. Together, these insights reposition advice-giving as a socially embedded testing methodology that shapes how entrepreneurs learn, theorize, and act under uncertainty. Our study advances theory by identifying the mechanisms through which distributed knowledge is integrated into entrepreneurial theorizing and action (Felin & Zenger, 2009; Miller et al., 2024), while also offering mentors and ESOs a structured framework to guide practice.

Before continuing with the chapter, one clarification deserves further explanation. Although our empirical setting is entrepreneurial mentoring, our theoretical focus is narrower. We examine mentoring primarily as a context in which advice is produced and exchanged. Accordingly, when we refer to “mentoring” or “mentors,” we do not invoke the full relational, developmental, or psychosocial dimensions often associated with mentoring relationships (e.g., Humberd & Rouse, 2016; Kram, 1983). Instead, we focus on *advice-giving*: third-party forward-looking comments intended to inform entrepreneurs’ strategic decisions (Miller et al., 2024). Throughout the chapter, references to mentors should therefore be understood as referring to their role as advice-givers within mentoring interactions, and our analysis centers on how variation in advice content activates different forms of entrepreneurial learning.

2.2 Theoretical Background

Entrepreneurship unfolds under conditions of Knightian uncertainty, where probabilities cannot be assigned to outcomes because the set of possible outcomes is itself unknowable (Knight, 1921). Moreover, in entrepreneurial contexts, customer needs are ill-defined, markets

are dynamic, and causal links between actions and outcomes remain unclear. Yet uncertainty is not experienced uniformly: what is unknown to a novice entrepreneur may be familiar to those with accumulated expertise, such as advice-givers, mentors, investors, or other entrepreneurs (Gruber et al., 2008; Shane, 2000). Thus, uncertainty in entrepreneurship is an environmental condition, but also a function of entrepreneurs' access to unevenly distributed knowledge.

Under these conditions, entrepreneurs are uncertain about both the value of their idea and the effectiveness and implementation of commercialization strategies (Agrawal et al., 2021). This gives rise to a learning-oriented approach to venture development. Learning is thus a central epistemic function of entrepreneurship (Felin & Zenger, 2009; Zellweger & Zenger, 2023). To progress, entrepreneurs must integrate distributed knowledge or generate new knowledge about which problems are worth solving, the plausibility of their solutions, and the implementation strategies of those solutions (Ehrig & Schmidt, 2019; Felin et al., 2024).

This learning imperative is twofold. Entrepreneurs must first assess the quality and validity of their ideas (Agrawal et al., 2021) and, if judged valuable, learn how to realize those ideas through implementation (Cohen et al., 2019; Gans et al., 2019). In this view, entrepreneurial learning involves both *refining the theoretical content of the ToV* (beliefs and causal relationships about how their actions will create and capture value) and *developing the executional insight needed to enact* these ToV. Entrepreneurship is therefore an iterative process of theorizing and learning (Felin & Zenger, 2009, 2017; Zellweger & Zenger, 2023). Learning about what to act upon, how to act upon it, and how to interpret new information.

2.2.1 Entrepreneurial Learning

Entrepreneurs' ToVs rest on a set of underlying beliefs and assumptions that inform decisions, guide actions, and, in turn, yield outcomes (Felin & Zenger, 2009, 2017). These outcomes generate new information that can confirm or challenge beliefs, creating opportunities for learning (Zellweger & Zenger, 2023). In this sense, learning in entrepreneurship reflects a process of feedback and revision: when new information alters different elements of this belief–decision–action system, different forms of learning occur. Consequently, entrepreneurs continuously construct and refine causal models that link problems, actions, and outcomes, an iterative process of theory building (e.g., Ott & Eisenhardt, 2020). Building on foundational work in organizational learning (Argyris & Schön, 1997) and the extension of anticipatory learning (Bingham & Kahl, 2014), we distinguish three types of entrepreneurial learning: single-loop, double-loop, and anticipatory.

[Insert Figure 1 about here]

Single-loop learning occurs when new information triggers adjustments to decisions and actions, while leaving deeper beliefs and assumptions unchanged (Argyris & Schön, 1997). With single-loop learning, entrepreneurs refine how they implement their ToV (e.g., altering pricing, product features) without questioning the fundamental theory behind their ventures. Single-loop learning is therefore incremental, improving execution while preserving the ToV's beliefs and assumptions.

Double-loop learning occurs when new information calls into question the beliefs and assumptions underlying an entrepreneur's ToV (Argyris & Schön, 1997; Zellweger & Zenger, 2023). The newly generated information (e.g., advice, feedback, customer interaction,

experimental outcome) encourages entrepreneurs to reconsider their core beliefs (i.e., whom they serve, what problems to address, or their causal model of value creation). This process follows a deeper feedback loop; the new information updates previously held beliefs, reshaping the ToV and, in turn, influencing subsequent entrepreneurial decisions and actions.

Beyond reactive processes, entrepreneurs also learn prospectively by adapting in anticipation of likely future conditions. *Anticipatory learning* captures this forward-looking type of learning, where current information triggers updates to beliefs, decisions, or actions with the aim of shaping long-term outcomes (Bingham & Kahl, 2014).⁷ This type of learning helps prevent foreseeable errors (Cohen et al., 2019) and supports proactive adaptation as entrepreneurs prepare in advance (e.g., by adjusting equity structures, designing teams, or planning fundraising strategies) before challenges are encountered.

Together, single-loop (action-level adjustment), double-loop (assumption-level revision), and anticipatory (foresight-based adaptation) learning provide a lens for understanding entrepreneurial theorizing and action. These types of learning differ by which component of the belief–decision–action–outcome model is modified and by whether learning is reactive or forward-looking (see Figure 1). Importantly, all three learning types depend on generating new information, a process entrepreneurs pursue through testing.

⁷ As illustrated in Figure 1, anticipatory learning is not mutually exclusive with single- or double-loop responses. The three learning types differ along two dimensions: the time horizon of the learning trigger and the depth of the update it produces. Single- and double-loop learning address current venture challenges, differing in whether they update decisions and actions (single-loop) or beliefs and assumptions (double-loop). Anticipatory learning, by contrast, addresses challenges that have not yet materialized, preparing entrepreneurs for future contingencies. As such, it can manifest as either action-level or belief-level updates, but the defining characteristic of anticipatory learning is the forward-looking temporal orientation of the information that initiates the process.

2.2.2 Testing as a Mechanism for Entrepreneurial Learning

Entrepreneurs make judgments and assumptions about problems worth solving, plausible solutions, and pathways to implementation, yet these assumptions are usually untested (Camuffo et al., 2020; Cohen et al., 2019; Gans et al., 2019). To convert them into informed action, entrepreneurs engage in testing, a (semi-)structured inquiry aimed at generating information, and improving decision quality (Felin et al., 2024). Testing produces new information that updates and refines ToVs (Chavda et al., 2024). This recursive process of theorizing and testing lies at the core of entrepreneurial learning and venture development (Zellweger & Zenger, 2023).

Testing can take multiple forms: trial-and-error (Sarasvathy, 2001), scientific hypothesis testing (Camuffo et al., 2020; Novelli & Spina, 2024), or social testing (Cohen & Koning, 2024; Felin & Zenger, 2009). Each testing methodology triggers different types of learning. Trial-and-error often yields incremental single-loop (Argyris & Schön, 1997) adjustments but can also reinforce initial assumptions or premature commitments (Cohen et al., 2019; Levinthal & March, 1993); scientific testing supports double-loop learning (Argyris & Schön, 1997, Camuffo et al., 2020) but demands resources (e.g., money or time) many early-stage ventures lack; and social testing enables entrepreneurs to update or modify their ideas via dialogue but its utility may be difficult to evaluate ex-ante. Although trial-and-error and scientific testing have been widely studied, social testing remains less developed. (Appendix B contains a comparison between testing methodologies).

Social interactions can function as a testing methodology by enabling entrepreneurs to interrogate and refine ideas through conversation, consistent with the view that theorizing unfolds socially (Felin & Zenger, 2009; Hampel et al., 2020).

Social interactions as a testing methodology rest on the view that theorizing unfolds socially, emerging through conversation (Felin & Zenger, 2009; Hampel et al., 2020).⁸ We refer to this process as “thought testing”.⁹ When entrepreneurs expose their ToVs to critique in conversation, mentors act as theorizing partners by prompting re-theorizing through dialogue, argument simulation, and critical exchange (Miller et al., 2024; Toivonen et al., 2023).

Social testing is pervasive in entrepreneurial practice, especially in ESO programs (Cohen et al., 2019; Miller et al., 2024), where it is often complemented with customer discovery approaches (Camuffo et al., 2020). Social exchanges help entrepreneurs identify flawed strategies and uncover previously unconsidered opportunities (Cohen et al., 2019; Grimes, 2018). Despite its informality and potential bias from mentors’ prior experiences (Sariri, 2025), social testing offers key advantages: it is fast, flexible, and cost-efficient, making it especially valuable for early-stage ventures (Chavda et al., 2024; Gans et al., 2019). Furthermore, it can surface a broad spectrum of issues in a single exchange, including customer preferences as well as customer acquisition channels, business models, supply chain partners, pricing, financing and so on. As such, it often complements other testing methodologies (Cohen & Koning, 2024; Ehrig & Schmidt, 2019; Miller et al., 2024).

⁸The view that theorizing and knowledge generation are inherently social processes is foundational in the philosophy of science and social epistemology literatures (e.g., Kuhn, 1962). These perspectives emphasize that individuals rely on others not only to access information, but to validate, challenge, and justify beliefs under uncertainty. Entrepreneurship research has begun to acknowledge this (e.g., Felin & Zenger, 2009; Zellweger & Zenger, 2023) but has yet to systematically incorporate the epistemic role of social interaction in entrepreneurial theorizing.

⁹ While the entrepreneurship and entrepreneurial learning literatures have examined how entrepreneurs learn through experience, observation, and social interaction (Bingham & Kahl, 2014; Cohen et al., 2019; Cope, 2005; Corbett, 2007), they have not formally conceptualized conversation as a distinct form of testing entrepreneurial theories. In other words, despite rich work on learning and social interaction in entrepreneurship (e.g., Grimes, 2015; Grodal et al., 2015), there is little explicit attention to the mechanisms by which conversational exchanges function as tests of entrepreneurial ToV, particularly in contrast to recent literature conceptualizing testing primarily in terms of hypothesis formulation and experimental validation (Camuffo et al., 2020; Felin & Zenger, 2009).

2.2.3 Mentoring as a Testing Mechanism for Learning

Mentoring is a central feature of entrepreneurial ecosystems (González-Uribe & Reyes, 2021). In incubators, accelerators, and other ESOs, entrepreneurs routinely engage with mentors and advisors (Cohen et al., 2019; Miller et al., 2024). Research shows that these relationships improve venture survival, growth, and performance (Assenova, 2020; Chatterji et al., 2018; Chrisman & McMullan, 2004). Mentors help entrepreneurs assess the quality of their ideas, mitigate bounded rationality and leverage their networks (Agrawal et al., 2021; Cohen et al., 2019; Humberd & Rouse, 2016).

Yet with few exceptions (e.g., Miller et al., 2024), this work emphasizes downstream outcomes while leaving underexplored the micro-level mechanisms through which mentoring shapes entrepreneurial learning. Mentors help entrepreneurs as they share advice, which has been defined as a mentor's "comment drawn from personal knowledge or experience intended to inform a firm-level decision" (Miller et al., 2024: 2). Recent research distinguishes advice from feedback, emphasizing its forward-looking nature and its aim to shape entrepreneurs' action (immediate or future) (Drencheva et al., 2024; Miller et al., 2024), and proposes that mentoring may operate as a socially embedded testing methodology (Cohen & Koning, 2024). Like feedback in creative projects, advice unfolds as a co-constructed, iterative process in which both parties jointly define and refine the problem space (Harrison & Rouse, 2015; Miller et al., 2024; Rouse, 2020). Yet we lack a systematic understanding of the *content* of advice given in entrepreneurial contexts and the learning it activates. Unpacking these mechanisms would clarify *when*, *how* and *why* advice shapes venture outcomes, guiding the design of more effective ESOs.

Accordingly, this study asks: *What advice do mentors give to entrepreneurs?* and *What type of learning does each advice category trigger?*

2.3 Methodology

We employed an inductive, grounded-theory approach (Corbin & Strauss, 2015, Edmondson & McManus, 2007; Glaser & Strauss, 1967; Rouse et al., 2025), appropriate when existing theory offers insufficient specification of underlying processes (Langley, 1999; Langley et al., 2013). While prior research establishes that mentoring matters, the specific content of advice and its relationship to different forms of learning remains undertheorized. Quantitative approaches would require *a priori* categorization of advice types, but, to our knowledge, these categories do not yet exist in the literature. Our inductive approach enabled us to identify systematic patterns in advice content and learning outcomes while maintaining the granularity needed to develop unique categories grounded in observed interactions (Grodal et al., 2021).

2.3.1 Research Setting

We examined mentoring conversations across two early-stage ESOs to capture how advice was produced, delivered, and whether it was used. Both settings connect entrepreneurs with experienced advisors, but they differ systematically in structure, advisor's background, and venture maturity. The first setting, a university-based ESO, offers individualized advising to nascent entrepreneurs engaged in ideation and early discovery. Founders meet one-on-one with experienced mentors (including industry professionals, serial entrepreneurs, and university affiliates) for thirty-minute sessions focused on defining customer problems, assessing feasibility, and refining emerging ToVs. These interactions privilege reflection and conceptual refinement, allowing mentors to act as thought partners who challenge and clarify entrepreneurs'

reasoning before substantial resources are committed. The first author observed these interactions *in situ*, providing additional richness. However, this ESO did not track entrepreneurs after mentoring sessions, preventing us from observing whether entrepreneurs acted on the advice received or achieved intended learning outcomes.

The second research setting, the Creative Destruction Lab (CDL), represents a global-ESO that (in addition to private one-on-one mentoring) also convenes multi-mentor advising sessions to more advanced ventures, typically those with prototypes, early revenues, or seed funding. The CDL setting has been described as a university-based global entrepreneurship program for technology start-ups (Sariri, 2025). The program brought together start-ups and experienced mentors for four structured quarterly sessions. During the sessions, mentors helped founders prioritize business objectives to work on and selected specific start-ups to advise on achieving those goals. The CDL dataset includes both start-up-level data (pre-program characteristics, operational and financial metrics during the program, and post-program outcomes) and mentor-level data (e.g., professional backgrounds and codified advice shared with founders). The sample includes ventures from multiple technological domains at various growth stages (from business planning, MVP validation and seed-financing). Mentors include investors, seasoned founders, VCs, and domain experts who collectively guide entrepreneurs through experimentation, implementation or fundraising. While we did not observe these sessions *in situ*, we were able to access the transcripts of the multi-mentor mentoring sessions.

This multi-site design provides complementary empirical insights. The university setting offered rich observational access to early-stage mentoring, and *what* advice is delivered. CDL served two complementary functions: first, it enabled validation of the emerging taxonomy,

confirming that the advice categories appeared systematically in a different early-stage entrepreneurial context; second, it enabled tracking of advice-to-outcomes, revealing which types of advice translated into achieved learning goals. We exploited the complementarity of these contexts to build conceptual richness and improve generalization.

2.3.2 Data Collection

University Setting. Between February and December 2024, the first author observed and recorded 38 one-on-one mentoring sessions. All mentor-entrepreneur pairs scheduled in this timeframe were invited to participate. Sessions were conducted in person or online, and audio-recorded with informed consent. To preserve interaction authenticity, no third party was present during sessions. The first author took field notes during, before, and after the session to capture contextual details. All transcripts were reviewed by the first author to ensure accuracy. To enhance contextual understanding and interpretive validity, we triangulated transcript data with field notes, and archival materials such as program guides. These supplementary sources informed, but were not used, in the analysis.

CDL setting. We obtained access to archival data from CDL, randomly selecting four cohorts spanning 2020/21 through 2023/24 (N = 9, 18, 16, and 16 ventures per cohort, respectively), comprising 152 multi-mentor mentoring sessions from 59 ventures. This panel dataset captures ventures longitudinally, with each venture observed between one and three times across program sessions. CDL records all multi-mentor mentoring sessions as part of its standard program operations, with participant awareness and consent. Sessions were transcribed and anonymized by the program before being shared with the research team. While ventures across cohorts participated in different technology-focused streams, data anonymization prevented

identification of specific industries. Beyond session transcripts, CDL provided access to complementary archival materials, including venture applications, cohort metadata, mentor profiles, venture survival outcomes within the program, and goal-tracking records documenting the objectives mentors and entrepreneurs agreed upon at each session's conclusion and ventures' reported progress against those goals at subsequent sessions. Although multi-mentor panel sessions at CDL typically lasted several hours in aggregate, each individual venture received approximately 10 minutes of focused mentoring time per session. This compressed format reflects the structured, high-intensity nature of CDL's advising model, in which experienced mentors rapidly prioritize key venture challenges and provide advice on how to act on them. We acknowledge that this brevity may shape the type and depth of advice observed, a point we return to in the limitations section.

Across the two ESOs, we analyzed a corpus of transcripts from 190 mentoring sessions involving 92 ventures and 153 mentors (see Table 1).

[Insert Table 1 About here]

2.3.3 Data Analysis: Developing Advice Taxonomy

We analyzed the mentoring session transcripts using an inductive, grounded approach (Corbin & Strauss, 2015; Gioia et al., 2013) to build a taxonomy of types of advice and build theory on how each advice type activates different types of entrepreneurial learning. Analyses unfolded iteratively, combining within-case immersion. This approach allowed us to move from descriptive coding of individual exchanges toward a structured taxonomy of advice practices and, ultimately, a theoretical model of advice-giving as a learning mechanism. This process is summarized in Appendix A.

Developing the Taxonomy of Advice Types. We began by open-coding transcripts from the university dataset to identify discrete advice interactions containing advice. All coding was conducted by the first author. Our unit of analysis was the individual mentor move, defined as a discrete piece of advice: a comment or question drawn from the mentor's knowledge or experience and intended to inform a firm-level decision (Miller et al., 2024). This unitizing decision allowed us to capture meaningful, bounded instances of advice-giving while preserving the conversational context in which each move occurred. Each piece of advice was coded for its relationship with respect to the venture and the entrepreneurial action it encouraged. We grouped similar advice into nine first-order categories that captured recurrent ways advice givers used to support entrepreneurs (Gioia et al., 2013; Grodal et al., 2021). We then aggregated these categories into four second-order themes: (1) refining existing ToVs, (2) redefining opportunity spaces, (3) guiding immediate action, and (4) institutionalizing the venture. These themes were further abstracted into two overarching support types: *theory refinement* and *theory execution*. The resulting data structure (Figure 2) summarizes this hierarchy of abstraction from empirical observation to conceptual insight.

[Insert Figure 2 About here]

Iterative Refinement and Robustness Checks. To ensure analytic rigor, we maintained a detailed codebook, revisited early transcripts after each coding cycle, and compared coding decisions across ventures and mentoring sessions to test for stability and scope. The iterative nature of grounded theorizing meant that coding and analysis progressed in tandem; emerging conceptual distinctions were checked against previously coded data. The process reached theoretical saturation within the university dataset when additional sessions yielded no new

categories. To confirm saturation, we coded five additional university sessions, which validated the stability of our coding scheme (Corbin & Strauss, 2015; Pratt, 2009).

Cross-site Validation. Having developed a stable taxonomy in the university setting, we turned to the CDL dataset to assess the generalizability of findings to a context with more mature founders and ventures. Using the existing codebook, we conducted axial coding on advice interactions across 152 panel-based sessions involving 59 ventures. The same nine advice types appeared consistently within the CDL sessions. This replication logic (Eisenhardt, 1989) strengthened confidence that the taxonomy captured core regularities in advice categories rather than site-specific artifacts.

2.3.4 Linking to Learning Mechanisms

After developing the taxonomy of types of advice we leverage an additional CDL dataset recording the goals that ventures and mentors agreed upon, to examine how different types of advice catalyze entrepreneurial learning. This dataset allowed us to link advice to both (1) the type of learning it aimed to trigger (intended learning) and (2) whether it was achieved.

CDL records the goals entrepreneurs and mentors jointly set for each venture at the end of each session. These goals served as explicit commitments for ventures on what to work over the subsequent weeks and provided a unique window into the intended learning outcomes of mentoring (Sariri, 2025). We coded each goal according to the advice taxonomy and its intended learning. Learning was coded as either targeting single-loop learning (when encouraging action-level actions), double-loop learning (when encouraging revision of underlying beliefs and refinement of the ToV), or anticipatory learning (when discussing foresight-based actions or goals) (see Table 2 for coding examples). This step enabled us to connect advice content to its

intended cognitive or behavioral effect. We hand-coded 318 goals from the ventures in the same four CDL cohorts used to derive the advice taxonomy.

[Insert Table 2 About here]

[Insert Figure 3 About here]

To assess whether these intended learning outcomes were realized, we used CDL's data documenting the completion status of each goal (completed, partial, or incomplete) at the beginning of the next program session. This two-step approach allowed us to trace how advice categories translate into intended learning outcomes, and whether those outcomes were realized, informing our theoretical propositions.

2.4 Results: Entrepreneurial Advice Taxonomy

Our analysis revealed a structured set of types of advice through which mentors shape entrepreneurial learning and action. Specifically, we identify two overarching types of advice: *theory refinement*, which targets the reconsideration of entrepreneurs' ToVs and widens the opportunity space; and *theory execution*, which focuses on recommendations for how to implement and validate these ToVs through practical, action-oriented guidance and operational insight. Together, these practices illustrate how advice-giving supports entrepreneurial theorizing (Felin & Zenger, 2009) and helps translate ToV into action.

2.4.1 Support Through Theory Refinement

Throughout the sessions, advice interactions contributed to entrepreneurs' theorizing by providing specific inputs into how they framed and developed their ToV (Felin & Zenger, 2009). In these exchanges, mentors acted as theorizing partners who introduced questions, critiques, and proposed alternative viewpoints that prompted deeper theorizing. The analysis revealed two

distinct types of support through which this theory refinement occurred: (1) existing ToV refinement and (2) redefinition of the opportunity space. See illustrative quotes in Table 3.

[Insert Table 3 About here]

Existing ToV Refinement. A prevalent theme in the data constitutes advice aimed at improving the internal logic, coherence, and clarity of entrepreneurs' ToV. Through interactions, mentors encouraged entrepreneurs to engage in ToV refinement, advancing their ToV beyond descriptive accounts toward more precise, developed, and actionable understandings of how value would be created and captured, shifting their theories towards more causally identified arguments (Chavda et al., 2024; Ehrig & Schmidt, 2019; Felin & Zenger, 2017). We identified four distinct types of advice mentors leverage to provide this support: (1.a) uncovering assumptions, (1.b) challenging assumptions, (1.c) identifying logical flaws, and (1.d) encouraging depth and coherence in the ToV.

Uncovering Assumptions (1.a). One frequent advice type involved prompting entrepreneurs to surface unspoken assumptions embedded in their ToV. These assumptions, often foundational, had not been articulated or tested, yet shaped how ventures framed problems, identified customers, or interpreted early signals of traction. For example, in one university session, an entrepreneur pitched a platform idea aimed at helping embassies connect with their diasporas to increase participation in elections. After listening, the mentor said:

*So, getting back to venture building, [it] has a lot to do with checking assumptions. First you have to identify those assumptions. What are the assumptions you're making? That this is something they want. Who's going to pay the bill for this? Your subscriber? Do [customers] really want to do this remotely? All these things are assumptions. [U- 1]*¹⁰

¹⁰ Quotes are labeled by data source and session or venture ID. Labels beginning with “U-” refer to mentoring sessions from the university-based entrepreneurial support organization (e.g., U-3 = University session 3). Labels such as “CDL-3456” refer to ventures in the Creative Destruction Lab dataset (e.g., venture 3456).

The questions shifted attention from customer problems to the venture's underlying ToV logic; specifically, whether the entrepreneur's expectations about customer and user behavior and who would pay had been validated. The mentor's response made these assumptions visible, not as conclusions, but as hypotheses (or possibilities) requiring scrutiny. The mentor surfaced the implicit, untested beliefs embedded in the ToV. He initiated a move from implicit reasoning to explicit theorizing, encouraging the founder to define what needed to be tested and why. These type of interactions were present across both samples (see Table 3 for additional quotes).

In these instances, mentors recognized that early-stage entrepreneurs often present ToV resting on implicit assumptions about customers, timing, or markets. Mentors helped founders identify, articulate and transform them into testable claims. Once surfaced, mentors guided founders in discerning which assumptions were speculative and hence required testing and which were defensible. By catalyzing this reflection, mentors pushed entrepreneurs to examine why they believed in what they were building, making “uncovering assumptions” an early thought-testing checkpoint that sharpened theorizing.

Challenging Assumptions (1.b). While some mentors helped entrepreneurs surface implicit assumptions, others questioned explicitly articulated assumptions, compelling the entrepreneurs to revisit elements of their ToV. For example, in a CDL session, a founder pitched a fashion-tech venture that helped users create personalized outfit recommendations based on a catalog of their attire generated by uploading photos of their wardrobes. A mentor responded with cautious praise followed by a core behavioral concern:

Well, I'm really impressed with this solution. I relate to it as a buyer. [But as a customer] I've got to go into my closet and take pictures of all my clothes. So, I'm not going to do that. [CDL - 33294]

The mentor accepted the premise that stylistically personalization could be valuable but challenged the explicit assumption that users would be willing to invest the required effort to make the service valuable (i.e., upload pictures of all their wardrobe). The critique (“*I’m not going to do that*”) did not dispute the product’s functionality, instead it highlighted a potential misalignment between the venture’s causal logic and user behavior. The founder had presumed that users would be motivated to upload their outfits data, yet this assumption had not been tested and (according to the mentor) was unrealistic. By grounding the challenge in a relatable scenario, the mentor encouraged reconsideration of the behavioral validity of this assumption of the ToV.

By challenging explicit assumptions, presenting counter-evidence, and interrogating the causal logic of entrepreneurs’ ToV, this type of advice prompts entrepreneurs to reassess and reconsider their strategies, and the foundational beliefs and assumptions underlying their ToV, facilitating the development of more coherent, context-sensitive, and theoretically robust ToV. These dialogues counterbalance entrepreneurs’ overconfidence (Sorenson, 2024), by introducing disconfirming perspectives and counter-evidence. The goal was not to dismiss the idea but to invite reflection and deeper scrutiny of the entrepreneur’s reasoning.

Identifying Logical Flaws (I.c.). Mentors also supported theory refinement by pointing out inconsistencies in the internal logic of entrepreneurs’ ToV. This type of advice examined how assumptions fit together and whether the causal relationships between problems, solution, and revenue generation held up when scrutinized.

In one university session, a founder pitched a platform designed to help job seekers navigate highly competitive roles by offering tailored application tools. The proposed business model relied on payments from job seekers. The mentor listened closely, then responded:

The challenge, I think, is twofold. The first problem is that employers, the companies, if they get a thousand applicants for a job, they don't care if you are not one of them. So, it's not broken on their end. It's only broken on the job seekers' end; and the job seekers are almost always not the ones that are able to pay for it. In my opinion, you're on the wrong side of the equation in terms of who's going to pay for it. [U - 17]

This example reveals the mentor identifying incoherences within the ToV internal logic: the venture targets a user group that lacks both power in the system and willingness to pay. The mentor flags a misalignment between the value proposition and the monetization logic, challenging the economic viability of the ToV. He points towards “weak links” in the causal chain, highlighting faulty reasoning that requires deeper scrutiny.

These exchanges show how mentors move beyond identifying assumptions to diagnosing the structure of entrepreneurs' ToV, questioning whether the causal links within its components hold. ToV are hierarchical, with interdependent premises that shape reasoning (Ehrig & Schmidt, 2019). While individual assumptions may be clear, their interrelations often contain hidden inconsistencies (Ott & Eisenhardt, 2020). By assessing how founders connect inputs, actions, and outcomes, mentors expose contradictions and encourage more disciplined theorizing. These moments of external critique often spark collective theorizing, helping (re)construct or refine their ToV causal logic or, when flaws are fundamental, reconsider the idea entirely.

Encouraging Depth and Coherence in the ToV (I.d.). The analyses revealed that the most frequently used advice category for refining entrepreneurs' existing ToV involved encouraging deeper engagement with their ToV and encouraging greater internal coherence. Mentors pushed for greater precision in articulating who the customer was, which need was being addressed, and how the venture would create and capture value. This type of questioning encouraged founders

to revisit the causal logic of their ToV, identify missing elements of the ToV, and align problems, product, and market with greater conceptual clarity.

In a CDL session, a mentor identified several elements of the venture's strategy that remained underdeveloped:

The[y] are going back to basics. [Venture] is having trouble identifying the need they are solving, finding a customer who understands what they want and is willing to pay for it. Some of the [objectives] that you see are trying to drill down into trying to get to that fundamental aspect of how they move forward. They have a comprehensive product and solution, but it is really ill-defined what customers they want to target and what they want to offer. They need to step back and understand what they are bringing. [CDL - 38825]

The advice pushed for increasing clarity and understanding of the user, market opportunity and problem, and improving the completeness and coherence of the ToV. The mentor emphasized the need to articulate the existing theory more clearly, specifically coherence between the product, the customer, and the value proposition. The advice points to conceptual imprecision, a common challenge among early-stage ventures (Cohen et al., 2019).

This pattern was consistent across both datasets (see Table 2). Mentors helped founders think more deeply within their chosen direction, inviting entrepreneurs to make their ToV more structured, coherent, detailed, and internally consistent. They guided founders to align multiple components of the ToV (e.g., assumptions, value propositions, and market logic) in a coherent framework that supported testing and decision making. Thereby, mentors acted as theory-building partners (Felin & Zenger, 2009), addressing ventures' tendency to settle for plausible yet underspecified solutions (Cohen et al., 2019), pushing entrepreneurs to articulate how, for whom, and under what assumptions value would be created and captured, thereby enhancing the clarity and testability of their ToV.

In summary, together, these four advice practices aiming at *existing ToV refinement* illustrate how advice-givers contribute to the refinement of the entrepreneur's original ToV by serving as intellectual partners in the theorizing process (Felin & Zenger, 2009). As co-theorizing partners, mentors helped entrepreneurs articulate, critically examine, and evaluate the logic of their ToV. Importantly, learning types were not used as coding categories during taxonomy development. The nine advice categories and their aggregation into theory refinement and theory execution emerged solely from patterns in advice content. The connection between advice categories and learning types was established only in a subsequent and separate analytical step, ensuring that the correspondence between the two is an empirical finding rather than a definitional assumption.

Redefining Opportunity Spaces. Support through theory refinement sometimes contributed to entrepreneurs' theorizing by proposing a different ToV and redefining entrepreneurs' opportunity spaces. This represents a shift from facilitating the entrepreneur's reasoning (or reconsideration) to co-generating new theoretical possibilities and helping entrepreneurs consider different business opportunities (Miller et al., 2024). We identified one type of advice used to provide this support: suggesting alternative ToV.

Suggesting Alternative ToV (2.a.). Mentors suggested fundamentally different ways of framing the opportunity to generate new ToVs.

In one university session, a founder pitched a platform to support high school seniors in navigating the university selection process, helping them compare institutions based on cultural and personal preferences, rankings, or experience. After the pitch, a mentor suggested a pivot towards a different customer need:

It doesn't immediately jump out to me that [school selection] was a big deal—just from my experience. But a career path? That might be. From a student's perspective, considering changing a major, and potential spending an extra year at the university, they may be asking, 'Hey, ...I would love to know somebody studying it and have an insiders view' That's a pain point right there. [U-7]

By contrasting the founder's focus with a different (more acute as perceived by the mentor) student need, the mentor reframed the problem space. The advice challenged the potential value of the original idea and introduced an alternative causal logic, one that presumed a different pain point. This suggestion directed the entrepreneur toward a different customer problem and, potentially, a different business model. This insight emerged from reinterpretation, highlighting ignored opportunities. As a result, the mentor reframed the venture's purpose and its potential scope of impact.

These mentoring interventions propose novel causal logics and redirect attention toward previously unconsidered opportunities (Hampel et al., 2020). Mentors introduced new premises, reframed the focal problem, or pointed to different mechanisms of value creation; effectively proposing alternative ToVs perceived (by the mentors) as more viable or promising. This guidance prompted entrepreneurs to consider a rival ToV that opened a broader opportunity space. Emerging from reinterpretation, mentors acted as creative collaborators; co-theorists who leverage their domain expertise to surface and propose underrecognized possibilities (Felin & Zenger, 2009). These interactions show how socially embedded testing can generate, not merely refine, entrepreneurial ToVs (Cohen & Koning, 2024), inviting founders to adopt alternative ToV and opening new paths for theorizing under uncertainty.

In sum, *support through theory refinement* played a crucial role in shaping entrepreneurs' ToV. Mentors helped entrepreneurs (1.a) uncover assumptions, (1.b) challenge assumptions,

(1.c) identify logical flaws, and (1.d) strengthen the coherence of their ToV. In some cases, mentors also expanded the opportunity space by (2.a) suggesting alternative ToV, inviting entrepreneurs to reconsider fundamental aspects of their ventures. Mentoring hence contributed to a collaborative social process of theorizing (Felin & Zenger, 2009, Leatherbee & Katila, 2020) in which entrepreneurs test and improve their ideas via social interaction. Mentoring acts as a low-cost testing methodology that supports this theorizing process which in turn guides entrepreneurs' actions and decision-making (Felin et al., 2024).

2.4.2 Support Through Theory Execution

In addition to supporting entrepreneurs through theory refinement, mentors also help entrepreneurs move from theorizing to action. These advice types encouraged action and provided operational advice to support the long-term success of the ventures. Entrepreneurs often face uncertainty about the viability of their ideas and how to execute them; this is particularly true for first-time and disadvantaged entrepreneurs (Assenova, 2020). In this context, mentors served as practical guides, helping entrepreneurs understand *what* should be done, and *how* to do it. We identified two types of advice that contributed to theory execution: (3) guiding action, and (4) institutionalizing the venture. Illustrative quotes of each category are provided in Table 2.

Guiding Action. Data analyses revealed three types of advice mentors used to support entrepreneurs' action: (3.a) encouraging testing and offering implementation advice (i.e., how to perform the testing), (3.b) providing concrete solutions, networks and tools to facilitate action, and (3.c) validating entrepreneurs' action.

Encouraging Testing and Offering Implementation Advice (3.a.). Mentors frequently encouraged entrepreneurs to move from theorizing toward action, urging them to validate

assumptions through direct engagement with customers, structured experimentation, and promoting data-driven decision-making. Testing was framed as a necessary input for refining the ToV and guiding strategic decision-making (Camuffo et al., 2020; Felin et al., 2024).

In one CDL session, a startup presented a product with broad potential applications but had not yet decided which market segments to target. A mentor suggested an organized discovery process to inform market selection:

One of the opportunities or challenges with them is there are so many addressable markets, and you're having a hard time getting to which one [enter] first So, [...] they have to do 30 interviews of potential end clients and pick one of those that really shows here's why we are well positioned to help this industry. [CDL - 26217]

The mentor reframed the problem of market selection as an empirical question to be resolved through planned and unbiased customer interviews. Advice-givers also cautioned against poorly designed interviews that aim to confirm entrepreneurs' preconceptions instead of challenging them (Camuffo et al., 2020; Karp, 2025). They emphasized disciplined testing; crafting conversations that elicit specific, honest feedback and generating an understanding of why a particular market should be prioritized. As a result, mentors reframed strategic decision-making as a deliberate, data-generating exercise in opportunity selection.

This advice combined strategic focus with methodological depth, offering concrete guidance on *how* to conduct testing. Mentors emphasized achieving product–market fit through conversation, instructing entrepreneurs to identify patterns across data and align insights with their venture's causal logic. This practice encouraged founders to treat entrepreneurship as a theory-testing endeavor; an iterative, evidence-based learning process (Camuffo et al., 2020). By guiding entrepreneurs to act in ways that generated actionable evidence that clarified key

uncertainties, mentors turned testing into a bridge between action and reflection. They helped founders learn *what* worked and *why* it worked, supporting theory execution and revision.

Offering Solutions, Networks and Tools (3.b.). In many sessions, entrepreneurs presented problems and difficulties they were facing, and asked mentors for help with near-term execution challenges such as allocating resources or recruiting users. In these instances, mentors responded with concrete solutions and immediately available tools or resources. These interventions helped operationalize ToVs, helping entrepreneurs overcome executional barriers.

In one university session, a founder facing budget constraints asked whether they should prioritize affordability or product quality when making early spending decisions. When answering, the mentor drew on a peer example:

Based on a good friend of mine who owns several restaurants... he's landed on the side of quality. [U - 21]

The advice offered a solution (a benchmark) to the entrepreneur's dilemma. This type of support often included justifications grounded in the mentor's experience or their broader exposure to related contexts typically explicitly acknowledging the internal coherence of the entrepreneur's ToV (Bacco et al., 2025).

Mentors also provided support by suggesting people that could help entrepreneurs execute their ideas more effectively (i.e., leveraging their networks). In another CDL session, a founder working in the African fintech sector described institutional challenges. A mentor suggested connecting with a peer founder who had successfully navigated the same environment:

You probably know [Name], the founder of [Company Name]. [Name] did exactly this from 2018 to 2022. He started with an early concept. He got a banking license. He has changed the board. I am sure you know [Founder Name] and [He] could be your mentor ideally because he has literally done it in your country. [CDL - 39304]

The mentor offered access to someone who had faced similar institutional barriers and succeeded. The solution came in the form of a person whose embedded knowledge could accelerate the founder's path to implementation.

In addition to relational support (e.g., connecting founders to potential collaborators), mentors also suggested concrete tools for immediate execution. In one CDL session, after one mentor asked founders to perform some customer discovery, another mentor intervened saying:

There's a great book called The Mom Test—study it. Get good at asking people questions so they give you bad news, not false praise.” [CDL, 35886]

Here, the mentor provided a concrete tool-kit (i.e., a book) to help the founders to overcome their immediate challenge and ensure unbiased customer discovery.

In these instances, advice-givers acted as execution enablers, as opposed to theorists. They offered situated knowledge, connected founders to relevant stakeholders, and provided tactical advice that made abstract challenges actionable. These practices translated ToVs into action, helping founders overcome bottlenecks and sustained momentum. By offering targeted solutions and tools mentors made strategy executable, reducing friction between thinking and doing, preventing ventures from stalling due to operational constraints.

Validation (3.c.). In several sessions, support for theory execution took the form of validation, where mentors affirmed the entrepreneur's direction, team composition, or progress. These interventions signaled that the entrepreneur's reasoning and actions aligned with mentors' expectations. As external signals of competence, validation reinforced confidence and encouraged continued action.

In one university session, for example, a mentor confirmed the founder's marketing strategy and reinforced and validated it with additional evidence:

I did a little bit of research. And it seems that drinking tea in the Asian community is a much bigger thing than it is in the general population. So, I think clearly targeting Asian Americans makes a ton of sense. And then I read that 98% of Asian Americans own a connected device, which is far higher than the general population. So digital marketing certainly would be the way to go. [U-venture 21]

The mentor confirmed the founder's market hypothesis and substantiated it with additional evidence, reinforcing the logic and viability of the entrepreneur's decisions. Other cases focused on founders' behavior, such as responsiveness and coachability (see Table 3).

Validation served multiple functions: helping entrepreneurs recognize when strategies were sound, providing motivation to continue, and fostering confidence. For early-stage founders, particularly those with limited experience or marginalized identities, such encouragement may be especially important, as positive signals from mentors can counterbalance other barriers (Assenova, 2020; Kanze et al., 2018).

In summary, the three practices that constitute the advice types focused on guiding entrepreneurs' action helped entrepreneurs translate their ToV into tangible steps by offering tactical direction, enabling entrepreneurs to sustain momentum in venture development.

Institutionalizing the Venture. In addition to helping entrepreneurs to refine their ToV and guiding their immediate action, mentors frequently offered advice on the broader endeavor of launching and operating a venture. This type of advice is focused on building general entrepreneurial knowledge concerning core managerial and operational elements. One type of advice was used to provide this support: Offering long-term operational advice.

Offering Long-Term Operational Advice (4.a.). While many mentoring interactions focused on helping entrepreneurs refine their ToV or take immediate action, mentors also offered foresight-oriented guidance that prepared founders for institutional and managerial challenges

not yet known by the entrepreneurs. This advice type discussed operational realities, concerning fundraising, legal risk, organizational structure, or capital strategy, that were likely to emerge as the ventures matured. When sharing this type of advice, mentors helped founders anticipate future challenges and pitfalls and build the operational infrastructure needed to support sustainable venture development.

In one CDL session, a mentor urged the founder to think carefully about future ownership and dilution while planning their fundraising strategy:

I am always a huge fan of companies staying small as long as they can, particularly when you are raising—you are going to give equity away too. The least you can give away, and I say this as an investor, the better. From my perspective, I think you should only raise what you absolutely need to and then make sure that you retain ownership of your company as much as you can. [CDL- 39155]

This mentor explained the logic about capital raising. The founder was encouraged to treat equity as a scarce resource, and to align their fundraising behavior with investors' expectations. Drawing on his investor logic, the advice guided the founder to manage growth through capital efficiency and control.

In these interactions, mentors offered advice anticipating potential downstream executional challenges (e.g., equity dilution or conflicts of interest) helping entrepreneurs proactively prepare for future contingencies. In doing so, mentors equipped founders with procedural knowledge to successfully scale their ventures.

Taken together, these findings show that *support through theory execution* helps entrepreneurs move from theorizing to acting, enabling them to act upon their ideas, helping them navigate uncertainty, avoid common operational pitfalls, and build the capabilities necessary for sustained venture development (Cohen et al., 2019). By encouraging (3.a) testing

and implementation, (3.b) offering solutions, networks and tools, (3.c) validating entrepreneurs' actions, and (4.a) providing long-term operational advice, mentors enabled entrepreneurs to translate emerging ToV into tangible experiments and actions.

Across the advice categories, a pattern emerged: different practices activated different types of learning. Some support helped entrepreneurs adjust actions within their existing ToV; others aimed at deeper reflection on the underlying ToVs; still others aimed to help founders anticipate challenges before they materialize. We explore these differences in the next section.

2.5 From Advice to Learning: How Mentoring Shapes Learning

To examine how different types of advice trigger entrepreneurial learning, we leverage another CDL dataset that records the goals that ventures and mentors agreed upon at the end of individual sessions, and their completion status two months later, at the beginning of the following CDL session. This enabled us to link advice to both (1) type of learning aimed to trigger and (2) whether it was achieved. Figure 3 shows the co-occurrence of types of advice, and Figure 4 reports the completion status across learning types.

Although theory refinement and double-loop learning share a conceptual family resemblance, as do theory execution and single-loop learning, the correspondence between advice categories and learning types was not assumed from the outset. The taxonomy was constructed inductively from advice content alone, and its alignment with established learning typologies emerged as a post hoc interpretive step of inference to the best explanation (IBE) (Harman, 1965; Lipton, 2004): having identified systematic patterns in advice content, we asked which established learning typology most coherently and parsimoniously (i.e., best explanation) accounted for those patterns.

[Insert Figure 4 About here]

[Insert Figure 5 About here]

2.5.1 Single-Loop Learning: Adjusting Actions Without Revising Beliefs.

Execution-oriented advice practices (*Guiding Action* and *Institutionalizing the Venture*) frequently aimed to activate single-loop learning, where entrepreneurs refine their actions without revising their ToV (Argyris & Schön, 1997). As Figure 3 shows, these types of advice practices accounted for most (85%) of all goals associated with single-loop learning, focusing on concrete, short-term tasks, such as tactical adjustments or resource acquisition, that advanced the implementation of the existing ToV. For example, one goal asked a team to “onboard 40 businesses to the platform” [CDL-26007]; another stated “initiate hiring process for a green chemist through networking and recruiters” [CDL-35561]. These examples illustrate how execution-oriented advice translates directly into tangible, actionable goals.

Mentors in these exchanges acted as execution enablers. Their guidance converted strategies into specific steps (i.e., how to test, whom to contact, what to build next) allowing entrepreneurs to “learn by doing”. This form of guidance emphasized procedural learning (learning about what to act on and how to act effectively). By creating feedback loops, mentors helped entrepreneurs close the gap between intention and action, building (implementing) their ventures.

Proposition 1: *Advice oriented toward theory execution (guiding action and institutionalizing the venture) primarily aim to trigger single-loop learning by enabling entrepreneurs to refine actions without revising core beliefs.*

This type of learning proved to be achievable. As Figure 5 shows, half of the goals associated with single-loop learning (52%) were completed and another 16% were partially

achieved. Because these goals emphasized concrete execution and immediate action, they were straightforward tasks that entrepreneurs could accomplish. Together, these patterns suggest that single-loop learning represents a successful mode of mentoring in ESO contexts: providing pragmatic, iterative, and easily actionable advice.

2.5.2 Double-Loop Learning: Revising Theories of Value.

Theory refinement advice practices (*Refining existing ToVs* and *Redefining opportunity spaces*) frequently aimed to trigger double-loop learning, encouraging entrepreneurs to revise the underlying assumptions and causal models of their ToV rather than merely adjusting actions (Argyris & Schön, 1997). As Figure 5 shows, these practices accounted for roughly 75% of all goals exclusively targeting double-loop learning. Through these exchanges, mentors pushed founders to revisit their assumptions about customers, markets, and value propositions, guiding them to question the reasoning behind their ToVs. For example, one goal instructed a venture to “document criteria that define the ideal customer” [CDL-34474], another stated “secure a second development project with the right chemical/consumer products manufacturer to further validate economic assumptions and priority end markets” [CDL-28237].

Mentors in these exchanges acted as co-theorists. Their guidance invited entrepreneurs to revise their beliefs, assumptions, components, and causal logic underpinning their ToV. In these situations, mentoring functioned as a socially embedded mechanism of co-theorizing: a conversational process in which entrepreneurs and mentors jointly surfaced, questioned, challenged, and reformulated entrepreneurs’ causal reasoning. This dialogue created a reflective space for entrepreneurs to refine what they do, and why they do it.

Proposition 2: Advice oriented toward theory refinement (*Refining the existing ToV and Redefining the opportunity space*) primarily aim to trigger double-loop learning by prompting entrepreneurs to revise underlying assumptions and beliefs.

Empirically, this type of learning also proved achievable. Approximately two-thirds of exclusive double-loop learning goals (62 %) were fully completed and another 17 % partially met. Because double-loop learning involves reexamining and reconstructing the causal architecture of entrepreneurs' ToVs, it demands deeper engagement; thus, when combined with other learning types, completion rates decline (see section below).

Together, these patterns indicate that double-loop learning constitutes a successful mode of mentoring in ESO contexts, one that transforms dialogue into a site of theorizing where entrepreneurs reconstruct not only their actions but the beliefs that guide them.

2.5.3 Anticipatory Learning: Preparing for Future Uncertainty.

Advice practices of *institutionalizing the venture* were also often linked to anticipatory learning, in which entrepreneurs prepare for future challenges by aligning current actions with long-term goals (Bingham & Kahl, 2014). As Figure 4 shows, this advice category accounted for 5% aiming to trigger exclusively anticipatory learning; and was typically triggered together with single-loop learning (34%). These goals encouraged ventures to anticipate future conditions (e.g., developing fundraising strategies, appointing advisers, or structuring equity) often pairing forward-looking preparation with immediate execution. For instance, one goal instructed the venture to “appoint strategic advisers with connections to key stakeholders in the employment background checking industry” [CDL-37803]; another emphasized “research [today] 10 potential future investors” [CDL-32544]. Such examples illustrate how mentors combined short-term action with long-term foresight, preparing entrepreneurs for challenges before they materialize.

In these exchanges, mentors provided foresight-oriented advice, urging entrepreneurs to reason beyond immediate decisions and anticipate future constraints. Their advice extended beyond refining or executing the ToV to building the institutional and relational foundations necessary for sustained growth. By encouraging entrepreneurs to anticipate future constraints, such as capital needs, governance structures, or regulatory shifts, mentoring functioned as a mechanism of proactive adaptation. Through these interactions, entrepreneurs learned to overcome emerging obstacles and to design ventures capable of withstanding future uncertainty.

Proposition 3: *Advice focused on long-term operational advice aims to trigger anticipatory learning, often doing so in tandem with single-loop learning, by preparing entrepreneurs for future scenarios and positioning themselves accordingly.*

Empirically, anticipatory learning proved the hardest goals to achieve. As Figure 5 shows, only 40% of exclusive anticipatory goals were completed, with an additional 40% partially achieved. Such goals typically demanded new relationships, resources, and objectives that exceed the program's horizon, explaining why progress was often partial. These patterns suggest that while mentors frequently encourage entrepreneurs to prepare for future challenges, ventures often translate such forward-looking guidance into initial action but struggle to fully complete these goals, as they typically require coordination with additional stakeholders and sustained engagement (typically beyond the program's time horizon).

Together, these patterns suggest that anticipatory learning represents the most demanding type of advice to complete within ESO contexts: forward-looking, strategic, and dependent on extended engagement with stakeholders. It reveals mentoring's role as a mechanism that helps entrepreneurs anticipate and prepare for potential future contingencies.

The analysis shows that advice practices systematically vary in the types of learning they are most likely designed to trigger. Execution-oriented advice aims at single-loop learning, theory refinement at double-loop learning, and institutional guidance at anticipatory. The evidence also reveals a gap between *intended* and *achieved* learning (see Figure 4).

However, these advice categories and learning processes rarely occur in isolation. Mentoring interactions often combine execution, reflection, and foresight. The following section explores these layered learning dynamics, examining how combinations of learning types shape what entrepreneurs can accomplish within ESO short-time cycles.

2.5.4 Layered Learning: Combining Execution, Reflection, and Foresight

Figure 3 (columns 4–7), also reveals that mentors frequently encouraged layered combinations of learning types, linking execution with either theory refinement or anticipation. In practice, mentors often weave together short-term action, reflective theorizing, and long-term preparation within the same mentoring conversation (and goals) (See Figure B2).

For example, goals that paired *Guiding Action* with *Existing ToV Refinement* often required ventures to run customer trials that both generated data (single-loop learning) to trigger reflection on underlying assumptions (double-loop learning). One such goal instructed the venture to “secure two to three customers on a trial project to provide feedback, from which [the venture] can build insights to help quantify the value of the service and savings generated” [CDL-26399]. Similarly, goals that combined *Institutionalizing the Venture* with *Guiding Action* blended immediate execution with longer-term foresight such as “prepare for the next fundraiser by finalizing the company pitch deck, building an investor target list, showcasing financials, engaging with 10 potential investors, and securing one term sheet” [CDL 33294].

These examples illustrate how mentors combined different types of advice encouraging ventures to learn across multiple temporal and cognitive horizons. Completion patterns changed based on this layering. Goals that combined single-loop learning with double-loop (58% completion) or anticipatory (6% completion) elements achieved relatively high success rates, suggesting that execution-oriented advice readily translates into observable progress even when paired with reflective or foresight-driven tasks. In contrast, when double-loop learning was paired with anticipatory learning completion dropped to 44%. Finally, when all three learning types were pursued together the completion rate was the lowest (38%). These declines highlight the compounded difficulty of integrating foresight with simultaneous reflection and execution.

2.6 General Discussion

Entrepreneurial ventures develop through the iterative processes of theorizing and testing (Camuffo et al., 2020; Zellweger & Zenger, 2023), yet we know surprisingly little about how entrepreneurs refine their ToV before committing to costly market experiments (Felin et al., 2024; Gans et al., 2019). Although recent research has emphasized the importance of scientific hypothesis testing in venture development (Camuffo et al., 2020), entrepreneurs often seek advice and guidance. While prior research establishes that advice shapes venture outcomes (Cohen et al., 2019; Miller et al., 2024), it has not systematically analyzed the content of advice or examined how variation in advice content corresponds to different forms of entrepreneurial learning. To address this limitation, we examined the transcripts of 190 advising sessions across two early-stage ESOs: 152 multi-mentor sessions involving 59 ventures at CDL and 38 individualized mentoring sessions at a university-based ESO, tracing what advice was delivered, and whether it translated into achieved learning outcomes. We found that mentoring functions as

a distinct testing methodology (what we call social testing) that enables entrepreneurs to expose their ToVs to critique and refinement before formal market experiments. This process of collective theorizing via thought testing (Felin & Zenger, 2009) shapes both entrepreneurs' theories about value creation and how they act on those beliefs.

2.6.1 Theoretical Contributions

Using an inductive approach, this study develops a grounded theoretical explanation of how advice supports entrepreneurial learning. We make three theoretical contributions. First, we reconceptualize advice interactions as social testing, a testing methodology that complements scientific hypothesis testing. Second, we show how the development of ToVs is socially scaffolded through advice-based interactions that support both theorizing and action. Third, we link variation in advice content to distinct learning outcomes, identifying what type of learning different types of advice are associated with.

First, the TBV of entrepreneurship conceptualizes entrepreneurs as theorists who develop theories about how value will be created and captured (Felin & Zenger, 2009, 2017). These theories of value guide entrepreneurial perception and action under uncertainty (Felin et al., 2024; Zellweger & Zenger, 2023). Building on this foundation, recent research has advanced a scientific model of entrepreneurial testing, emphasizing systematic hypothesis formulation and experimental validation (Camuffo et al., 2020). However, such approaches presume entrepreneurs already possess coherent and testable ToVs. In the earliest stages of venture formation, entrepreneurs' ToVs are often descriptive, fragmented, or built on unexamined assumptions (Gans et al., 2019).

Extending the TBV and scientific approach to entrepreneurship, we theorize that entrepreneurs engage in *social testing* before scientific testing becomes feasible. In this process, mentors serve as epistemic counterparts who help entrepreneurs expose their emerging ToVs to critique, validation, and refinement through conversation. We reconceptualize mentoring as an alternative testing methodology that operates *complementing* scientific hypothesis testing. Social testing functions as a collective thought-testing mechanism (Felin & Zenger, 2009; Miller et al., 2024) through which entrepreneurs assess the internal coherence and external plausibility of their ToVs prior to committing to costly market experiments. By identifying this socially embedded mechanism, we extend the TBV's cognitive focus to show that theorizing about value creation is not only an individual process of reasoning but also a socially scaffolded form of collective inquiry. This reconceptualization positions advice interactions as a distinct and complementary testing methodology that shapes how entrepreneurs theorize about value creation and capture.

Second, this study extends entrepreneurial learning by incorporating a social-epistemic lens. While epistemic theory has long recognized knowledge as socially distributed (Kuhn, 1962), entrepreneurship research has rarely applied this lens (with the exception of Felin & Zenger, 2009). Extending this work, we show that entrepreneurial learning is also socially embedded through interaction with mentors. Our analysis reveals mentors support entrepreneurs through two types of advice: theory refinement and theory execution advice. With *theory refinement advice*, mentors interrogate entrepreneurs' underlying assumptions and causal logic. By prompting founders to articulate and defend their reasoning, mentors elicit fundamental reassessments of value-creation mechanisms, defining why, how, and under what conditions their ToV is likely to hold. This practice makes implicit assumptions explicit, probes internal

coherence of entrepreneurs' ToV (Felin & Zenger, 2009), and identifies gaps in their reasoning about value creation and capture. On the other hand, *theory execution advice*, translates ToVs into concrete action without revisiting core assumptions. When mentors specify customer interview protocols or pilot testing into implementable steps, they help entrepreneurs with the *how* of executing and validating their ToV without challenging the *what* or *why* of the underlying ToV. This taxonomy demonstrates that mentoring is not merely knowledge transfer, but a socially embedded learning process through which entrepreneurs both *reconstruct* and *enact* their ToV.

Finally, this study integrates the entrepreneurial learning and mentoring literatures by identifying how distinct types of mentoring advice activate different forms of learning (Argyris & Schön, 1997; Bingham & Kahl, 2014). Prior research on advice and mentoring has shown that guidance from experienced mentors can improve venture performance (Chatterji et al., 2019; McDonald & Gao, 2019), yet this work typically focuses on whether entrepreneurs receive advice rather than on what kind of advice they receive and how it shapes learning (e.g., Cohen et al., 2019; Hallen & Eisenhardt, 2012). In parallel, organizational learning research has articulated distinct learning types (single-loop, double-loop, and anticipatory learning) but has rarely identified the social mechanisms that trigger these modes in entrepreneurial contexts. We bridge and extend both literatures by showing that mentoring functions as a social mechanism that translates conversational exchanges into learning outcomes. Specifically, theory refinement advice activates double-loop learning by prompting entrepreneurs to revise their underlying ToV, while theory execution advice activates single-loop learning by improving implementation without questioning core assumptions. This mapping demonstrates that mentoring effectiveness

depends not merely on access to advisors but on the epistemic content of advice interactions. By specifying how advice type shapes learning outcomes, our theorization extends organizational learning theory to the domain of early-stage entrepreneurship and refines the mentoring literature by unpacking the mechanisms through which advice catalyzes learning.

2.6.2 Limitations and Future Research Directions

While this study provides novel insights, several limitations invite further inquiry. First, the analysis draws on structured ESO programs with early-stage ventures, contexts where ToVs are still being formed and mentoring (and advice-giving) is particularly salient. Mentoring dynamics may evolve as ventures mature, and different advice-giving practices may emerge in informal or long-term relationships (Kram, 1983). Future research could extend these insights to later venture stages or to less structured settings to assess how advice practices vary across contexts and over time.

Second, this study adopts a mentor-centric lens, analyzing transcripts of advice but not entrepreneurs' interpretations. As a result, it cannot fully capture the bi-directional nature of advice, nor how it is processed, resisted, or internalized (Grodal et al., 2015; Miller et al., 2024). Future research would benefit from longitudinal and multi-perspective designs, such as pre/post ToV mapping, follow-up interviews, or repeated observations, that trace how advice is enacted in entrepreneurs' ongoing theorizing and decisions.

Third, the study cannot fully disentangle whether observed differences in advice stem from mentor style, venture stage, or the mentor matching process. While the taxonomy documents what types of advice occur, it remains unclear why certain forms arise in particular circumstances. Comparative or experimental designs that track mentors across ventures, or

ventures across mentors, may help isolate how mentor dispositions, venture needs, and program designs interact (Eesley & Wang, 2017; Miller et al., 2024; Sariri, 2025).

Finally, the completion patterns observed in this study (see Figure 5), particularly the declining rates associated with double-loop, anticipatory learning goals and their combinations, raise questions about the cognitive mechanisms through which entrepreneurs comprehend, evaluate and act on different types of advice. One possible explanation, developed theoretically in Chapter 1 of this dissertation, is that variation in completion rates may reflect variation in the entrepreneurs' cognitive demands. Double-loop learning may be harder to achieve as it requires deeper reflection, and places greater demands on comprehension and evaluation: entrepreneurs must decode advice that challenges their existing mental models, assess its coherence and contextual fit under uncertainty, and commit to revising beliefs that may be anchored or part of the entrepreneurs identity (Grimes, 2018; Simon, 1955; Toivonen et al., 2023). Anticipatory learning may add another cognitive difficulty, as entrepreneurs must evaluate advice whose relevance cannot yet be confirmed by current conditions, making contextual fit particularly difficult to assess. When advice interactions combine multiple learning types simultaneously, these cognitive demands compound, potentially overwhelming the entrepreneur's capacity for deliberate comprehension and evaluation (Simon, 1955) and increasing the likelihood that some learning goals are only partially understood and acted upon. Future research employing interview-based or ethnographic designs could explore these cognitive mechanisms more directly, examining how entrepreneurs process different types of advice and why certain learning goals prove harder to translate into completed action.

These limitations highlight promising directions for future research that could connect micro-level mentoring practices to longer-term venture trajectories, clarifying the conditions under which specific types of advice emerge and shape venture performance.

2.7. Conclusion

This study positions advice-giving interactions as an informal testing methodology through which entrepreneurs refine their ToVs. Building on the metaphor of entrepreneurial opportunities as “mountains” to be scaled, mentoring (and advice-giving) can be seen as both a map and a climbing tool, helping entrepreneurs identify which paths to pursue and supporting their ascent. By combining theory refinement with practical execution, advice-giving reinforces an iterative, cyclical theory–action approach to entrepreneurship.

Table 1: Overview of Research Settings and Dataset Scope

Dimension	University ESO	Global ESO	Total
Advising Format	One-on-one sessions	Multi-mentor panel sessions	-
Session Structure	Self-scheduled	Structured cohort rounds	-
Average Session Time	~30 minutes	~10 minute per venture	-
Typical Venture Stage	Ideation, pre-MVP	Ideation, MVP or post-MVP, preparing to scale	-
Advice-givers	Entrepreneurs, generalists, university professors	Former entrepreneurs, angel investors, VCs, industry experts	-
Number of Mentors	11	142	153
Number of Ventures	33	59	92
Number of Sessions	38	152	190
Transcript pages	532	858*	1390
Transcript words	224,308	357,566	481,874
Approx. Hours	20	40	60

*The original dataset was provided in excel, already anonymized (for ventures, entrepreneurs and mentors' names), each interaction in a row and order. To estimate the volume of textual data, we computed the total word count across all cells (where the interaction content was stored) and approximated the number of Word-equivalent pages based on a standard double-spaced document format (12-point Times New Roman, 1-inch margins), which typically contains 250–300 words per page. To be conservative, we used the upper bound of 300 words per page.

Table 2: Goals Data Coding Examples: Advice Practices and Learning Type

Goal	Advice Coding	Advice Explanation	Learning Coding	Learning Explanation
Apply for sustainable biomaterials government grant funding with an end customer industry collaborator	Long-term Operational Advice (4.a)	Pursuing government grant funding with an industry collaborator reflects guidance on institutional and resource-acquisition that support the venture's long-term viability.	Anticipatory Learning	The goal prepares the venture for future conditions by building collaborative funding capacity in advance of immediate needs, foresight-based adaptation.
Initiate hiring process for a green chemist and process engineer through networking and recruiters. Subcontract go-to-market strategist for additional expertise.	Solutions, Network and Tools (3.b)	This goal emphasizes using recruiters, networking, and subcontracting as concrete tools and resources to advance the hiring and expertise needs of the venture.	Single-Loop Learning	The goal directs the venture to execute specific staffing and subcontracting actions, representing tactical adjustments within the existing ToV.
	Long-term Operational Advice (4.a)	By building technical capacity, the goal addresses organizational processes that aim to help in the long-term development of the venture.		
Secure two to three customers on a trial project to provide feedback, from which {VENTURE} can build insights to help quantify the value of the service and savings that were generated	Depth and coherence (1.d)	The goal encouraged the venture to use customer feedback to articulate more clearly the value proposition, strengthening the internal coherence of the ToV.	Single-Loop Learning	By encouraging running trials and gathering feedback, the venture adjusts and improves executional practices within the current ToV.
	Test and implementation (3.a)	The goal encourages testing the idea through customer engagement and feedback, to test if value is generated and if so, to what extent	Double-loop Learning	Quantifying value and savings may prompt the venture to reconsider (or validate) its value proposition, thereby deepening the understanding of the causal logic of the ToV

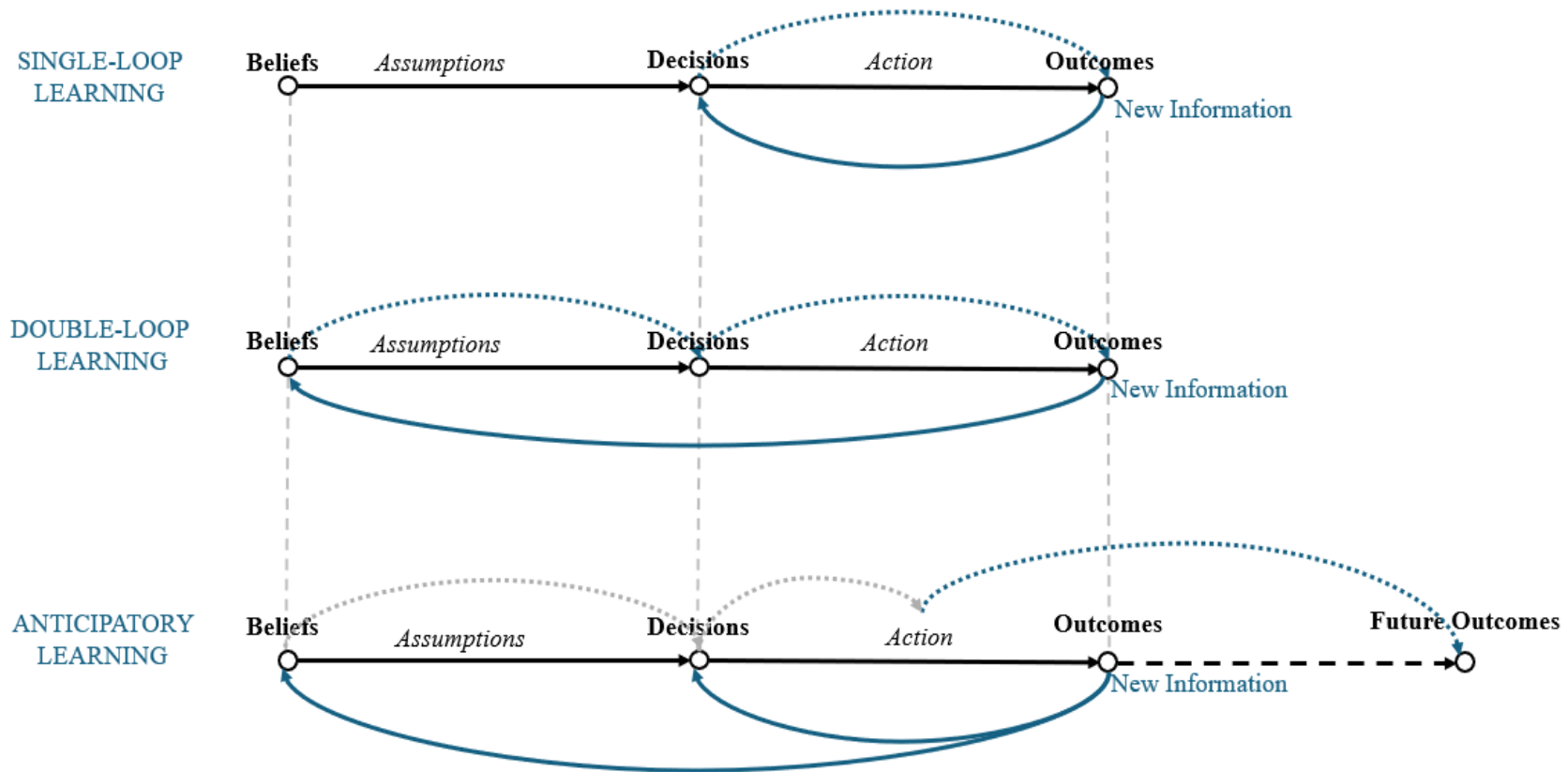
Table 3.A: Advice Patterns: Example Quotes Across Two Contexts - ToV Refinement

Advice Practice	Data Examples
Uncovering assumptions (1.a)	- “Why do you want to enter the UK market? ... The reality of the markets is so different and the benefit of operating in the South African market is completely different from the benefit for the target you are trying to reach I’m not sure that’s the best objective.” [CDL, 40098] - “You’re selling on the dream [...] but you’ve got to be careful—some grocers won’t work with you because of union issues. That could be the boulder you don’t see.” [CDL, 36028] - “My concern is that they are entering a space where the barriers to competition are low. [Incumbents] could turn around and write a check and spend way more than these guys have raised and deployed.” [CDL- 26616]
Challenging assumptions (1.b)	- “You’re taking the one-stop shop idea too seriously. Walmart and Amazon didn’t start that way.” [CDL, 40093] - “If it’s this easy to sign customers, does that suggest the pricing is right?” [CDL, 39680] - “I found it very valuable to build the [personal] relationship [with suppliers] because maintaining the supply chain is absolutely critical.” [University, 22]
Identifying logical flaws (1.c)	- “Your staff are the same team for both nonprofit and for-profit work. That’s a problem.” [University, 16] - “This modem business is taking off, but the risk is that it distracts from the core. If you can find someone to run the modem business and keep it outside the main structure, that might de-risk the two things competing for time and resources.” [CDL, 27016] - “I think they have a great catalyst right now but, once the landlord has done that, is that a once-in-a-lifetime deal and bye-bye and how do we retain those customers.” [CDL - 38545]
Depth and coherence (1.d)	- “Right now, you’re pursuing a lot—BMW, Siemens, insurance brokers... this focus issue you need to think very carefully about. You need to think really carefully about where the real leverage points are.” [CDL, 40093] - “What sets you apart. What’s your differentiator? What’s your value prop? What are your numbers? What’s the cost? What are we charging? How are we making money? [...]Built the story” [University, 9] - What’s our customer? [You have to get] to know a little bit more about the market opportunity. Who else is in this industry? How are you unique? Do you have any of that information? [University, 12]
Alternative ToV (2.a)	- “There are also other potential customers. [...]Don’t just consider users as paying customers—who else benefits? If the university sponsors it, it’s free to users—and you’ll get more of them” [University 7] - “These guys have actually built is effectively open banking in Nigeria [...]actually, there is a massive opportunity for payments inside Africa between those banks. The conversation evolved from there.” [CDL - 39155]

Table 3.B: Advice Patterns: Example Quotes Across Two Contexts - ToV Execution

Advice Practice	Data Examples
Test and Implementation (3.a)	- “And that [product-market fit] is your most important job as a founder [...] And the way to do that is talking to people with as many demographics as possible.” [U - 20] - “There’s a feedback loop between customers and the model that has to be closed before scaling. Identify the primary customer group, test there, then expand.” [CDL, 26399] - “Continue to do this customer discovery. Continue to sell this idea, pitch this idea to banks and doctors and everyone else you can think of. Until that data set is so rich that you are convinced this is needed.” [University, 16]
Offering solutions, network and tools (3.b)	- “There's a great book called <i>The Mom Test</i>—study it. Get good at asking people questions so they give you bad news, not false praise.” [CDL, 35886] - “You want to get testimonials and case studies... There is the minimum. The key message is: ‘I couldn’t have done this without you.’ [University, 35] - “I have a portfolio company that just exited the HMRC [UK’s tax authority] sandbox and maybe that is a route in. I do not know who runs the HMRC sandbox, but the portfolio company would.” [CDL - 37803]
Validation (3.c)	- “This is a tool that, frankly, is desperately needed in this industry. I am amazed it does not already exist but anyway we have it in front of us, so fantastic!” [CDL, 31951] - “You're on to something. And so, there are a lot of ways that you can capitalize on it. Don't give up.” [University, 33] - “I really like this team and their results. I find them very energetic, they are visionary, they have got some great revenue and traction. So, more of the same. [CDL- 39304]
Long-term Operational Advice (4.a)	- “Be cautious contracting with advisers too soon—track record matters. With only nine months of runway, you’ll need to show fundraising progress well before summer.” [CDL, 38545] - “I would also like not raise a pre-seed. That's not a good idea right now, especially for healthcare companies. Build this on the side, validate it on the side. Use your resources if you are working at a company that is similar and go straight to seed.” [University, 8] - “They are both still employed. [...] That’s a potential conflict if they're creating these tools while still working at their current employer. [...] I believe that defining an exit strategy in a way they see as a win kicks you off in a very good way. We wouldn't want any perceived conflict of interest.” [CDL- 35886]

Figure 1: Learning Types: Double-Loop, Single-Loop, and Anticipatory Learning



Note: According to Argyris, 1992, 2003; Argyris & Schön, 1978; Bingham & Kahl, 2014.

Figure 2: Data Structure Illustrating Advice Types in Entrepreneurial Settings

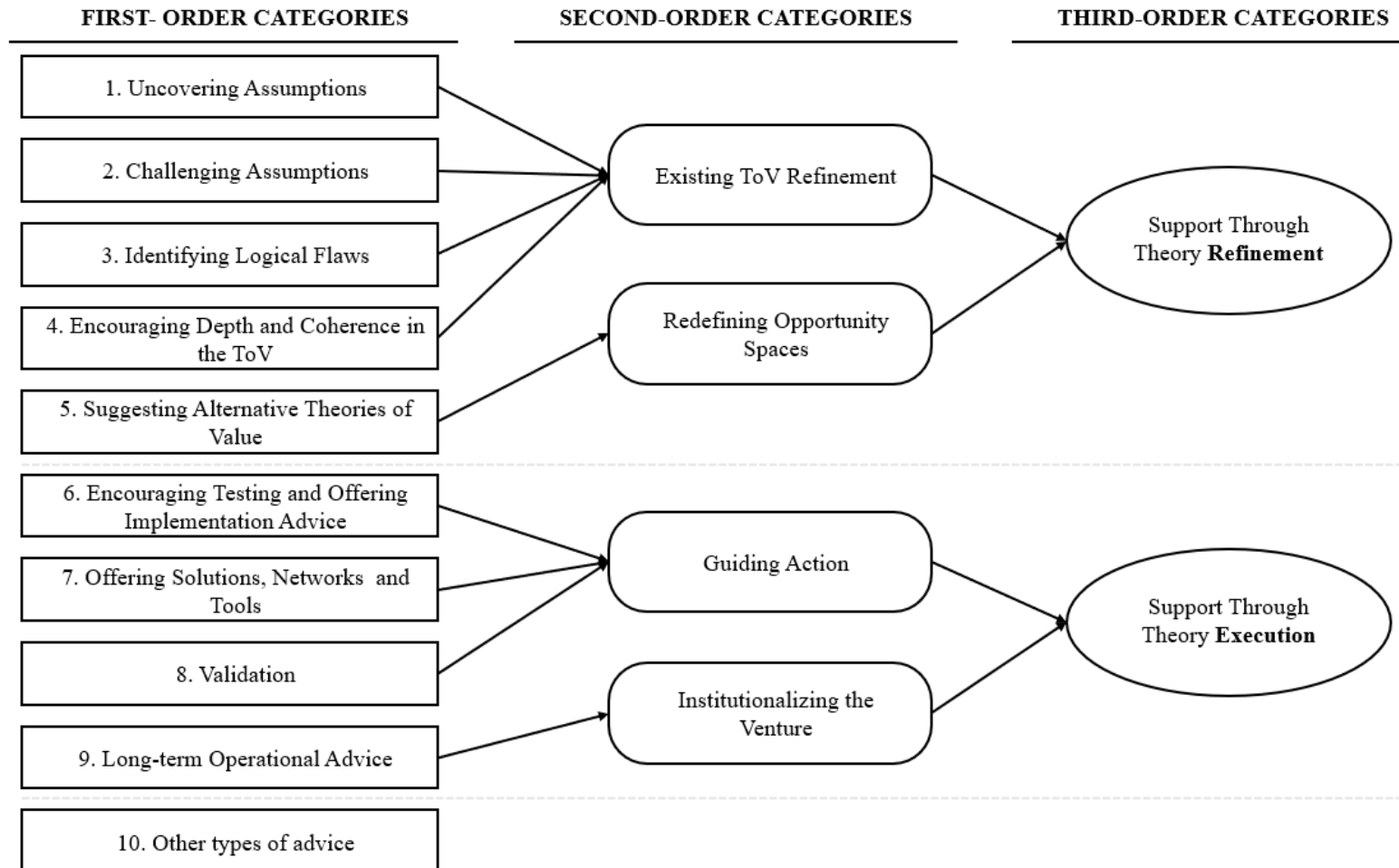
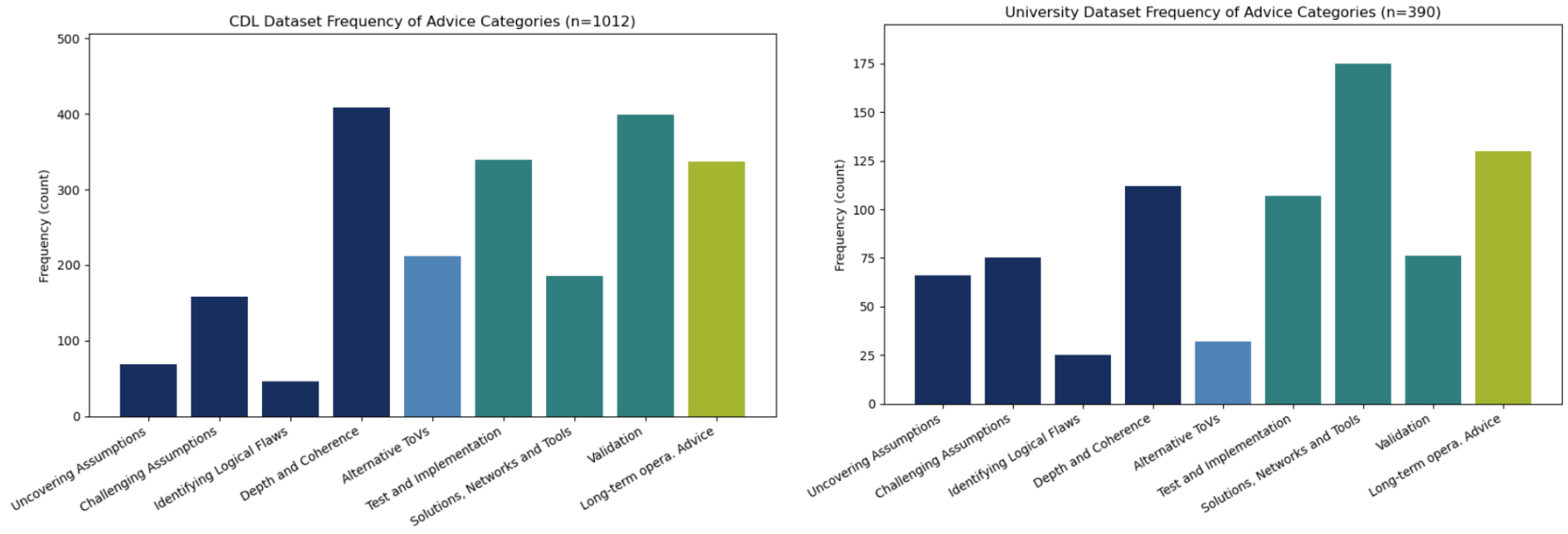
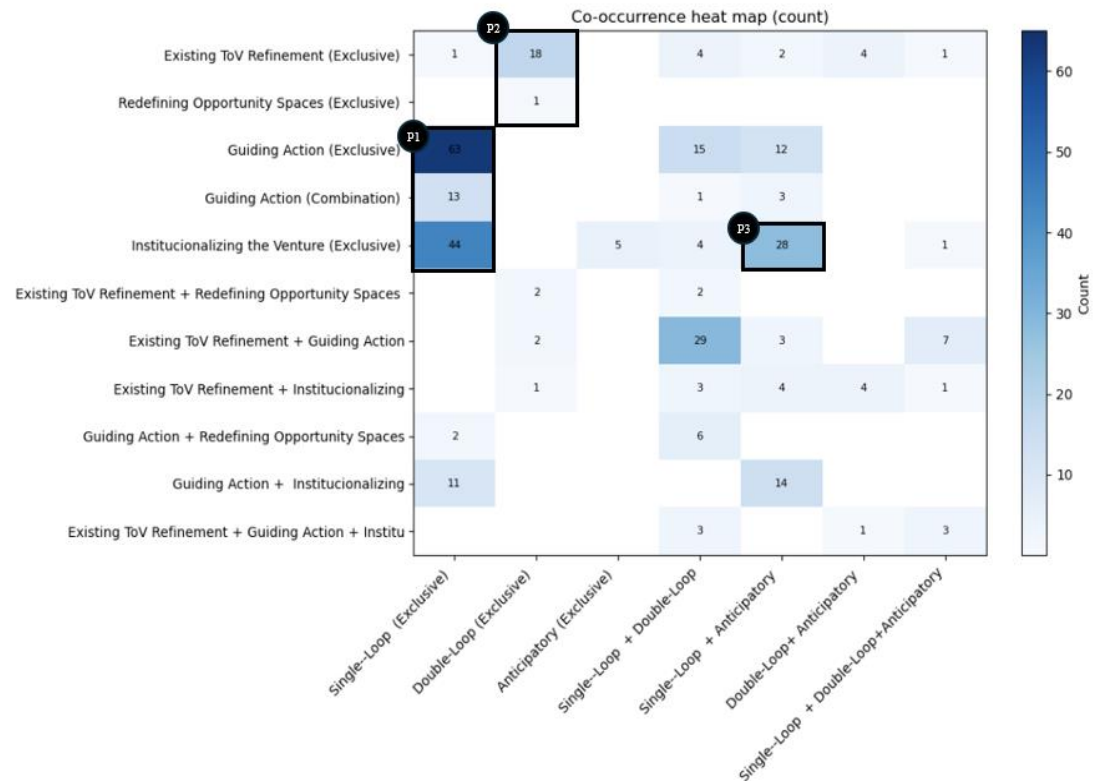


Figure 3: Frequency of Advice per Categories Across Two settings



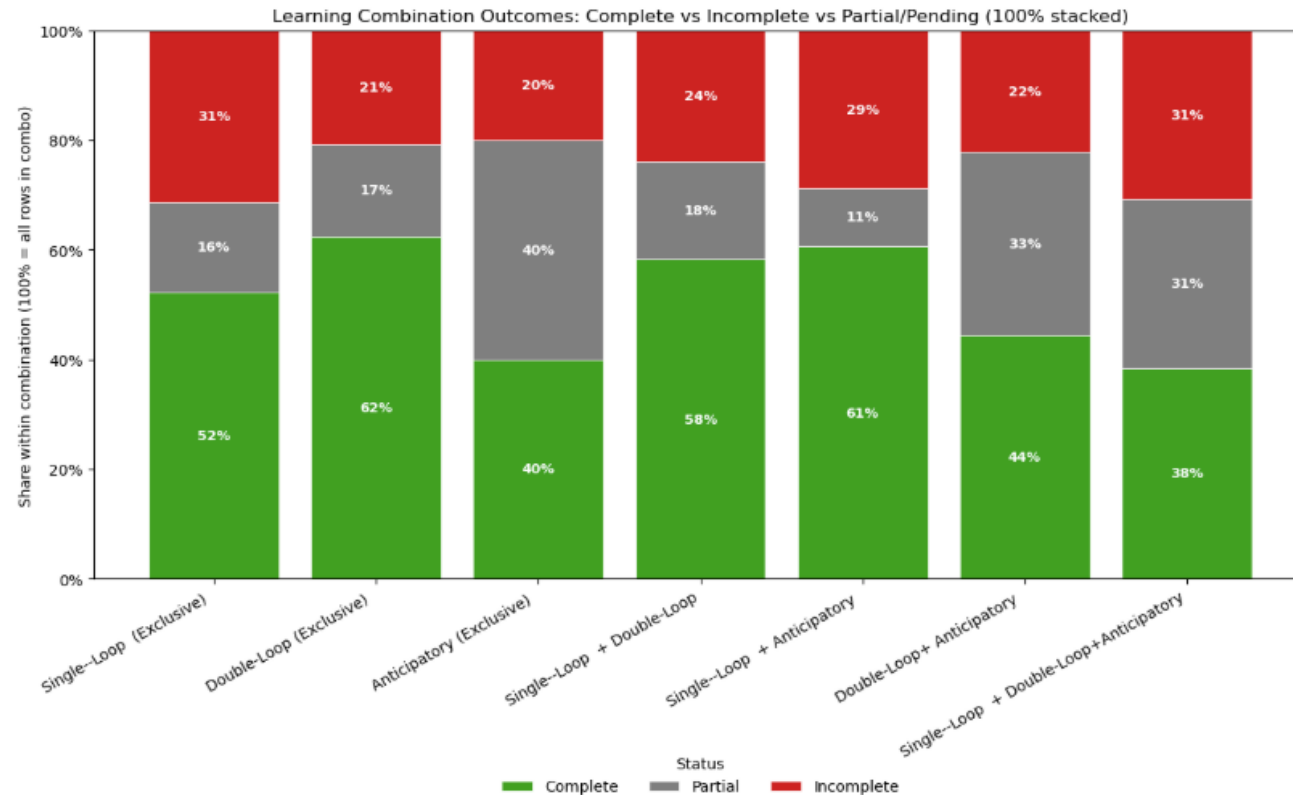
Note: Figure 3 displays the frequency of each advice category across the two-research setting. The unit of aggregation is individual advice. Because each advice could be coded into more than one advice category when it addressed multiple dimensions simultaneously, the sum of frequencies across categories exceeds the total number of unique advice. Co-occurrence patterns across advice categories are reported in Appendix B Figure B.2.

Figure 4: Co-Occurrence Heatmap: Advice Categories and Associated Learning



Note. Figure 3 displays the co-occurrence of types of advice (rows) and learning mechanisms (columns), within CDL Goals Database. The heatmap is constructed at the goal level: each of the 318 goals was independently coded along two dimensions, advice type and intended learning type, and co-occurrences were then tallied across all goals. Dark shading indicates more frequent combinations. The heatmap highlights that action-oriented practices such as Guiding Action and Institutionalizing the Venture are most often associated with single-loop or mixed learning types, while refinement practices (e.g., Existing ToV Refinement) appear less frequently and are more likely to co-occur with double-loop or combined learning outcomes.

Figure 5: Completion Status by Intended Learning Type



Note. Figure 4 shows the completion status of goals across different intended learning types, distinguishing between completed (green), incomplete (red), and partial/pending (gray). Goals aiming at triggering exclusive single-loop or double-loop learning achieved moderate completion rates (52% and 62%, respectively), while goals aiming at triggering anticipatory learning were less often completed (40%) and more frequently left partial (40%). Combinations of learning types generally showed higher levels of incompleteness, underscoring the greater difficulty ventures face when goals require both execution and deeper reflection or foresight simultaneously.

CHAPTER 3: EVALUATING ENTREPRENEURIAL THEORIES OF VALUE: LOVELINESS, LIKELINESS, AND RESOURCE ALLOCATION

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Abstract

Evaluating entrepreneurial theories of value (ToVs) is challenging because these theories concern unrealized futures, yet stakeholder evaluation of these ToVs determines which ideas receive resources. Building on the Theory-Based View and philosophy of science, I introduce the *lovely-likely matrix*, which conceptualizes ToV evaluation along two epistemic dimensions: *loveliness* (economic potential and disruptiveness, conceptual elegance, and generativity) and *likeliness* (empirical plausibility and feasibility). I theorize ToV evaluation as a socially mediated process, showing how entrepreneurs leverage narratives to influence stakeholders' assessments of the ToV across the lovely-likely matrix, and shape resource allocation decisions. Because loveliness and likeliness rely on distinct forms of evidence and judgment, evaluation is prone to systematic error; the chapter identifies the key sources of such errors. The framework advances theory on how stakeholders evaluate entrepreneurial ToV by clarifying the criteria they use to judge uncertain opportunities and identifying the sources of evaluation errors that give rise to systematic patterns of resource misallocation.

3.1 Introduction

Entrepreneurial ventures pursuing seemingly implausible ideas sometimes attract investors while other ventures struggle to secure funding. Theranos raised over \$700 million for blood-testing technology that experts deemed scientifically dubious (Carreyrou, 2018), while countless ventures with validated customer demand and proven business models fail to mobilize resources. Stitch Fix, despite early profitability and strong customer traction, faced persistent difficulty raising venture capital, with investors repeatedly declining to fund a business with demonstrated demand (Bercovici, 2017). These puzzling patterns reveal a fundamental gap in our understanding of entrepreneurship: *How do stakeholders evaluate entrepreneurial theories of value? And how do these evaluations sometimes give rise to errors in resource allocation?*

Existing entrepreneurship research has not explained this heterogeneity in evaluation dynamics. The Theory-Based View (TBV) has advanced our understanding of how entrepreneurs form and test theories of value (ToVs) through experimentation and iteration (Camuffo et al., 2020; Felin et al., 2024; Felin & Zenger, 2009, 2017), but it has paid less attention to how ToVs are evaluated and endorsed by external stakeholders whose resource commitments determine which ToVs move from imagination to implementation. The lean startup and scientific approaches to entrepreneurship emphasize evidence accumulation through systematic testing (Blank, 2013; Camuffo et al., 2020; Ries, 2011), yet they cannot explain why ventures with little empirical support sometimes attract massive investment while those with validated traction fail to do so. The field lacks a theory explaining how stakeholders evaluate these ToV, when and why stakeholders overweight disruptiveness (or imaginative economic potential) despite empirical uncertainty, how evaluation errors occur systematically across different stakeholder groups, or how entrepreneurs strategically leverage their ToV narratives to influence these

evaluations. This matters because stakeholder evaluation of these uncertain ToVs determines which ventures receive the resources necessary to pursue their theories, pivot, and ultimately reshape markets.

Drawing on philosophy of science (PoS) insights about how theories are judged on epistemic virtues, I argue that entrepreneurial ToVs are similarly assessed along two conceptually distinct but empirically correlated epistemic dimensions (Laudan, 2004; Lipton, 2004; Pillai et al., 2023): *loveliness*, capturing a ToV's economic potential, disruptiveness and transformative scope, and *likeliness*, reflecting its empirical plausibility and operational feasibility given current technologies, institutions, and market conditions. Stakeholders evaluate and position a ToV within this two-dimensional space (what I call *lovely-likely matrix*) based on their beliefs, logics and interpretations, and these evaluations shape whether they commit financial, human, and reputational resources to the venture (Lounsbury & Glynn, 2001; Martens et al., 2007).

Stakeholder evaluation of entrepreneurial ToV is not a purely technical or evidence-based process; it is socially mediated. Entrepreneurs articulate their ToV through narratives that translate abstract causal conjectures about value creation and capture into accounts that stakeholders can interpret and assess. In doing so, narratives shape how stakeholders perceive the loveliness and likeliness of a ToV and, in turn, how they allocate resources under uncertainty (Garud et al., 2014; Turner, 2025).

This chapter advances research on entrepreneurship in three ways. First, it reframes entrepreneurship as a process of social selection in which stakeholders' assessments of *theories* of value condition resource commitment by external stakeholders and experimentation for the entrepreneur. While the TBV emphasizes how entrepreneurs form and test ToVs (Camuffo et al.,

2020; Felin & Zenger, 2009, 2017; Felin et al., 2024), this study argues that stakeholder evaluation determines which ToVs receive resources necessary for testing at scale. This explains why some ToVs are never validated despite internal plausibility, while others persist despite weak empirical support, shifting attention to the social allocation of resources and legitimacy, (Lounsbury & Glynn, 2001; Martens et al., 2007).

Second, I introduce *loveliness* and *likeliness* as epistemic dimensions for evaluating entrepreneurial ToVs. Drawing on philosophy of science and epistemic virtues (Laudan, 2004; Lipton, 2004, 2017; Pillai et al., 2023), the framework specifies what stakeholders evaluate when judging entrepreneurial ToVs. *Loveliness* captures imaginative scope, generativity, and economic potential, whereas *likeliness* reflects empirical plausibility, feasibility, and alignment with the adjacent possible (Goldfarb & Kirsch, 2025; Kauffman, 1995, 2000). Unlike prior work treating these as trade-offs along a single continuum (Nanda & Rhodes-Kropf, 2013; Navis & Glynn, 2011), I theorize them as conceptually distinct but empirically correlated dimensions with distinct forms of evidence (Pillai et al., 2023), explaining why feasibility evidence fails to resolve uncertainty about long-term value and why compelling visions endure despite weak empirical support.

Third, I identify the sources of evaluation errors. Building on research on entrepreneurial judgment (Alvarez & Barney, 2007), narratives (Garud et al., 2014), and stakeholder heterogeneity (Fisher et al., 2017), I show that evaluation errors arise from information asymmetry, temporal uncertainty, epistemic uncertainty, heterogeneous evaluation criteria, the difficulty of reconciling both dimensions in decision-making, and stakeholders' misjudgments about the relationship between loveliness and likeliness. By linking evaluation errors to resource

allocation decision-making, I explain misallocation and path dependence in innovation and market formation (Gompers et al., 2008; Nanda & Rhodes-Kropf, 2017).

3.2 Theoretical Background

3.2.1 The Theory-Based View and Entrepreneurial Theorizing

The Theory-Based View (TBV) of entrepreneurship conceptualizes entrepreneurs as theorists who develop and test theories of value (ToVs); coherent sets of beliefs and causal conjectures about how value can be created and captured (Felin & Zenger, 2009, 2017; Felin et al., 2024; Wuebker et al., 2023). These ToVs are driven by entrepreneurs' beliefs and assumptions about how particular configurations of resources, technologies, and markets might enable them to create and capture value (Coali et al., 2024; Felin & Zenger, 2009).

Research within the TBV has clarified how entrepreneurs form and test ToVs (Felin & Zenger, 2017; Ott & Hannah, 2024; Rindova & Martins, 2024). This work shows that ventures progress through cycles of theorizing, experimentation, and adjustment as iterative feedback can trigger pivots when hypotheses are disconfirmed (Agrawal et al., 2024; Valentine et al., 2024). In other words, like scientific theories, ToVs are provisional: they are tested and revised, or discarded in light of new evidence (Valentine et al., 2024).

While TBV explains how entrepreneurs form and test ToVs, this work has focused primarily on entrepreneur-centered processes of theorizing and validation: how they develop theories, design experiments, and interpret feedback (Camuffo et al., 2020; Felin & Zenger, 2017; Felin et al., 2024; Gans et al., 2019). However, entrepreneurship does not occur in isolation. Entrepreneurs can conduct initial small-scale tests with limited resources, but implementing ToV at scale requires external resources that entrepreneurs rarely possess alone (Fisher et al., 2017; Freeman & Phillips, 2002; Lounsbury & Glynn, 2001; Martens et al., 2007).

Accessing these resources depends on external stakeholders' willingness to commit financial, human, and reputational capital based on their evaluations of a ToV's merit. Yet the TBV has not systematically theorized *what* stakeholders evaluate when analyzing ToVs under uncertainty, *what criteria* guide these evaluations, or *why* some ToV attract endorsement and resources while others (even those with promising initial evidence) fail to gain support. This matters because stakeholder evaluation operates as a selection mechanism that determines which ToV receive the resources necessary for large-scale testing and implementation (Martens et al., 2007). The proposed framework addresses this by specifying the epistemic dimensions along which stakeholders evaluate entrepreneurial ToVs, theorizing how entrepreneurs may influence these evaluations through narrative, and identifying the primary sources of evaluation errors. It complements TBV's focus on entrepreneurial theorizing by examining the social processes of ToV evaluation and endorsement.

Two clarifications about the nature of evaluation in this framework deserve explicit attention, particularly in relation to prior work on entrepreneurial cognition and advice utilization (including Chapter 1). First, the *lovely-likely matrix* is not exclusively a tool for external stakeholder evaluation; entrepreneurs themselves also position their own ToVs within this space. However, because different evaluators bring distinct beliefs, logics, criteria, and time horizons to the assessment process, the same ToV will typically be positioned differently across evaluators (Fisher et al., 2017; Pillai et al., 2023). Entrepreneurs, who possess insider knowledge and have committed to their venture, will often assess their ToV more favorably on either or both dimensions than external stakeholders, primarily reflecting differences in beliefs, logics, and evaluation criteria (Lounsbury & Glynn, 2001; Shane & Cable, 2002) as well as overconfidence (Sorenson, 2024). Much of the narrative work entrepreneurs engage in is precisely aimed at

closing this gap, persuading external stakeholders to reposition the ToV toward a more favorable location within the matrix (Martens et al., 2007). Second, what is being evaluated in this framework differs fundamentally from the evaluation of advice theorized in Chapter 1, which focused on advice evaluation (Villamor Martin, 2025). Advice is information grounded in existing knowledge and experience, shared by an external party to inform a specific decision (Miller et al., 2024). A ToV, by contrast, is a forward-looking causal theory about an unrealized future; it concerns value that does not yet exist and may never exist if the venture fails (Felin & Zenger, 2009; Garud et al., 2014). Evaluating a ToV therefore requires imagination, inference, and judgment about conditions that have not yet materialized, making it qualitatively more speculative and uncertainty-laden than evaluating incoming advice (Garud et al., 2014; Knight, 1921; Rindova & Martins, 2024).

3.2.2 Stakeholder Evaluation Under Uncertainty

Evaluating entrepreneurial ToVs is fundamentally challenging because these theories concern desirable but unrealized futures (Garud et al., 2014). Entrepreneurs and stakeholders judge whether a ToV is worth pursuing before its success or failure can be verified (Garud et al., 2018). This temporal distance means ToV evaluation fundamentally involves imagination about future states, inference about causal mechanisms that have not yet been validated, and beliefs about how markets, technologies, and institutions might evolve. The object of evaluation (i.e., the future the ToV describes and its economic (value creation and capture) potential) does not yet exist and may never exist if the venture fails.

This temporal distance creates two interrelated forms of uncertainty that complicate evaluation. First, epistemic uncertainty arises from limited knowledge about fundamental aspects of the ToV and the opportunity space (Knight, 1921). Stakeholders face uncertainty about

whether the problem the ToV addresses exists, the effectiveness of the proposed solution, and the validity of the causal mechanisms linking entrepreneurial actions to value creation and capture. Second, temporal uncertainty exacerbates these challenges through delayed feedback about outcomes (Levinthal & March, 1993; McGrath, 1999). Many relevant features of the opportunity only become observable through implementation, creating scope for error in early judgments and after initial resource commitments have been made, when it is too late to reverse decisions (Gans et al., 2019). Thus, evaluation becomes a challenge of inference under uncertainty.

Consequently, stakeholders rely on both inferential and interpretive mechanisms when assessing ToV. On the inferential side, stakeholders assess the ToV internal coherence and causal plausibility (Bacharach, 1989; Felin & Zenger, 2009), evaluating whether a ToV's assumptions are consistent and whether its causal mechanisms appear plausible given their understanding of markets, technologies, and customer behavior. These inferences are drawn under conditions of uncertainty (Knight, 1921), with stakeholders filling gaps with individual beliefs and prior knowledge (Lounsbury & Glynn, 2001). On the interpretive side, ToV acceptance depends on how ToV resonate with shared frames, categories, and institutional logics that structure how stakeholders evaluate opportunities. Stakeholders assess whether a ToV fits recognizable categories, challenges prevailing market understandings, or conforms to institutional expectations governing their domain (Navis & Glynn, 2011; Hsu, 2006).

Stakeholders differ in their risk tolerance, time horizons, strategic objectives, and evaluation criteria (Fisher et al., 2017; Navis & Glynn, 2011; Pollock & Gulati, 2007), generating heterogeneity in what they find compelling when assessing ToV (Pillai et al., 2023); and explaining why the same ToV may receive divergent evaluations from different stakeholders. Importantly, assessments of feasibility are not determined solely by the

characteristics of the ToV itself but are constrained by the socio-technical systems within which ventures operate.

3.2.3 The Systems-Based View: The Adjacent Possible as Feasibility Constraint

Stakeholder evaluations of entrepreneurial ToV feasibility are not shaped exclusively by the ToV characteristics and their preferences; they are also constrained by the broader socio-technical systems in which ventures operate (Goldfarb & Kirsch, 2025). Entrepreneurial ventures are embedded in configurations of technologies, institutions, infrastructures, norms, and markets that enable or constrain what is possible at any given moment (Adner, 2012; Nelson & Winter, 1982). Hence, not all ToVs are equally feasible at any point in time (Goldfarb & Kirsch, 2025).¹¹ The current state of these socio-technical systems thus defines boundaries around which entrepreneurial theories can realistically be pursued.

This constraint is captured by the concept of the "adjacent possible," which describes the range of outcomes attainable from existing socio-technical configurations (Goldfarb & Kirsch, 2025; Kauffman, 1995, 2000). The adjacent possible defines what is currently feasible, not merely what is theoretically possible in some distant future (Kauffman, 1995, 2000). In entrepreneurial contexts, this boundary is determined by current ecosystem conditions including technological readiness, institutional settings, infrastructural capabilities, social and cultural readiness, and resource availability (Goldfarb & Kirsch, 2025).¹² Consequently, ToVs can be positioned at varying distances from this adjacent possible, and these distances shape feasibility

¹¹ What seems impossible today may become feasible tomorrow as technologies mature, institutions evolve, or infrastructures develop. Conversely, what appears feasible today may have been impossible just years earlier.

¹² Technological readiness, which refers to the availability and maturity of existing and required technologies; institutional arrangements, which encompass regulatory frameworks, legal systems, and property rights governing ToV activity; infrastructural capabilities, which include payment systems, logistics networks, and complementary products that support venture operations; social and cultural readiness, which captures consumer behaviors, norms, trust patterns, and adoption willingness; and resource availability, which encompasses skilled labor, capital markets, and supplier ecosystems (Goldfarb & Kirsch, 2025)

assessments. Ventures positioned near the adjacent possible build on proven technologies and established practices, pursuing what might be characterized as incremental innovations. Their ToVs leverage existing system capabilities with modest extensions or recombinations, making their feasibility more readily apparent to external stakeholders.¹³ In contrast, ventures positioned far from the adjacent possible pursue theories that require technological breakthroughs, institutional transformations, or infrastructural developments, because the system capabilities they require do not yet exist.¹⁴ Between these extremes lie ventures at moderate distances, where some system components are ready while others are not.¹⁵ These different distances from the adjacent possible, create different evaluation challenges for stakeholders. Recognizing these evaluation challenges, entrepreneurs strategically employ narrative to influence these evaluations.

3.2.4 Entrepreneurial Narratives as Resource Mobilization

Entrepreneurs use narratives to give form and meaning to their ToVs, translating abstract causal conjectures about value creation and capture into compelling accounts that stakeholders can understand, believe in, and support (Garud et al., 2014; Turner, 2025). Narratives are not descriptions of entrepreneurial theories; they are strategic constructions that shape how audiences interpret and evaluate them (Goldfarb & Kirsch, 2020; Lounsbury & Glynn, 2001; Martens et al., 2007). Through narratives, entrepreneurs make sense of novel opportunities for themselves and others, build legitimacy, mobilize resources, and construct organizational

¹³ A new software tool built on established cloud platforms exemplifies a ToV near the adjacent possible—the required technologies exist, the institutional frameworks are clear, and the implementation path is relatively straightforward.

¹⁴ Theranos exemplified a ToV far from the adjacent possible: its blood-testing technology did not exist and required scientific advances not yet achieved, making its feasibility fundamentally uncertain (Carreyrou, 2018).

¹⁵ Uber in 2009 had the necessary technological infrastructure (smartphones, GPS, payments) but lacked institutional readiness (regulation, insurance frameworks), positioning it at a moderate distance from the then-adjacent possible (Stone, 2017).

identities that resonate with diverse stakeholder groups (Goldfarb & Kirsch, 2020; Navis & Glynn, 2011). Narratives thus serve as the mechanism linking the entrepreneurs' internal work of forming and testing theory with the social work of gaining endorsement and resources from external stakeholders (Garud et al., 2014). Through narratives, ToV become shared social objects that can be evaluated, endorsed, or rejected.

Recognizing that stakeholders evaluate ToVs under conditions of uncertainty, entrepreneurs strategically craft narratives to influence these evaluations. Narratives shape stakeholder perceptions by framing which aspects of a ToV receive emphasis and how evidence should be interpreted (Lounsbury & Glynn, 2001). The strategic choice of narrative emphasis depends on the ToV's characteristics and the entrepreneur's assessment of what will resonate with target stakeholders (Martens et al., 2007).¹⁶

Yet despite extensive research demonstrating the importance of influencing stakeholders' perceptions and evaluations of entrepreneurial opportunities, we still lack a systematic framework for understanding *what* stakeholders evaluate when they assess these forward-looking ToV. While we know narratives matter for shaping evaluation (Garud et al., 2014), we have limited understanding on the specific criteria or dimensions stakeholders assess when judging ToVs under uncertainty.

3.3 A Framework for Evaluating Entrepreneurial Theories of Value

Philosophy of science (PoS) offers a foundation for understanding these evaluation criteria. For centuries, philosophers have examined how scientific theories are judged under

¹⁶ Different stakeholder groups respond to different narrative emphases, requiring entrepreneurs to tailor their accounts for specific audiences while maintaining overall coherence. Early-stage investors focused on market opportunity may respond to narratives emphasizing transformative potential, while later-stage investors focused on risk mitigation may demand narratives emphasizing validated execution (Hsu, 2006).

uncertainty, identifying the qualities (epistemic virtues¹⁷) that make an explanation credible (Kuhn, 1962, 1977; Laudan, 2004; Lipton, 2004). Entrepreneurs and other stakeholders within the entrepreneurial ecosystem face analogous challenges when evaluating *theories* of value.

3.3.1 The Lovely-Likely Matrix

Building on the philosophical foundations (Laudan, 2004; Lipton, 2004), Pillai et al. (2023) argue that management theories can be evaluated along two conceptually distinct but empirically correlated dimensions: *likeliness*, their empirical plausibility, and *loveliness*, their conceptual appeal. I argue that the same evaluation logic applies to entrepreneurial ToV. Hence, evaluating ToVs requires simultaneous assessment of two questions: (1) what is their capacity to open new possibilities, reshape industries, and capture value and generate economic return; their *loveliness*, and (2) what a currently feasible and plausible solution is, their *likeliness* to create value given available technologies, institutional conditions and shared time-frames. Clarifying what *lovely* and *likely* means in entrepreneurial contexts is critical for understanding how stakeholders judge ToV.

A *lovely* ToV offers an appealing and parsimonious explanation of how value can be created and, especially, captured across a broad range of contexts, through entrepreneurial action under prevailing market and technological conditions. It reflects strategic and technological imagination (Rindova & Martins, 2024), including the ability to identify underexplored opportunities, envision new markets, or redefine industry boundaries. Lovely theories tend to score highly on epistemic virtues such as generalizability and parsimony, projecting a vision that is both conceptually elegant and economically ambitious. Lovely ToV articulate a differentiated

¹⁷ Epistemic virtues are the qualities that make a theory credible. These include consilience (fit with observed facts), coherence (alignment with prior beliefs or theories), precision (causal depth), parsimony (simplicity and elegance), and generalizability (applicability across contexts) (Pillai et al., 2023).

causal logic that departs from prevailing assumptions and specifies how the venture's approach to value creation and capture diverges from existing ideas. Loveliness does not imply near-term feasibility; it captures the novelty, originality, and transformative potential of the opportunity envisioned and its capacity to reshape industries or generate new bases for competitive advantage. Novelty, although necessary, is not a sufficient condition for high loveliness: a highly novel ToV is not automatically lovely, as loveliness additionally requires elegance and parsimony of causal logic, scope of economic potential, and generativity.¹⁸ Loveliness reflects both the elegance (and parsimony) of a causal explanation and the high scope of economic value that could be unlocked and captured if realized. While novelty contributes to loveliness, it is neither equivalent to it nor sufficient for it.

A *likely* ToV articulates a feasible and operationally viable path to value creation under prevailing market, technological, and institutional conditions. Likelihood reflects the extent to which a theory aligns with existing technologies, available resources, and established norms or regulations. Such theories are judged as implementable because they demonstrate internal coherence and external fit with the current environment (i.e., validated customer discovery, or early traction of the available prototype). Yet likelihood is not exclusively about the ToV itself; it is also constrained by the broader socio-technical system within which ventures operate (Goldfarb & Kirsch, 2025; Kauffman, 1995, 2000). Ventures can only act within the "adjacent

¹⁸ Two illustrative examples help clarify this distinction. Juicero, a startup that raised over \$120 million for a wifi-connected juice press, was novel in the sense that no comparable connected juicing device had existed before. Yet it lacked loveliness: the causal logic of value creation was weak and easily replicated by hand, the economic potential was narrow, and the ToV opened no new markets or strategic directions, making it neither parsimonious nor generative (Carr, 2017). Google Glass offers a parallel case. As a wearable computing device, it was novel, introducing a new human-computer interaction device. However, in its early consumer form, it lacked loveliness because the causal logic of value creation for everyday users was never convincingly articulated: it was unclear what problem it solved, for whom, and why the proposed solution represented a compelling and scalable ToV creation and capture. In both cases, novelty was present but insufficient for loveliness, as the ToVs lacked the causal elegance, economic scope, and generativity that together constitute a lovely ToV.

possible," the range of outcomes achievable given current configurations of technologies, infrastructures, and institutions. Likeliness reflects the readiness of the ecosystem to support the proposed ToV, thus likely ToV typically score highly on epistemic virtues such as consilience, coherence, and precision as they correspond to observed evidence and translate entrepreneurial vision into concrete, validated actions that create value.

Loveliness and likeliness together capture the multidimensional nature of evaluating entrepreneurial ToVs. Table 1 summarizes the determinants of each dimension in entrepreneurial contexts and their correspondence to epistemic virtues from PoS. While loveliness and likeliness are conceptually distinct dimensions, measuring different aspects of a ToV, they are empirically correlated rather than independent, the adjacent possible systematically creates a tendency toward negative correlation between them in practice. The "adjacent possible" implies that as ToVs become more disruptive and move further from what is currently feasible (further away from the adjacent possible) (Goldfarb & Kirsch, 2025; Kauffman, 1995, 2000), the empirical correlation between high loveliness and low likeliness strengthens; but this is a tendency driven by ecosystem constraints, not a definitional relationship between the two dimensions. This relationship explains why few ToVs achieve high levels on both dimensions simultaneously. Increasing a ToV's feasibility may require constraining its novelty to stay closer to the adjacent possible, whereas pursuing greater disruptiveness often means more implementation challenges and longer paths to validation. This empirical tendency explains why high-high combinations are relatively rare in practice; some ToVs do achieve both dimensions simultaneously when

ecosystem conditions align. Figure 1 illustrates how these two dimensions map into the lovely-likely matrix.¹⁹

[Insert Figure 1 Around Here]

[Insert Table 1 Around Here]

Positions within the lovely–likely matrix reflect stakeholders’ judgments rather than objective properties of ToV (Pillai et al., 2023). These judgments are shaped by stakeholders’ beliefs, prior experiences, domain expertise, and the narratives entrepreneurs use to frame their theories (Garud et al., 2014; Pillai et al., 2023).²⁰ As a result, the same ToV may be assessed differently across stakeholder groups or at different points in time as evidence accumulates, narratives evolve, and systemic conditions change. Entrepreneurs may believe their ToV merits a different positioning than stakeholders currently assign it; much of entrepreneurial narrative work involves attempting to shift stakeholder judgments towards more favorable evaluations. Recognizing matrix positions as socially constructed and products of stakeholder judgment rather than objective properties of the ToV is essential for understanding both why evaluations vary and why narrative strategies matter for resource mobilization.

¹⁹ While the lovely-likely matrix defines the conceptual space for evaluating ToVs, the distribution of ventures across this space is not uniform. The adjacent possible creates predictable patterns: High loveliness combined with high likeliness (Quadrant I) (Quadrant IV) is relatively rare in practice because ToVs that are genuinely transformative are often distant from current capabilities, reflecting the empirical correlation between the dimensions rather than any logical incompatibility between them. The adjacent possible shifts—through technological breakthroughs, institutional changes, or infrastructure development—some ToVs may move from low to high likeliness (e.g., ride-sharing became feasible only after smartphones, GPS, and digital payments converged). High loveliness with low likeliness (Quadrant II) is more common for radical visions that outpace current capabilities (e.g., Theranos). Low loveliness with high likeliness (Quadrant III) represents the most common category—incremental innovations building on established capabilities. Low loveliness with low likeliness (Quadrant III) is rare because ventures that are both unambitious and infeasible typically fail to attract entrepreneurial pursuit or stakeholder support. These patterns help explain both which ToVs emerge and where systematic evaluation errors are most likely to occur.

²⁰ Stakeholder heterogeneity in evaluating likeliness may also reflect divergent beliefs about the current boundaries of the adjacent possible. Stakeholders with different levels of domain expertise, technological knowledge, or institutional familiarity may hold systematically different mental models of what is currently feasible, leading them to position the same ToV at different locations along the likeliness dimension even when evaluating identical evidence.

3.3.2. Positioning Within the Lovely-Likely Matrix and Narrative Strategies for Resource Mobilization

A ToV position within the lovely–likely matrix influences the evaluation challenges stakeholders face when deciding whether to commit resources to it. Each quadrant reflects a distinct configuration of uncertainty, giving rise to different evaluators’ concerns about feasibility, economic potential, timing, or execution. Ventures occupying different positions therefore confront systematically different patterns of stakeholder perception and scrutiny (Fisher et al., 2017; Huang & Pearce, 2015). Understanding these position-specific challenges is critical for entrepreneurs seeking to strategically leverage narratives (including pitch presentations; Turner, 2025) to secure stakeholder endorsement (Garud et al., 2014; Lounsbury & Glynn, 2001). In what follows, we examine each quadrant by identifying the dominant evaluation challenges it entails and theorizing the narrative strategies through which entrepreneurs seek to shape stakeholder judgments and mobilize resources given their ToV’s positioning (Garud et al., 2014; Lounsbury & Glynn, 2001).

The matrix positions described below reflect the prevailing stakeholder evaluation of a ToV, that is, how the majority of investors, employees, customers, and other resource providers currently assess it. These positions are not static; they emerge from ongoing interaction between entrepreneurial narratives, accumulated evidence, and stakeholder interpretation.²¹

²¹ The matrix positions described below reflect the prevailing stakeholder evaluation of a ToV, that is, how most investors, employees, customers, and other resource providers currently assess it. These positions are not static; they emerge from ongoing interaction between entrepreneurial narratives, accumulated evidence, and stakeholder interpretation.

3.3.2.1 Quadrant I: High Loveliness, High Likelihood

Ventures in this quadrant articulate ToVs that combine transformative potential with operational feasibility, articulating theories that envision new forms of value creation and capture while leveraging existing technologies, validated demand and product-market fit and prototypes feasibility. These ventures aim to reshape markets by integrating conceptual ambition and empirical validation (as opposed to speculative aspiration, see discussion in Quadrant IV). A representative example is Airbnb, launched in 2008 with a vision to transform underutilized private spaces into a decentralized global hospitality network (Gallagher, 2017). The ToV was highly lovely, as it introduced a new logic of value creation built on trust, reputation, and peer-to-peer exchange, challenging long-standing assumptions about hospitality, property rights, and consumer behavior. At the same time, it was highly likely, since it leveraged existing infrastructures (homes, smartphones, digital payments, and online review systems) and addressed validated customer demand for affordable lodging (Gallagher, 2017; Sundararajan, 2016).

Stakeholders evaluating ventures in this quadrant recognize both the transformative potential and operational feasibility of the ToV, making these opportunities highly attractive for resource commitment. However, this very attractiveness creates unique challenges. The ToV signals to the market that the opportunity is both valuable and achievable, potentially raising competition (Huang & Pearce, 2015). Multiple ventures may pursue similar ToVs, creating evaluation difficulties for stakeholders who must distinguish among competing founding teams and ToV. The evaluation uncertainty in this quadrant is primarily managerial uncertainty: whether this particular founding team can establish sustainable competitive differentiation or competitive barriers, maintain both dimensions simultaneously, and meet stakeholders' high expectations for sustained value creation and capture. Hence, I propose that:

Proposition 1: *When a ToV is evaluated as high in both loveliness and likeliness, stakeholder judgment shifts away from assessing opportunity attractiveness toward evaluating the founding team's execution capabilities and capacity for differentiation.*

Given this evaluation logic, the narrative challenge in this quadrant is twofold.

Entrepreneurs should persuade stakeholders that this founding team possesses the execution capabilities required to realize an opportunity that is already viewed as attractive, while also managing high expectations about implementation and growth. As a result, narratives in this quadrant shift away from emphasizing the opportunity itself and toward team- and firm-specific signals related to managerial judgment, coordination, and organizational capabilities that support reliable execution. At the same time, because high loveliness and high likeliness raise expectations, narratives that fail to moderate optimism risk generating stakeholder disappointment if subsequent performance falls short (Martens et al., 2007; Garud et al., 2025).

Consequently, narratives that underscore execution coherence plans and firm-specific sources of advantage become particularly salient to stakeholders. Such narratives emphasize features that distinguish one venture from competitors, including team capabilities, proprietary assets, organizational routines, or strategic positioning that support reliable execution and defensible differentiation (Hsu, 2006). At the same time, narratives that sustain loveliness by articulating long-term economic potential are more likely to resonate when they are grounded in concrete, credible implementation plans rather than generic claims about opportunity size or vision. Because high loveliness and high likeliness increase stakeholder expectations, narratives that also clarify constraints, sequencing, and near-term milestones can help align expectations with implementation realities, reducing the risk of subsequent disappointment and erosion of trust (Lounsbury & Glynn, 2001; Martens et al., 2007).

3.3.2.2 Quadrant II: Low Loveliness, High Likelihood

Ventures in this quadrant articulate ToV that are feasible and aligned with existing institutional settings, technologies, and customer needs, yet lack clear conceptual distinctiveness, disruptive potential, or a well-articulated monetization logic. ToVs in this quadrant demonstrate operational feasibility (e.g., validated customer demand, working prototypes, or early traction) yet their ToVs lack strategic depth, scalability logic, or economic logic. These ventures show that value creation is possible but provide limited guidance on how that value will be captured or scaled over time, leaving the long-term economic implications of the opportunity uncertain (Rumelt, 2012; Zenger, 2013). Facebook offers an illustrative example. Launched in 2004, the platform achieved rapid and sustained user adoption across university campuses within months, demonstrating clear operational feasibility and validated demand (high likelihood). However, Zuckerberg had not articulated a coherent monetization strategy or theory of value capture. At this stage, Facebook had demonstrated strong operational feasibility but lacked a developed economic logic and strategic vision (Vise & Malseed, 2005); early investors committed resources based on user traction rather than a developed economic logic. Facebook's value capture strategy only crystallized years later through targeted advertising (Kirkpatrick, 2010).

The stakeholder evaluation challenge in this quadrant is the assessment of whether a compelling monetization strategy can be developed to capture value beyond early feasibility and growth; and, second, assessment of the opportunity disruptiveness or market potential to justify resource commitment (Zenger, 2013). Some ventures in this position possess latent transformative potential that has not yet been articulated through a coherent value capture strategy (potential that some stakeholders may infer or recognize); while others represent opportunities with inherent economic limits; viable businesses that lack disruptiveness or

scalability to generate high economic returns (Agrawal et al., 2021)²². As a result, the evaluation challenge in this quadrant varies systematically across stakeholder groups. For equity investors seeking high-growth outcomes, the challenge lies in distinguishing ventures with latent transformative potential from those constrained by the underlying opportunity structure. For other stakeholders, such as customers, employees, or banks, these ToVs are attractive because *likeliness* (i.e., operational viability) reduces execution risk, even if *loveliness* is modest.

Proposition 2: *When a ToV is evaluated as high in likeliness but low in loveliness, stakeholder judgment shifts away from concerns about execution and toward uncertainty about the opportunity's economic scope, scalability, and long-term value capture.*

Given this evaluation logic, the narrative challenge in this quadrant centers on whether the operational feasibility demonstrated can be interpreted as evidence of broader economic potential. Although execution capability is largely taken as given, stakeholders remain uncertain about the opportunity's scope, scalability, and capacity for value capture. As a result, narratives that link proven feasibility to a coherent account of how value can be captured at scale become particularly salient, especially when they articulate how current traction could support expansion beyond the venture's existing positioning (Navis & Glynn, 2011). In the absence of such narratives, ventures risk being evaluated as niche or small-scale opportunities, limiting resource commitment and reinforcing trajectories of modest growth (Martens et al., 2007).

Consequently, narratives that articulate a credible path from demonstrated feasibility to scalable value capture become especially salient. Such narratives clarify how current traction and operational viability could support expansion beyond the venture's existing position, often by specifying monetization logics (i.e., business models), growth mechanisms, or analogies to

²² A well-executed local restaurant or professional services firm may demonstrate operational excellence and sustainable profitability, yet the opportunity itself limits growth potential and potential economic returns.

comparable ventures that evolved from similar starting points (Garud et al., 2014). Importantly, the persuasiveness of these narratives depends on stakeholder-specific evaluation criteria. For equity investors oriented toward high-growth outcomes, operational success alone is typically insufficient; evaluation centers on whether feasibility can plausibly translate into transformative scope and scalable value capture. By contrast, for stakeholders who prioritize stability and risk mitigation, such as banks, customers, or employees, emphasis on reliable execution may be sufficient even when loveliness remains modest (Lounsbury & Glynn, 2001). This variation in stakeholder priorities helps explain why different narrative emphases become salient across audiences rather than implying a single dominant narrative strategy.

3.3.2.3 Quadrant III: Low Loveliness, Low Likelihood

Ventures in this quadrant articulate ToV that are neither imaginative nor disruptive and lack operational feasibility. As a result, most low–low ventures fail to progress beyond initial conceptualization or operate at very small scale, relying primarily on personal networks for resources (e.g., family, friends, or the entrepreneur’s own funds). Such ventures are rarely observed at scale because these ToV face high skepticism from professional investors and partners (Hsu, 2006). For analytical purposes, a low–low theory of value can be characterized as offering an incremental solution with limited novelty or competitive differentiation (low loveliness) while failing to demonstrate validated demand or implementation (low likelihood).

Critically, entrepreneurs rarely perceive their own ventures as occupying this quadrant; most believe their ToVs possess either transformative potential or operational feasibility, if not both. This perceptual gap underscores the importance of early empirical testing and customer validation before committing significant resources (Blank, 2013; Camuffo et al., 2020; Leatherbee & Katila, 2020; Ries, 2011). By validating both the relevance of the problem, the

feasibility of the solution or customers' willingness to pay, entrepreneurs can gain evidence about their ToV's true positioning within the lovely-likely matrix. Although such testing does not guarantee success, it reduces the risk of pursuing ToVs that lack both loveliness and likeliness.

Stakeholders' evaluation challenge in this quadrant is existential: assessing whether a viable opportunity exists and whether any feasible implementation strategy can be articulated (Blank, 2013; Ries, 2011). The fundamental evaluation challenge is distinguishing ventures that truly lack both vision and viability from those that appear low-low due to incomplete information or premature assessment (that is, whether the venture represents a “false start” or an opportunity whose potential remains unrecognized).

Proposition 3: *When a ToV is evaluated as low in both loveliness and likeliness, stakeholder assessment is focused on assessing whether any credible basis for pursuit exists and on the potential merits of the opportunity itself.*

Given this evaluation logic, the narrative challenge in this quadrant is establishing credibility along at least one dimension of the ToV.²³ When both loveliness and likeliness are questioned, stakeholder skepticism is existential, focused on whether the venture warrants pursuit at all. Narratives that provide concrete evidence that a meaningful problem exists or that some aspects of the solution are feasible can therefore become salient, as they offer a basis for reassessing the venture's prospects (Blank, 2013; Ries, 2011). In the absence of such credibility, ventures are unlikely to attract professional investment or strategic partnerships, limiting their ability to move beyond initial experimentation.

Consequently, narratives that establish credibility along at least one dimension of the ToV become salient to stakeholders. Such credibility may derive from evidence that a

²³ Most commonly by demonstrating operational feasibility and validated demand (moving toward Quadrant III), or less frequently, by articulating compelling transformative vision despite execution uncertainties (moving toward Quadrant II)

meaningful problem exists and is valued by customers, or from indications of technical or operational feasibility, such as working prototypes or early validation. By anchoring evaluation on credible empirical data rather than on expansive but unsupported claims, these narratives can prompt stakeholders to reassess the venture's potential and increase the likelihood of resource commitment, enabling movement beyond ("out") the low–low quadrant.

3.3.2.4 Quadrant IV: High Loveliness, Low Likelihood

This quadrant includes ToV that are highly ambitious, often envisioning the creation of new markets or the radical reconfiguration of existing ones through technological or market disruption (Garud & Karnøe, 2003; Navis & Glynn, 2011; Santos & Eisenhardt, 2009), yet remain difficult to implement because critical technological, institutional, or infrastructural and ecosystem enabling conditions are insufficiently developed. Such ventures are typically led by visionary founders and depend on complementary innovations, supporting technologies, market infrastructure, or enabling regulatory arrangements before they can be fully realized (Adner, 2006; Autio & Thomas, 2014; Gawer & Cusumano, 2002; Moeen et al., 2020). As a result, these theories of value are positioned far from the current adjacent possible, combining high strategic imagination and perceived economic potential (high loveliness) with temporal misalignment between vision and execution feasibility (low likelihood) (Goldfarb & Kirsch, 2025; Kauffman, 1995, 2000). A representative example is Jeff Bezos's early vision of Amazon as "the everything store" in the mid-1990s (Stone, 2013). The ToV articulated a parsimonious yet expansive theory of retail. However, at the time, critical enabling conditions were absent, including secure online payment systems, scalable logistics infrastructures, and established consumer trust in e-commerce. The ToV was evaluated as highly lovely, reflecting its imaginative scope and

disruptive potential, but initially low in likeliness, given the technological, institutional, and behavioral barriers that constrained near-term implementation.

Stakeholder evaluation in this quadrant centers on the plausibility of a theory of value's eventual realization and the founding team's capacity to guide the venture toward feasibility over time. Although the opportunity is perceived as highly promising (high loveliness), stakeholders remain uncertain about whether the technological, institutional, and infrastructural conditions required for implementation can materialize within relevant time horizons. As a result, evaluation focuses on whether the surrounding ecosystem is likely to evolve in ways that support the proposed theory of value, including the emergence of complementary technologies, regulatory arrangements, market infrastructure, or user behaviors. In parallel, stakeholders assess whether the founding team possesses the managerial and coordination capabilities needed to navigate prolonged uncertainty and adapt execution as enabling conditions gradually emerge.

Proposition 4: *When a ToV is evaluated as high in loveliness but low in likeliness, stakeholder judgment centers on the plausibility of eventual feasibility over time rather than on immediate implementability.*

Given this evaluation logic, the narrative challenge in this quadrant lies in combining an ambitious and transformative vision while providing sufficient implementation specificity to signal that feasibility can plausibly emerge over time. Although stakeholders often recognize the opportunity's potential (high loveliness), they remain uncertain about timing and execution because the envisioned future lies far from current ecosystem conditions (i.e., beyond the adjacent possible). As a result, narratives in this quadrant perform temporal coordination work, clarifying how the gap between vision and present constraints might be bridged through a combination of ecosystem evolution and entrepreneurial action. Narratives that articulate plausible pathways for the emergence of enabling technologies, institutions, or complementary

innovations, while also signaling the founding team's capacity to navigate prolonged uncertainty and adapt as conditions change, are more likely to sustain stakeholder engagement. By contrast, narratives that emphasize ambition without credible temporal grounding risk early endorsement followed by disappointment and resource withdrawal when feasibility fails to materialize within expected time horizons (Adner & Kapoor, 2010; Martens et al., 2007).

Thus, in this quadrant, stakeholder evaluation focuses on whether feasibility can plausibly emerge over time, making narratives that clarify the temporal relationship between vision and implementation particularly salient. Evaluation is more likely to shift when narratives distinguish which elements of the ToV are immediately actionable and which depend on broader ecosystem evolution, and when stakeholders infer that the founding team can navigate prolonged uncertainty and coordinate and influence the ecosystem. Combining long-term vision with expectations about timing and staged implementability, narrative can sustain stakeholder engagement and support continued resource commitment despite long-term feasibility.

Taken together, the four quadrants of the lovely-likely matrix highlight that ToV evaluations are governed not by a single logic, but by distinct evaluation challenges depending on how ToVs combine disruptiveness and feasibility. When both dimensions are high, evaluation centers on execution capability and expectation management; when feasibility is high but loveliness is low, uncertainty shifts toward opportunity scope and value capture; when both dimensions are weak, evaluation becomes existential, focused on whether any basis for pursuit exists; and when loveliness is high but likeliness lags, evaluation hinges on the plausibility of eventual feasibility and the venture's capacity to bridge temporal and systemic gaps. Table 2 summarizes these quadrant-specific evaluation logics and the corresponding narrative challenges.

[Insert Table 2 around here]

However, because evaluations rely on inference under uncertainty (influenced by founders' narratives), rather than direct observation, stakeholder assessments are prone to systematic error. Ventures may be misjudged (i.e., evaluated as more or less lovely or likely than they truly are) leading to consequential misallocations of resources.

3.3.3 Evaluating ToVs Under Uncertainty: Challenges and Errors

Positions within the lovely–likely matrix are not intrinsic properties of a ToV. They are judgments formed by stakeholders under conditions of epistemic uncertainty and constrained by available evidence, and individual evaluation criteria (Knight, 1921; Pillai et al. 2023). Stakeholders must assess ventures' loveliness and likeliness before outcomes materialize, relying on incomplete information, provisional evidence, and interpretations mediated by founders' narratives (Pollock & Gulati, 2007). Importantly, stakeholder evaluations vary in depth and confidence depending on how stakeholders comprehend and evaluate the ToV: stakeholders who engage more deeply with the causal logic, evidence, and narrative of a ToV are likely to form more confident and accurate assessments, and crucially, to remain more willing to update those assessments as new evidence accumulates or ecosystem conditions change (Gavetti & Levinthal, 2000; Kahneman, 2011).²⁴ Conversely, stakeholders whose comprehension of a ToV is superficial are more likely to anchor on initial impressions, resist revision, and perpetuate evaluation errors even when disconfirming evidence emerges. Consequently, stakeholder evaluations are prone to error: ventures may be misjudged, with their loveliness or likeliness

²⁴ This relationship between comprehension depth and willingness to update rests on three related mechanisms. First, deep comprehension produces a more articulated and precise mental representation of the ToV, making it easier to identify where new evidence is relevant and how it should update the assessment (Gavetti & Levinthal, 2000). Second, superficial comprehension increases susceptibility to anchoring, as stakeholders who form quick initial impressions lack the cognitive scaffolding needed to meaningfully integrate disconfirming evidence (Kahneman, 2011; Tversky & Kahneman, 1974). Third, deep comprehension fosters epistemic humility, as stakeholders who have engaged carefully with a ToV are more aware of the limits of their own knowledge and therefore more receptive to revision (Kruglanski & Webster, 1996).

overestimated or underestimated relative to what subsequent market validation and implementation revealed.

I define evaluation error as the discrepancy between stakeholders' initial assessed position of a ToV within the lovely-likely matrix and the ToV position later revealed through market validation and testing, implementation outcomes, or ecosystem evolution that reveal opportunity potential. These errors are consequential, as judgments about ToV position shape stakeholders' resource allocation decisions, determining which ToV are pursued or abandoned, producing investment losses and missed opportunities.

Following the judgment and decision-making literature (Kahneman & Tversky, 1979; Kahneman, 2011), we distinguish two types of evaluation errors. Type I errors (false positives or bad-investment) occur when stakeholders overestimate a ToV's loveliness, likeliness, or both, leading to resource commitments that subsequent evidence reveals as misplaced. These errors result in funding ventures that ultimately fail, producing capital destruction and lost investor returns. Type II errors (false negatives or missed-opportunities) arise when stakeholders underestimate a ToV's latent potential along one or both dimensions, resulting in rejection or underinvestment in ventures that later prove economically viable, scalable, or disruptive. These errors result in missed opportunities, delayed innovation adoption, and economic losses.

3.3.3.1 Sources and Mechanisms of Systematic Evaluation Errors

Evaluation errors in entrepreneurial settings arise from the conditions under which ToV are evaluated. Stakeholders assess entrepreneurial ToVs under epistemic uncertainty about underlying value, temporal uncertainty about when enabling conditions will materialize, information asymmetries between entrepreneurs and evaluators, heterogeneity in evaluation criteria across stakeholder groups, and the inherent difficulty of jointly assessing loveliness and

likeliness as conceptually distinct yet empirically related dimensions. Together, these conditions generate predictable patterns of evaluation errors, both bad-investment (or false positives) and missed-opportunities (or false negatives).

Information asymmetry. Entrepreneurs possess privileged knowledge about their ventures that external stakeholders cannot observe or verify (Akerlof, 1970; Shane & Cable, 2002). Founders have direct access to product capabilities, testing results, team dynamics, early customer feedback or technical challenges, unknown to external stakeholders who must rely on signals and selective disclosure data.

Information asymmetry produces bad-investment (false positives) when entrepreneurs strategically reveal information that emphasizes a ToV's loveliness (e.g., transformative vision, market size) while concealing or downplaying negative signals about likeliness (e.g., technical failures, lack or low sales, execution challenges). External stakeholders, unable to verify these claims, form optimistic assessments based on incomplete or curated information. On the other hand, information asymmetry may also produce missed-opportunities (or false negatives) when entrepreneurs fail to effectively communicate latent potential that exists but is not yet observable in early evidence. Ventures may possess capabilities, insights, or strategic positioning that stakeholders cannot assess without insider knowledge. When entrepreneurs lack credibility, narrative skill, or established reputations, stakeholders may underestimate a ToV's loveliness or likeliness despite actual merit. This risk may be particularly pronounced for ventures in novel categories where stakeholders lack frameworks for interpreting signals (Hsu, 2007).

The likelihood that information asymmetry generates bad-investment and missed-opportunities varies across contexts. Bad-investments are more likely to occur when ToV involve high technical complexity that non-expert stakeholders cannot readily evaluate, when

feedback cycles are long and disconfirming evidence is delayed, and when founder reputation or prior success reduces scrutiny of claims (Gompers et al., 2010). Periods of market exuberance further amplify these dynamics by weakening due diligence and increasing reliance on narratives and social signals (Nanda & Rhodes-Kropf, 2017). By contrast, missed-opportunities are more likely to occur when entrepreneurs lack credibility signals, operate in novel problem spaces without established evaluation templates, or pursue opportunities in unfamiliar geographic or institutional contexts, leading stakeholders to underestimate loveliness or likeliness (Hsu, 2007).

Temporal Uncertainty. Temporal uncertainty arises because the conditions determining whether a ToV can be successfully implemented unfold over time and remain unknown at evaluation (Knight, 1921). Critical determinants of success including technological breakthroughs, regulatory changes, competitive responses, ecosystem infrastructure development, and customer adoption patterns, may not yet exist or may evolve in unpredictable ways (Gavetti & Levinthal, 2000). Stakeholders must therefore form judgments about ToVs whose outcomes depend on future states of the world that have not yet materialized and whose timing is fundamentally uncertain.

Temporal uncertainty produces bad-investment errors when stakeholders underestimate how long enabling conditions will take to materialize or overestimate the likelihood that such conditions will emerge within relevant timeframes. Ventures may articulate lovely ToVs that would be viable *if* certain technologies mature, regulations change, or consumer behaviors shift, but stakeholders misjudge *when* these conditions will arrive. This temporal optimism is especially pronounced for ToVs positioned far from the adjacent possible (Goldfarb & Kirsch, 2025; Kauffman, 1995, 2000), where multiple ecosystem components must be developed and align. On the other hand, temporal uncertainty produces missed-opportunities when stakeholders

underestimate if and how quickly enabling conditions might materialize or fail to recognize that a ToV's infeasibility as temporary rather than fundamental. Stakeholders may dismiss ToVs as "too early" without recognizing emerging convergences that will soon shift the adjacent possible.

The extent to which temporal uncertainty generates bad-investment and missed-opportunities depends on features of the technological, market, and institutional environment. Bad-investments are more likely when ToV depend on the simultaneous evolution and emergence of multiple complementary innovations, particularly in settings with long development cycles that delay disconfirming feedback, such as infrastructure-intensive, hardware-based, or highly regulated industries (Adner & Kapoor, 2010). Periods of market exuberance further amplify these dynamics by encouraging optimism about the pace of technological progress and the speed with which enabling conditions will emerge (Nanda & Rhodes-Kropf, 2017; Goldfarb & Kirsch, 2020). By contrast, missed-opportunities are more likely to occur when stakeholders anchor on current constraints and underestimate the speed or direction of technological and institutional change, treating provisional infeasibility as permanent, especially when early failures create persistent skepticism despite improving conditions (Tripsas & Gavetti, 2000).

Epistemic uncertainty. Epistemic uncertainty reflects the fundamental unknowability of the economic value of entrepreneurial ToVs prior to their realization (Knight, 1921; Alvarez & Barney, 2007). Because ToVs concern futures that do not yet exist, stakeholders cannot know *ex ante* how early evidence will translate into scalable implementation, how markets will respond to novel offerings, or what the ultimate scope and disruptiveness of an opportunity will be. This uncertainty is irreducible, not merely informational, because opportunity value emerges

endogenously through entrepreneurial action, market interaction, and ecosystem co-evolution in ways that cannot be fully anticipated in advance (Sarasvathy, 2001).

Epistemic uncertainty generates bad-investment when stakeholders overestimate a ToV's loveliness by extrapolating from compelling visions or limited early evidence to assumptions of large-scale economic viability. Early traction or localized success may be taken as evidence of broad disruptiveness, even when scaling later reveals structural constraints that limit value creation or capture. On the other hand, it may produce missed-opportunities when stakeholders underestimate a ToV's latent loveliness or likeliness because early evidence fails to reveal opportunities for pivots. Ventures that are operationally feasible but lack an obvious value-capture logic may be dismissed as modest opportunities when their loveliness is only discoverable through subsequent implementation or theorizing. Similarly, ventures that appear infeasible under current conditions may later become viable as ecosystem components evolve, yet stakeholders anchored to early assessments may reject such ToVs prematurely, treating provisional limits as definitive judgments.

The extent to which epistemic uncertainty generates bad-investment and missed-opportunities depends on the nature of the ToV and the evaluation context. Bad-investments are more likely when ToVs operate in novel domains that lack historical benchmarks for valuation, particularly when strong early growth signals or network effects encourage extrapolation from localized success to assumptions of broad economic scope without adequate scrutiny of scalability or value-capture mechanisms (Eisenmann et al., 2006). By contrast, missed-opportunities are more likely when ToVs address familiar problems through seemingly incremental approaches whose transformative potential is not immediately apparent, leading stakeholders to discount long-term economic significance despite operational feasibility and user

adoption. In such settings, loveliness may only become visible through implementation, recombination, or strategic reframing over time, yet stakeholders anchored to early evidence may underestimate emergent value and abandon ToVs prematurely.

Stakeholder Heterogeneity. Stakeholder heterogeneity arises because different resource providers apply different evaluation criteria, weightings, and interpretive frames when assessing the same ToVs (Fisher et al., 2017; Pillai et al., 2023). Venture capitalists, banks, customers, employees, corporate partners, and regulators differ in their risk tolerance, time horizons, strategic objectives, and domain expertise. These differences reflect divergent professional logics that shape what each audience finds compelling (Pollock & Gulati, 2007). As a result, a ToV may be evaluated favorably by some stakeholders and skeptically by others, each group positioning the same venture in different quadrants.

Stakeholder heterogeneity generates bad-investment through social inference and information cascades (Banerjee, 1992; Bikhchandani et al., 1992). When a high-status or influential stakeholder endorses a ToV, other stakeholders may infer quality from that endorsement rather than conduct independent evaluation, allowing early (mis)judgments to propagate across audiences (Banerjee, 1992; Bikhchandani et al., 1992). These cascades are especially likely when evidence is sparse and evaluation criteria are ambiguous. On the other hand, stakeholder heterogeneity produces missed-opportunities errors when coordination failures prevent any stakeholder from taking the lead in endorsing a ToV. When evaluation criteria are fragmented across stakeholder groups, each may wait for others to validate the opportunity before committing resources, particularly when the ToV does not align cleanly with any group's preferred profile. In such cases, ToV may be systematically undervalued or ignored, not because of negative assessments per se, but because no stakeholder group is willing or able to bear the

initial evaluation risk (Gulati & Gargiulo, 1999; Lerner, 1994). These dynamics help explain why some ToVs fail to attract support despite underlying merit, resulting in premature abandonment driven by coordination failure rather than substantive infeasibility.

The extent to which stakeholder heterogeneity generates bad-investment and missed-opportunities depends on the distribution of status, expertise, and coordination incentives across audiences. Bad-investments are more likely when high-status stakeholders provide strong early endorsement signals, leading others to infer quality rather than conduct independent evaluation, especially when media attention amplifies these signals and domain-specific expertise is limited (Pollock et al., 2015). By contrast, missed-opportunities are more likely when ToV lack clear category membership or span multiple categories, making them difficult to assess using any single audience's dominant criteria (Navis & Glynn, 2010). In such cases, coordination failures arise when no stakeholder group has sufficient incentives or legitimacy to lead evaluation, particularly when ToVs challenge shared institutional logics, resulting in systematic underinvestment or abandonment despite underlying potential (Thornton et al., 2012).

Complexity of assessing both dimensions simultaneously. Evaluation errors also arise from the difficulty of jointly assessing loveliness and likeliness as two conceptually distinct yet empirically related dimensions. Assessments of loveliness rely on imaginative projection and expectations about future economic scope, causal elegance, and generativity; whereas assessments of likeliness draw on empirical validation, feasibility signals, and alignment with prevailing technological, institutional, and infrastructural conditions. Because these dimensions capture different aspects of a theory of value, evidence that increases confidence in one dimension often provides limited guidance for evaluating the other (Pillai et al., 2023). Yet

resource commitment decisions require stakeholders to reconcile both dimensions within a single judgment, increasing error probability.

This integration difficulty generates false positive evaluations when stakeholders underestimate constraints imposed by the adjacent possible and infer feasibility from high loveliness. In such cases, evaluators overestimate likeliness for theories of value that remain far from current system capabilities, committing resources on the expectation that enabling conditions will materialize within relevant time horizons. These errors are especially common in domains such as deep technology, biotechnology, or infrastructure, where visionary opportunities outpace technical readiness and where coordination and temporal barriers are substantial (Goldfarb & Kirsch, 2025). On the other hand, the same integration challenge generates false negative evaluations when stakeholders overestimate the coupling between loveliness and likeliness, treating imaginative or disruptive theories of value as inherently infeasible. Anchoring on current conditions, evaluators may dismiss opportunities as “too ambitious” or “too disruptive,” underestimating the potential for feasibility to emerge through entrepreneurial action or ecosystem evolution. As a result, stakeholders may either continue supporting theories whose windows of opportunity have closed or reject newly viable theories based on outdated assessments (Goldfarb & Kirsch, 2025).

The likelihood that integration difficulty produces bad-investment and missed-opportunities depends on a ToV distance from the adjacent possible and the evaluation context. Bad-investments are more likely when theories require the coordinated emergence of multiple complementary innovations and evaluators lack the technical expertise needed to independently assess feasibility constraints, particularly when compelling narratives emphasize transformative potential while obscuring implementation challenges. By contrast, missed-opportunities are more

likely when stakeholders assume a strong negative relationship between loveliness and likeliness, generalizing from salient failures of highly imaginative ventures and prematurely dismissing theories whose dimensions could plausibly evolve independently.

Taken together, these five sources of evaluation error, information asymmetry, temporal uncertainty, epistemic uncertainty, stakeholder heterogeneity, and integration difficulty, create systematic patterns of misjudgment that shape resource allocation in entrepreneurship. Table 3 synthesizes these error sources by mapping how each produces bad-investment (or false positives) and missed-opportunities (or false negatives), and the external conditions that influence when these errors are most likely to occur. These evaluation errors are consequential as they determine which ToVs receive resources, which are prematurely abandoned, and how ventures evolve through the lovely-likely matrix (a dynamic discussed in Appendix A).

[Insert Table 3 around here]

3.4 Discussion

This chapter develops a theory of stakeholder evaluation of entrepreneurial ToV under uncertainty by examining how ToV are assessed and endorsed before outcomes are observable. Rather than treating evaluation as a downstream consequence of experimentation, the framework highlights evaluation as a selection mechanism that shapes which theories are pursued, tested, and refined over time. By introducing the lovely–likely matrix and theorizing how narrative and systematic evaluation errors operate within it, the chapter reframes entrepreneurial outcomes as the product of socially mediated judgments formed under epistemic and temporal uncertainty. In this section, we discuss the theoretical contributions of this framework, outline its practical implications, and consider its boundary conditions and directions for future research.

3.4.1 Theoretical Contributions

This chapter advances three theoretical contributions. First, it reframes entrepreneurship as a process of stakeholder evaluation that shapes which ToV are pursued, tested, and refined. Research grounded in the Theory-Based View has emphasized how entrepreneurs form and test ToV through experimentation and learning (Camuffo et al., 2020; Felin et al., 2024; Felin & Zenger, 2009, 2017). We extend this perspective by showing that evaluation by external stakeholders precedes and conditions experimentation at scale, because access to financial, human, and reputational resources is required before ToV can be tested beyond limited settings. By theorizing stakeholder evaluation as a selection mechanism in entrepreneurial evolution, the chapter explains why some ToV are never tested at scale despite internal plausibility, while others persist despite weak empirical validation. This study shifts attention toward the social allocation of resources, legitimacy, and attention under uncertainty, linking ToV to endorsement and resource allocation literatures (Lounsbury & Glynn, 2001; Martens et al., 2007).

Second, the chapter introduces *loveliness* and *likeliness* as two distinct yet systematically related epistemic dimensions through which stakeholders evaluate entrepreneurial ToV. Drawing on PoS work on epistemic virtues (Laudan, 2004; Lipton, 2004; Pillai et al., 2023), the framework clarifies both what stakeholders evaluate and how such judgments are formed under uncertainty. *Loveliness* captures imaginative scope, generativity, and perceived economic potential (dimensions that go beyond novelty alone to include the elegance and parsimony of the ToV's causal logic and the scope of value it envisions creating and capturing), whereas *likeliness* reflects empirical plausibility, feasibility, and alignment with the adjacent possible (Goldfarb & Kirsch, 2025; Kauffman, 1995, 2000). Unlike prior work that treats novelty, feasibility, or legitimacy as trade-offs along a single continuum (e.g., Nanda & Rhodes-Kropf, 2013; Navis &

Glynn, 2011), the framework theorizes loveliness and likeliness as analytically distinct dimensions grounded in different forms of evidence.

Third, the study identifies and theorizes the sources of systematic evaluation error in entrepreneurship. Building on research on uncertainty (Knight, 1921), entrepreneurial judgment (Alvarez & Barney, 2007), narratives (Garud et al., 2014), and stakeholder heterogeneity (Fisher et al., 2017; Pillai et al., 2023), it shows how false positive (bad-investments) and false negative (missed-opportunities) evaluations arise from information asymmetry, epistemic and temporal uncertainty, heterogeneity in evaluation criteria, and the difficulty of reconciling loveliness and likeliness as distinct yet correlated dimensions of judgment. These errors shape which ToV attract resources, and how ventures move across the lovely–likely matrix as implementation unfolds. By linking evaluation error to resource allocation, the chapter extends entrepreneurship research to explain systematic misallocation and path dependence in innovation and market formation (Gompers et al., 2008; Nanda & Rhodes-Kropf, 2017).

3.4.2 Practical Implications

The proposed framework has several practical implications for entrepreneurs, investors, and ESO. Across these audiences, the core implication is that resource mobilization under uncertainty depends not only on the development and testing of ToV, but also on how those theories are evaluated by stakeholders before outcomes are observable.

For entrepreneurs, the framework highlights that success depends not only on refining and testing ToV, but also on anticipating how those theories are likely to be assessed by different stakeholders under uncertainty. Entrepreneurs face qualitatively different forms of skepticism depending on whether concerns center on feasibility, economic scope, existential credibility, or temporal alignment. Recognizing the dominant source of evaluation uncertainty can help

entrepreneurs better interpret stakeholder feedback and understand why otherwise promising theories may struggle to attract resources. The framework highlights evaluation as an active process that shapes which ToV receive the resources necessary for experimentation, scaling, and refinement (Lounsbury & Glynn, 2001; Martens et al., 2007).

For investors and other resource providers, the lovely–likely matrix offers a framework for clarifying where uncertainty lies when evaluating entrepreneurial ToV. Distinguishing between uncertainty about feasibility, about the opportunity’s economic scope or about timing can help evaluators avoid confusing loveliness with likeliness or dismissing early-stage theories whose potential has not yet materialized. Making these evaluation dimensions explicit may also help reduce systematic false positive and false negative judgments by encouraging more deliberate consideration of which aspects of a theory are supported by evidence and which remain speculative (Fisher et al., 2017).

For incubators, accelerators, mentors, and other ESO, the framework underscores the importance of aligning guidance with a venture’s evaluation position rather than offering generic recommendations. Advice focused on experimentation, scaling, or narrative refinement is likely to have different effects depending on whether a venture’s primary challenge lies in establishing feasibility, articulating economic scope, or addressing temporal misalignment. By diagnosing evaluation bottlenecks more precisely, intermediaries can better support ventures in navigating stakeholder judgments and progressing across the lovely–likely matrix.

3.4.3 Boundary Conditions

The arguments and propositions developed in this chapter are most applicable to entrepreneurial settings characterized by high uncertainty, where resource commitments must be made before outcomes are observable. In such contexts, stakeholders cannot rely on established

performance metrics or historical benchmarks and instead evaluate ToV based on conjectures about feasibility and economic potential. The lovely–likely framework is therefore most relevant for early-stage ventures, novel technologies, and innovation-driven contexts in which evaluation precedes validation. By contrast, in more mature or low-uncertainty settings where outcomes are readily observable and standardized criteria dominate, stakeholder judgments are more likely to rely on alternative, conventional performance metrics.

Second, the framework assumes the presence of external stakeholders who control critical resources and whose evaluations condition a venture’s ability to pursue and test its ToV. The dynamics described here are most salient when entrepreneurs depend on investors, partners, employees, regulators, or other audiences for financial, human, or reputational capital. In settings where ventures are indefinitely self-funded, embedded within organizations with internal capital markets, or governed by centralized decision structures, evaluation processes may be less visible or contested, reducing the relevance of the lovely–likely framework.

Finally, the theory emphasizes socially mediated evaluation, in which narratives are visible to audiences and judgments are formed through interpretive rather than formalized or algorithmic processes. The framework is therefore less applicable in contexts where evaluation is highly codified or rule-based, such as procurement systems, credit scoring, or environments dominated by strict regulatory thresholds. In such settings, feasibility criteria are likely to outweigh considerations of loveliness. Together, these boundary conditions clarify where the lovely–likely framework offers the greatest explanatory power and where alternative evaluation logics are likely to prevail.

3.4.4 Future Research Avenues

This chapter opens several promising avenues for future research on entrepreneurial evaluation under uncertainty. One important direction concerns the role of cognitive heuristics and social influence processes in shaping stakeholder judgments. While the present framework locates evaluation error in the structural and epistemic conditions of evaluating theories of value, future work could examine how specific heuristics are differentially activated across stakeholder groups. Differences in expertise, experience, incentives, and institutional roles may shape which heuristics dominate judgment in particular contexts and how they interact over time, deepening understanding of heterogeneity in entrepreneurial evaluation and refining theories of judgment under uncertainty (Fisher et al., 2017; Pillai et al., 2023).

A second avenue for future research concerns exploring the micro-dynamics of entrepreneurial narratives. Although this chapter theorizes narratives as a mechanism through which entrepreneurs influence stakeholder assessments of loveliness and likeliness, empirical research could investigate how narrative content, timing, and adaptation affect evaluation judgments across different audiences (Lounsbury & Glynn, 2001; Garud et al., 2014). Such work could also examine when narratives amplify evaluation error and when they facilitate learning and revision as evidence accumulates and ecosystem conditions evolve.

Third, the lovely–likely framework invites empirical investigation across a range of methods and settings. Longitudinal studies could study how stakeholder evaluations and resource commitments evolve as ventures move across the matrix over time, while experimental designs could isolate the causal effects of specific loveliness and likeliness cues on evaluation. Archival and computational approaches could further examine how evaluation language, narrative

framing, and resource allocation decisions interact, exploring how early judgments shape trajectories and longer-term outcomes (Gompers et al., 2008; Camuffo et al., 2020).

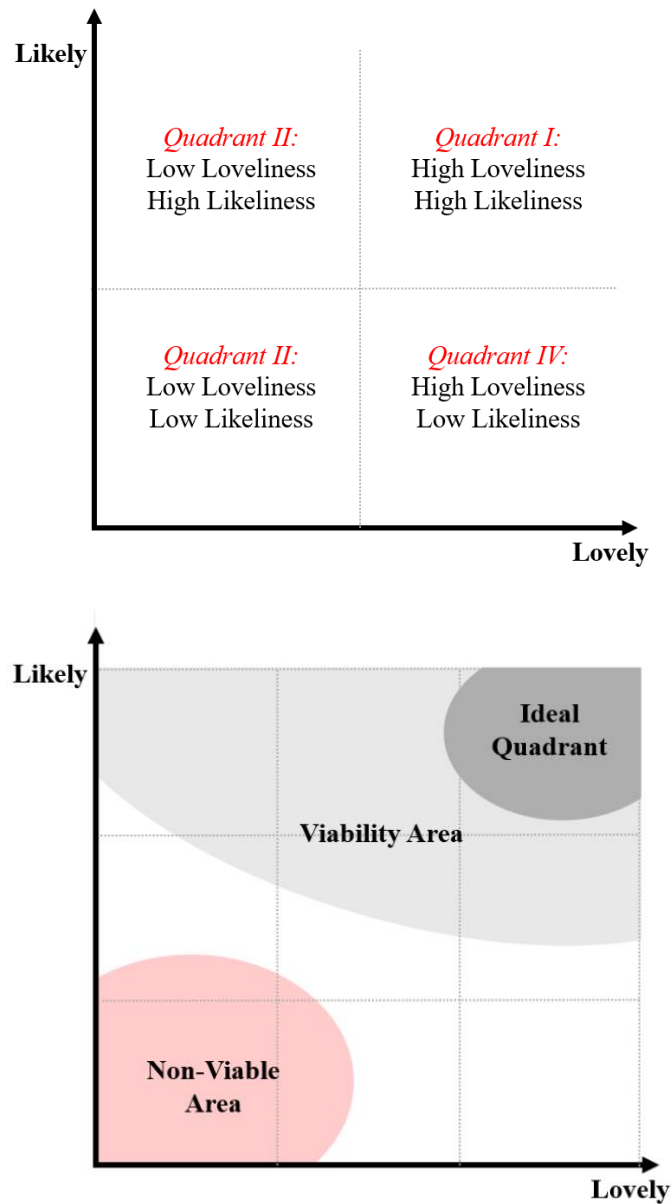
Finally, in practice, entrepreneurs frequently receive advice in which external stakeholders share evaluations of their ToV that diverge from the entrepreneur's own assessment, questioning its loveliness, challenging its likeliness, or repositioning it within the lovely-likely matrix in ways the entrepreneur had not anticipated (Cohen et al., 2019; Miller et al., 2024; Toivonen, 2023; Villamor & Cohen, 2025). When stakeholders communicate such assessments through advice, entrepreneurs must then comprehend, evaluate, and act on that input, a cognitive process that unfolds through the stages theorized in prior work on advice utilization (Villamor Martin, 2025). This may create a recursive dynamic: stakeholders' evaluation of a ToV shapes the advice entrepreneurs receive, the quality of entrepreneurs' cognitive engagement with that advice determines how or whether they act on it, advice implementation generates new evidence that moves the ToV across the lovely-likely matrix, and these movements in turn invite further rounds of stakeholder evaluation (see Appendix A). Conversely, when entrepreneurs fail to fully comprehend or evaluate such external ToV evaluation and subsequent advice, the gap between self-assessment and external evaluation persists. Future research employing longitudinal or mixed-method designs could examine how this feedback loop operates in practice, clarifying when and how stakeholder evaluations of ToVs, communicated through advice, update entrepreneurs' own assessments and shape subsequent theorizing and action (Felin & Zenger, 2009; Miller et al., 2024).

3.5 Conclusion

Entrepreneurial outcomes depend not only on inherent qualities of ToV, but on how those theories are evaluated, endorsed, and resourced by external stakeholders. This chapter develops a

theory of how stakeholder judgment shapes which ideas are pursued, tested, and refined, and why systematic evaluation errors arise. In doing so, the lovely-likely framework highlights evaluation as a central mechanism in entrepreneurial evolution, helping explain patterns of both overinvestment and missed opportunity that characterize innovation-driven markets.

Figure 1: Loveliness–Likeliness Matrix for Evaluating Entrepreneurial ToV



Note: The matrix maps ToVs along two conceptually distinct but empirically correlated dimensions: *loveliness* (conceptual appeal and novelty) and *likeliness* (empirical plausibility and feasibility). It distinguishes three regions: the *Ideal Quadrant* (high on both dimensions, combining visionary and feasible theories), the *Viability Area* (partially validated or imaginative ToVs with developmental potential), and the *Non-Viable Area* (theories that are neither conceptually distinctive nor practically

Table 1a: Determinants of Loveliness and Likeliness in Entrepreneurial ToV

Determinants of a ToV's Loveliness		
Determinant	Definition	Epistemic Virtue(s)
Novelty	The extent to which the ToV identifies opportunities or problem framings that are unseen by others, offering contrarian or distinctive insights.	Generalizability (opens new domains)
Generativity	The ability of the ToV to open up new problems, markets, or strategic directions; its capacity to keep generating additional avenues for value creation over time.	Generalizability; (capacity to generate insight)
Conceptual Elegance	Clarity and simplicity with which the ToV articulates a bold vision or causal logic, making it theoretically appealing while retaining explanatory breadth.	Parsimony
Originality / Disruptiveness	The degree to which the ToV challenges existing industry logic, proposes novel value configurations, or envisions creating entirely new markets	Generalizability
Economic Potential	The perceived scope and magnitude of value creation and capture the ToV can generate if realized, including scalability and profitability.	Generalizability (breadth of value creation); Consilience (fit with economic mechanisms)
Strategic Imagination	The ToV's ability to project future states of the world and inspire others (investors, employees, partners, customers) to believe in those possibilities.	Coherence (internally aligned vision)

Note: Novelty is a necessary but not sufficient condition for loveliness: a ToV may be novel yet lack the causal elegance, economic scope, or generativity that together constitute high loveliness

Table 1b Determinants of Loveliness and Likelihood in Entrepreneurial ToV

Determinants of a ToV's Likelihood		
Determinant	Definition	Epistemic Virtue(s)
Problem Validation	Evidence that the focal customer "pain" or need is real, generalizable, and salient beyond the entrepreneur's perception	Consilience (fit with observed facts)
Willingness to Pay	Confirmation that customers are prepared to pay to solve the problem, establishing the basic revenue potential.	Consilience; Precision
Solution Feasibility	Alignment between the ToV and available technologies, resources, and implementation capabilities.	Coherence; Precision
Institutional and Regulatory Fit	Compatibility with prevailing rules, norms, and institutional arrangements that enable implementation	Coherence (fit with broader systems)
Empirical Support	Accumulating data points (customer discovery, MVP testing, usage metrics) that demonstrate fit between the ToV and observed behaviors	Consilience
Adjacent Future	Extent to which the ToV lies within the "adjacent possible" — outcomes achievable from current technological, institutional, or market states without requiring radical systemic change.	Coherence (fit with system readiness); Consilience
Causal Precision & Coherence	How clearly the ToV specifies mechanisms that link actions to outcomes, and whether those mechanisms hold together logically in practice.	Precision; Coherence

Table 2: ToV Characteristics, Evaluation and Narrative Strategies Across

	Quadrant I: High Lovely – High Likely	Quadrant II: Low Lovely – High Likely	Quadrant III: Low Lovely – Low Likely	Quadrant IV: High Lovely – Low Likely
Representative Example	Airbnb	Google early stage	Rarely observable	Amazon "everything store"
Key Characteristics	Both disruptive and executable; combines transformative vision with operational feasibility	Operationally feasible with validated demand but lacks strategic depth, differentiation, or monetization logic	Neither imaginative nor operationally feasible; false starts	Visionary and ambitious but ahead of ecosystem; depends on complementary innovations
Stakeholder Perception	Highly attractive; both vision and execution recognized	Execution proven but transformative potential questioned	Fundamental skepticism on both dimensions	Vision recognized but feasibility doubted due to temporal/ecosystem constraints
Primary Uncertainty	Managerial uncertainty: Can this team differentiate and deliver?	Strategic/economic uncertainty: Can this generate substantial value? Will it scale?	Existential uncertainty: Does any viable opportunity exist?	Feasibility uncertainty: Can enabling conditions materialize in relevant timeframes?
Evaluation Focus	Team execution capabilities, competitive differentiation, expectation management	Opportunity economic potential, monetization strategy, distinguishing latent potential vs. ceiling constraints	Whether any basis for pursuit exists; false start vs. unrecognized opportunity	Plausibility of eventual feasibility; ecosystem evolution; team's orchestration capabilities
Stakeholder Heterogeneity	Broadly attractive to most stakeholders	High: VCs skeptical of modest potential; banks/customers attracted to proven viability	Most avoid; personal networks only (unless misjudgment)	Visionary VCs attracted; risk-averse stakeholders avoid
Narrative Challenge	(1) Differentiate from competitors; (2) Manage elevated expectations to avoid over-promising	(1) Signal latent transformative potential; (2) Articulate value capture strategy beyond current positioning	(1) Establish credibility on at least one dimension; (2) Overcome existential skepticism	(1) Sustain ambitious vision; (2) Provide credible temporal pathways to feasibility; (3) Demonstrate team can orchestrate ecosystem

TABLE 2
ToV Characteristics, Evaluation and Narrative Strategies Across the Lovely–Likely Matrix (Cont.)

	Quadrant I: High Lovely – High Likely	Quadrant II: Low Lovely – High Likely	Quadrant III: Low Lovely – Low Likely	Quadrant IV: High Lovely – Low Likely
Strategic Narrative Approach	Emphasize team capabilities, proprietary assets, execution excellence, and barriers to imitation; set realistic milestones and sustainable growth expectations	Leverage proven feasibility as foundation while articulating monetization strategy and strategic vision; emphasize generalizability to signal scale potential	Provide empirical evidence establishing baseline credibility on one dimension (typically likeliness first); focus on validation over aspiration	Articulate how ecosystem conditions will evolve; sequence actionable vs. aspirational elements; position team as capable of navigating uncertainty and orchestrating development
Key Risk	Over-promising leading to stakeholder disappointment; failure to differentiate leading to commoditization	Being dismissed as niche player or SME; self-fulfilling prophecy of limited resources preventing strategic development	Resource starvation; dismissal as non-viable; pivot or termination	Stakeholder disappointment when timelines extend; resource depletion before conditions align; dismissed as purely aspirational

Table 3: Evaluation Errors in Entrepreneurial ToV

Source of Error	Core Evaluation Challenge	Primary Mechanism	Typical Direction of Bias	Resulting Error Pattern
Information Asymmetry	Stakeholders must infer loveliness and likeliness from incomplete, selectively disclosed information	Selective revelation; reliance on narratives and unverifiable signals	Toward overestimation when positive signals dominate; toward underestimation when latent potential is opaque	Type I errors when feasibility or value is overstated. Type II errors when credible but poorly signaled ToVs are discounted
Temporal Uncertainty	Outcomes depend on future conditions whose timing and sequence are unknown	Misjudgment of timing; temporal optimism or pessimism; anchoring on current constraints	Toward overestimation during optimistic periods, toward underestimation when feasibility is treated as permanently delayed	Type I errors when enabling conditions are assumed to emerge prematurely; Type II errors when emerging feasibility is dismissed as “too early”
Epistemic Uncertainty	Economic value and disruptiveness cannot be known prior to realization	Extrapolation from limited evidence; failure to imagine endogenous value emergence	Toward overestimation in novel domains; toward underestimation in familiar or incremental-looking contexts	Type I errors when early success is mistaken for scalable value; Type II errors when emergent loveliness is not recognized
Stakeholder Heterogeneity	Different audiences apply distinct criteria and face coordination problems	Social inference; information cascades; coordination failure across evaluators	Toward overestimation when endorsements cascade, toward underestimation when no audience leads	Type I errors from herding around early endorsements; Type II errors from coordination failure despite underlying merit
Integration Difficulty	Loveliness and likeliness must be reconciled despite relying on distinct evidence	Attribute substitution; misperceived correlation between dimensions	Toward overestimation when loveliness substitutes for feasibility, toward underestimation when disruptiveness is treated as infeasibility	Type I errors when feasibility is inferred from vision; Type II errors when ambitious ToVs are prematurely rejected

Note: The table summarizes systematic sources of evaluation error in entrepreneurial theories of value. Directional biases indicate the typical tendency induced by each source under common conditions; they do not imply that any source produces only one type of error or affects all stakeholders uniformly.

Appendices
APPENDIX A. Supplemental Materials for Chapter 1
Table A.1: Glossary of Core Constructs and Definitions

Concept	Definition	Key Citations	Field / Domain of Origin
Advice	Information, recommendations, or guidance offered by one party to another with the intention of informing decision-making.	(Schaerer et al., 2018; Miller, et al., 2024)	Management; Behavioral decision-making
Mentoring	A developmental relationship in which a more experienced individual provides support, feedback, and guidance to facilitate another's learning or career advancement.	(Kram, 1985; Eby et al., 2013)	Organizational behavior; Human resource development
Absorptive Capacity	The capability to recognize the value of new external knowledge, assimilate it, and apply it for commercial or strategic ends. It involves processes of acquisition, assimilation, transformation, and exploitation, shaped by prior knowledge and organizational context.	(Cohen & Levinthal, 1990; Zahra & George, 2002; Lane, et al., 2006)	Organizational learning; Knowledge management
Cognitive Readiness	An individual's preparedness to acquire, interpret, and apply new information effectively, shaped by prior knowledge and experience.	(Cohen & Levinthal, 1990; Feltovich et al., 2006)	Organizational learning; Cognitive psychology
Interpretive Capacity	The ability to make sense of and contextualize new information by linking it to existing cognitive frameworks and situational cues.	(Weick, 1995; Lane et al., 2006)	Sensemaking; Organizational learning
Mental Models	Internal representations or simplified cognitive structures that individuals use to interpret and predict the environment and guide action.	(Fiol & Lyles, 1985; Johnson-Laird, 1983)	Cognitive psychology; Organizational learning
Cognitive Frameworks	Overarching sets of beliefs, categories, and schemas that structure how individuals perceive, interpret, and respond to information.	(Fiske & Taylor, 1991; Gavetti, 2012)	Cognitive sociology; Strategic cognition
Cognitive Effort	The amount of mental energy required to process, integrate, and make sense of information, particularly under conditions of complexity or uncertainty.	(Payne et al., 1993; Gigerenzer & Todd, 1999)	Cognitive psychology; Decision sciences

Table A.1: Glossary of Core Constructs and Definitions (Cont.)

Concept	Definition	Key Citations	Field / Domain of Origin
Cognitive Engagement	The degree of psychological involvement and active mental participation in processing information or solving problems.	(Fredricks et al., 2004; Haynie, et al., 2010)	Educational psychology; Entrepreneurial cognition
Cognitive Appraisal	The evaluation process by which individuals assess the personal significance and implications of an event or information.	(Lazarus, 1991; Smith & Ellsworth, 1985)	Cognitive psychology; Emotion research
Cognitive Calibration	The metacognitive process of adjusting one's judgments or beliefs to improve accuracy or coherence, often through reflection on errors or discrepancies.	(Haynie et al., 2010; Shepherd et al., 2015)	Entrepreneurial cognition; Cognitive psychology
Learning	A process through which individuals or organizations acquire, interpret, and transform information into knowledge that changes their understanding, beliefs, or behavior. Learning entails both cognitive and behavioral change, encompassing processes such as knowledge acquisition, reflection, and adaptation.	(Argyris & Schön, 1978; Fiol & Lyles, 1985; Crossan et al., 1999)	Organizational learning; Cognitive psychology
Metacognitive awareness	An individual's conscious understanding of their own cognitive processes, including awareness of what they know, how they learn, and when and why to use particular strategies for thinking or problem-solving. It enables self-regulation of cognition through planning, monitoring, and evaluating mental activities.	(Flavell, 1979; Schraw & Dennison, 1994; Haynie et al., 2010)	Cognitive psychology; Entrepreneurial cognition

Note: Cognitive readiness represents the antecedent state that enables entrepreneurs to engage effectively with new information. *Cognitive effort* captures the active mental energy invested in processing that input when its meaning is ambiguous or contested. *Interpretive capacity* reflects the application of that effort; it is the ability to link new information to existing schemas and contextual cues to generate meaning. Finally, *cognitive engagement* denotes the observable manifestation of these internal processes, the degree of psychological involvement while grappling with advice. These constructs form a nested hierarchy in which readiness enables effort, effort activates interpretive capacity, and engagement reflects their behavioral expression.

APPENDIX B. Supplemental Materials for Chapter 2
Table B.1: Comparison of Testing Methodologies

Dimension	Social Interactions (Thought Testing)	Trial-and-Error Testing	Scientific Testing
Resource Intensity	Low (primarily time and social engagement)	Medium (requires time and market engagement, but less formal data collection)	High (requires time, data, and analytical resources)
Temporal Characteristics	Rapid, iterative feedback cycles	Rapid, iterative cycles but dependent on environmental feedback timing	Slower, extended timelines due to preparation and data collection
Scope of Theory Modification	Broad, enabling simultaneous revision of multiple ToV components	Broad but often incremental, based on experiential feedback	Targeted, focused on testing specific assumptions or causal links
Signal Characteristics	Subjective, socially embedded, experience-based signals	Ambiguous, outcome-based signals from environmental responses	Objective, data-driven, statistically grounded signals
Sources of Bias	Mentor heuristics, personal experiences, contextual knowledge	Entrepreneurs' own biases, misinterpretation of feedback, survivorship bias	Sampling limitations, measurement error, research design constraints
Impact on Theorizing	Facilitates theory refinement through assumption questioning, causal restructuring, and alternative framing	Gradual adaptation of ToVs through experiential learning and feedback incorporation	Enables formal validation or falsification of specific assumptions and hypotheses
Typical Stage	Early-stage theorizing, prior to formal empirical testing	Early to middle stages, accompanying initial market entry and product iterations	Later-stage testing, following initial theory development and structuring
Underlying Mechanism	Thought experimentation through socially embedded interaction	Action-based learning through real-world engagement	Formal empirical testing (e.g., field experiments, surveys, A/B tests)
Role in TBV Learning Process	Enables low-cost, flexible theory refinement under uncertainty	Provides experiential insights, guiding intuitive adjustment of ToVs	Provides rigorous validation, enhancing the credibility and reliability of ToVs

Figure B.1: Inductive Research Process

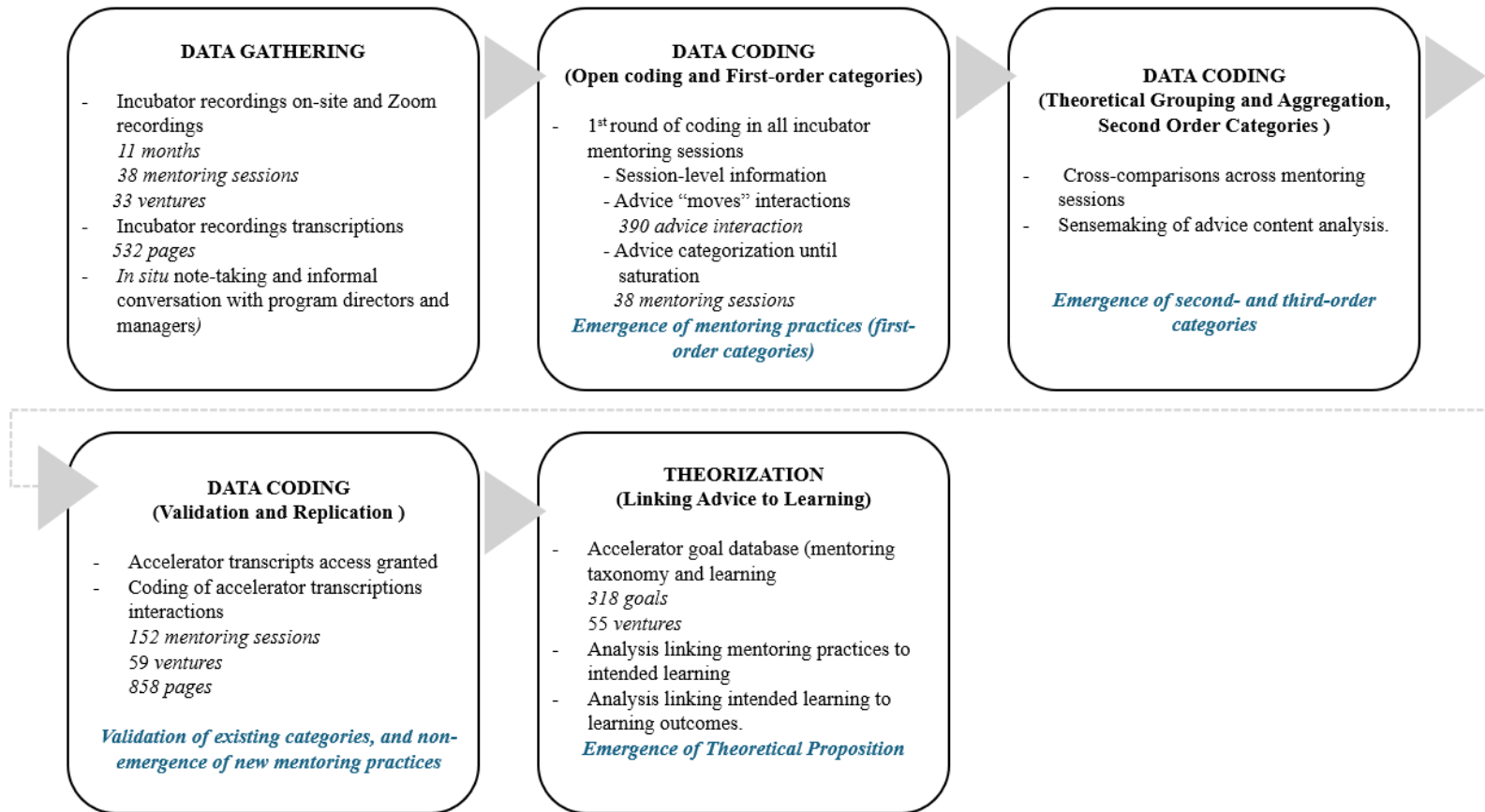
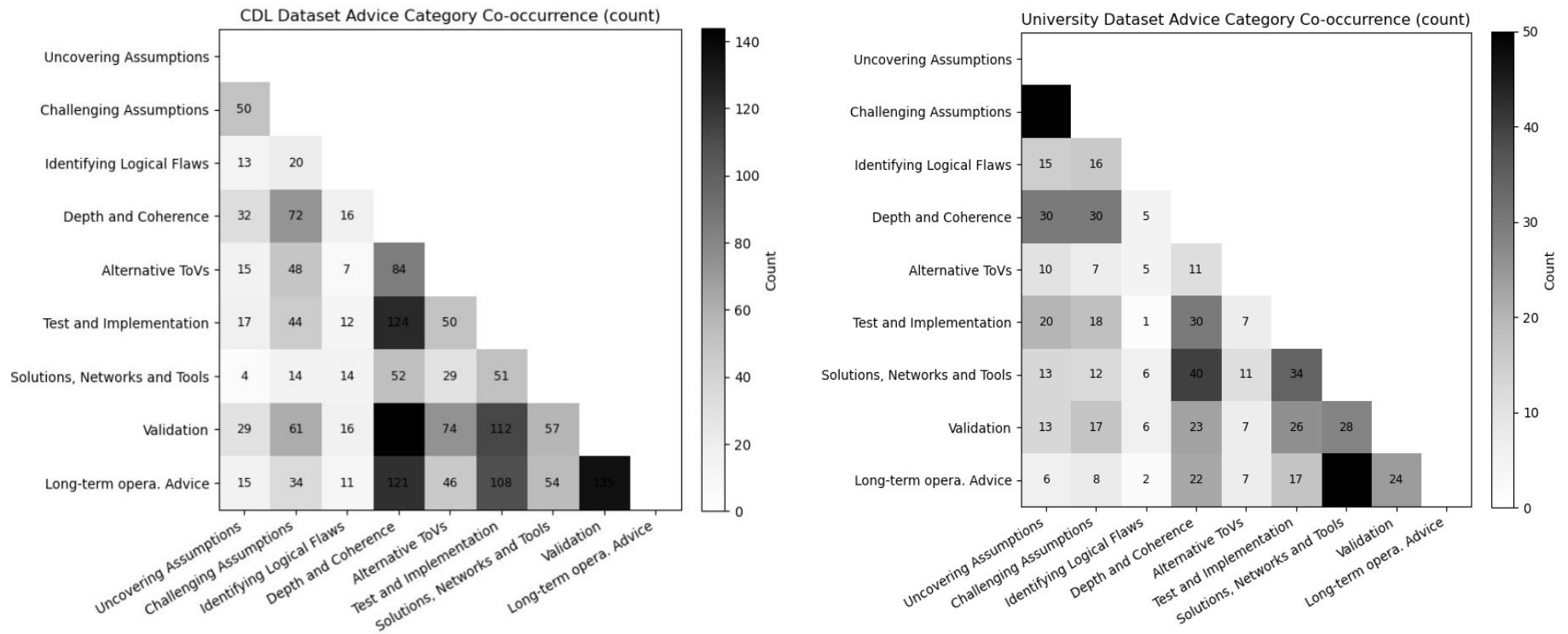


Figure B.2: Advice Co-occurrence



APPENDIX C. Supplemental Materials for Chapter 3
Table C.1: Stakeholder Preferences Across the Lovely–Likely Matrix

Stakeholder	Preferred Position in the Matrix	Rationale
Venture Capitalists	High-Lovely	Seek scalable, opportunities with both disruptive potential and validated feasibility.
Angel Investors	Medium-high/ High on both	Willing to accept some risk in likeliness in exchange for loveliness (novelty, ambition), often backing visionary founders early.
Crowdfunding Backers	High-Lovely, Medium-Likely	Respond strongly to compelling narratives and novelty, even if feasibility is not fully validated.
Banks / Lenders	High-Likely, Medium-Lovely	Prioritize feasibility, cash flows, and repayment capacity over disruptive potential.
Public Investors	High-Likely, Moderate-to-High Lovely	Require financial viability and growth story; loveliness helps justify valuation multiples.
Early Employees	Higher tolerance for low-likely, high-lovely.	Early employees (co-founders, joiners) are attracted by mission and equity upside;
Late Employees	High-likely ventures.	Employees joining at later stages seek job security and stability.
Corporate Partners	Minimum threshold of high-likely; moderate-to-high lovely desirable	Partnerships require feasibility to avoid reputational or operational risk, but loveliness adds strategic complementarity.
Suppliers / Distributors	High-likely ventures.	Value stability and predictability to justify contracts and long-term investments.
Early Customers	Indifferent to likeliness, high loveliness.	Early adopters value novelty and differentiation
Late Customers	High likeliness.	Late adopters demand proven functionality, safety, and reliability.
Mentors / Advisors	Medium-Likely, Medium-Lovely with high coherence	Focus on refining the internal logic of the ToV and ensuring causal consistency rather than extreme disruption.
Government / Regulators	High-Likely, Low-to-Medium Lovely	Prioritize feasibility, compliance, and risk minimization; disruption without safeguards is viewed skeptically.
Incubators / Accelerators	Higher weight on loveliness	Their business model depends on backing potentially disruptive ventures; tolerate lower likeliness early on.
Communities / NGOs	High-Lovely, Lower Likely	Value social impact visions; tolerate feasibility risks if societal benefit is compelling.

Table C.2: Mapping TBV Attributes to Epistemic Virtues

TBV attributes (Felin & Zenger, 2017)	Associated epistemic virtues (Pillai et al., 2024)
<i>Novelty</i> : reveals new opportunities and problems	<i>Loveliness</i> (opens new explanatory domains and new causal mechanisms).
<i>Simplicity</i> : clear and not overburdened with assumptions	<i>Parsimony</i> (fewer assumptions, elegant structure).
<i>Uniqueness</i> : distinguishes one venture's path from others	<i>Consilience</i> (fit with contextual evidence) <i>Precision</i> (distinctiveness and introduces new unique causal mechanisms).
<i>Generativity</i> : creates new possibilities, guides action	<i>Loveliness</i> (opens new explanatory domains and new causal mechanisms).
<i>Coherence</i> : internal consistency, fit with broader beliefs.	<i>Coherence</i> (alignment with prior theory and internal logic) <i>Consilience</i> (fit with observed data).

Note: Table 1 maps how the attributes of the Theory-Based View (Felin & Zenger, 2017) correspond to classical epistemic virtues (Pillai et al., 2023), illustrating how entrepreneurial theorizing can be understood as the pursuit of theoretical virtues similar to those that guide scientific reasoning.

APPENDIX D. Supplemental Materials for Chapter 3

EVOLUTIONARY PATHWAYS OF ENTREPRENEURIAL THEORIES OF VALUE

Entrepreneurs rarely begin with fully formed or internally coherent ToV (Leatherbee & Katila, 2020). Instead, they learn through cycles of experimentation, feedback, and even failure; leveraging their limited resources to update their theories as new information emerges and as technological and market conditions evolve (Agarwal et al., 2025; Camuffo et al., 2020; Chavda et al., 2024; McDonald & Gao, 2019; Valentine et al., 2024). Movement across the lovely–likely matrix is therefore dynamic. Some ventures advance through iterative refinement, strategic repositioning, or shifts in their external environment, gradually approaching the high-lovely, high-likely state that characterizes viable and scalable theories. Others fail to adapt, becoming non-feasible or incoherent ToV. This section explores these distinct evolutionary pathways.

To theorize these dynamics, we outline five stylized evolutionary trajectories that illustrate how ToV progress, stall, or decline. These illustrative examples draw on well-documented ventures of Amazon, Theranos, Google, Yahoo!, and Inkdom. These ventures were selected because of their detailed historical accounts and because readership familiarity with these ventures minimizes idiosyncratic interpretation. The following accounts are stylized conceptual illustrations, used heuristically to elaborate the theoretical logic of the framework and to illustrate evolutionary pathways.

[Insert Figure D1 Around Here]

Discovering Likelihood While Compromising Loveliness: Amazon

Some ventures begin with ToV that are highly *lovely*, visionary, disruptive and with high long-term economic potential; but initially *unlikely* given prevailing technological, behavioral, or institutional constraints. This evolutionary path illustrates how entrepreneurs can gradually

increase the feasibility of such theories by narrowing and testing their scope, sacrificing some short-term loveliness to validate key assumptions about likeliness while preserving the broader vision. Over time, as evidence accumulates and external conditions (e.g., technology) matured, ventures may re-expand their scope and eventually reach the high-lovely, high-likely quadrant.

Amazon's evolution exemplifies this pattern. Jeff Bezos's 1995 ToV framed the company as "the everything store," a parsimonious yet expansive vision of centralized online retail (Stone, 2013). The idea was conceptually elegant and disruptive but faced significant feasibility barriers: lack of secure online payment systems, undefined scalable logistics, and untested consumer trust in e-commerce. The theory thus scored high on loveliness but low on likeliness.

To address this, Bezos temporarily narrowed the theory's scope by selecting books as an initial product category (Snihur, Zott, & Kiss, 2025; Thomas & Snihur, 2025); an item with standardized attributes, predictable demand, and established supply chains. This pivot increased coherence and precision, creating a testable version of the broader long-term "everything store" theory, while reducing short-term novelty and disruptiveness. With this early online-bookstore ToV, the venture disrupted only the book (rather than retail) industry.

As the online-bookstore ToV proved viable, Amazon progressively reintegrated elements of the original "everything store" ToV. As the ToV was progressively enacted in practice (via refining logistics, and improving search, recommendation, and fulfillment), its consilience and internal coherence increased, with observable behavior and its operational feasibility. Moreover, as the number of categories expanded, so did its loveliness. By the mid-2010s, accumulated capabilities and technological progress had restored the original ToV positioning Amazon in the high-lovely, high-likely quadrant. By that time Amazon was no longer a startup.

This evolutionary path is characteristic of growth-oriented, disruptive ventures that begin with ambitious, but initially implausible ToV and eventually become successful. Such entrepreneurs, often supported by venture capital, advance by building likeliness through staged validation and iterative testing (e.g., proof points, technological advancements, showing execution ability, etc.) before restoring the full scope of the original ToV.

Erosion Through Persistent Non-Feasibility: Theranos

Other ventures that also originated with highly lovely, low likely ToV quadrant, remained infeasible (and never increased in likeliness) given the state of technological or scientific development. These ventures also attempt to increase feasibility by narrowing scope or adjusting implementation, but without credible empirical validation, their theories deteriorate rather than evolve. Over time, loveliness declines as the original theory is compromised as likeliness fails to emerge. This trajectory reflects erosion through persistent non-feasibility, illustrating how sustained infeasibility undermines both the theoretical and empirical foundations of a ToV.

Theranos provides a canonical example. Founded in 2003, the venture articulated an exceptionally lovely ToV: diagnosing hundreds of medical conditions from a single drop of blood (Carreyrou, 2018). The vision was parsimonious, disruptive, and socially resonant, promising to make testing faster, cheaper, painless, and more accessible, thereby revolutionizing diagnostics and preventive care. Yet the theory was technologically unlikely. It relied on assumptions about biochemical stability, miniaturization, and analytical precision that exceeded what contemporary science at that time could deliver (Carreyrou, 2018).

Early on Theranos sought to increase the likeliness by narrowing its scope, from hundreds of diagnostic tests to a smaller subset of them, and later to partnerships with pharmacies to facilitate market entry. These shifts, however, did not produce greater empirical plausibility. The firm's

technological core remained unvalidated and internal tests failed to demonstrate accuracy (Carreyrou, 2018).²⁵ Ultimately, the ToV collapsed because its promised causal relationships could not be demonstrated. Theranos's path reflected a systematic decrease of epistemic virtues: coherence and consilience shrank as evidence failed to validate its claims.

Despite also compromising loveliness, Theranos's efforts to increase likeliness failed to generate empirical support and revealed the theory to be more difficult to implement than initially anticipated. Its ToV remained untested and empirically unfeasible at that time, reflecting an evolutionary path in which narrowing and adjustment did not translate into feasibility. This trajectory characterizes ventures that emerge under conditions of technological impossibility, where continued testing exposes persistent infeasibility within shared and expected timeframes, and entrepreneurs fail to overcome the existing technological bottleneck or identify an alternative feasible adjacent possible (Goldfarb & Kirsch, 2025; Kauffman, 1995, 2000). As a result, perceived loveliness erodes over time, and the venture gradually shifts toward the Low-low area of the lovely–likely matrix.

Discovering Loveliness Over Time: Google

Some ventures begin with ToV that are highly *likely* theories, grounded in technological feasibility (existing MVP) or customer demand, yet relatively low in *loveliness* as they lack a compelling logic of how value will be captured. Entrepreneurs in this position often create products or services that solve identifiable problems and gain rapid adoption but initially lack an economic rationale linking value creation to value capture.

²⁵ Later, other ventures have successfully developed technologies capable of performing multiple tests from minimal blood samples, suggesting that the original ToV was rather premature relative to the state of technological readiness.

Google's early development provides a canonical example of this trajectory. When Larry Page and Sergey Brin launched Google in the late 1990s, their efforts originated as an academic project rather than as a commercial venture (Vise & Malseed, 2005). Their PageRank algorithm dramatically enhanced search relevance and usability, leading to widespread user adoption and rapid diffusion relative to existing incumbents such as Yahoo! and AltaVista. At this stage, Google's ToV was highly likely as it was operationally viable, validated through user behavior, and technologically scalable; however, it was not lovely, as it lacked a model for value capturing, and internet search services were a commodity service (Rindova & Kotha, 2001).

Over time, Google's theory evolved as the company introduced targeted advertising as a monetization mechanism. Advertising created a coherent revenue logic, tightly linked to Google's expanding user base, and revealing new affordances in digital markets, as advertisers recognized the value of targeted, keyword-based advertising. This innovation transformed the ToV into one that was both likely *and* lovely: advertising established a revenue logic that aligned with user demand and expanded the company's profitability. The resulting theory scored higher across epistemic virtues such as consilience, as advertisers' willingness to pay validated the monetization strategy, and coherence, as monetization complemented user experience.

This trajectory characterizes ventures that originate from nascent inventions or software technologies. Such ventures often begin with a validated technological innovation that demonstrates clear value-creation potential but lacks an immediate mechanism for value capture. In these cases, the "loveliness" of the theory (i.e., its monetization) is discovered over time.

Erosion Through Failed Re-theorizing (or Lack of Coherent Pivots): Yahoo!

Some ventures begin with feasible and economically promising ToV (medium-lovely, medium likely) but struggle to maintain coherence and distinctiveness as markets evolve. This

trajectory illustrates how repeated re-theorizing can erode both loveliness and likeliness when pivots lack theoretical integration (Rindova & Kotha, 2001; Agarwal et al., 2025).

Yahoo! exemplifies this pattern. Founded as an Internet search engine in the mid-1990s, its initial ToV was highly likely: the service was technically feasible, rapidly adopted, and monetized through advertising linked to web traffic (Livingston, 2007). It was also moderate in loveliness: being distinctive (by creating a new industry) and generating revenue via advertising tied to web traffic. However, while useful and once the most popular search tool on the web, Yahoo!'s early ToV offered limited distinctiveness (which limited Yahoo!'s loveliness). The model was functional rather than distinctive, and its value proposition eroded as search became commoditized, and competitors introduced more effective algorithms (Rindova & Kotha, 2001).

In response, Yahoo! redefined its ToV (pivoted) towards becoming a destination site, emphasizing branded content and user engagement (Rindova & Kotha, 2001). This pivot temporarily increased loveliness by projecting a broader, more imaginative role for the firm by becoming a daily hub where users consumed news, sports, finance, and entertainment (Livingston, 2007). Economic potential also increased as Yahoo! promised advertisers not only traffic but also deeper engagement by keeping users within its ecosystem. However, likeliness declined as execution depended on external content providers, costly partnerships, and acquisitions that reduced coherence and precision across activities (Rindova & Kotha, 2001).

As industry competition continued to evolve, Yahoo! pivoted again toward a portal model. This pivot promised an even more ambitious and integrated vision, positioning Yahoo! as a single-entry point for users' digital lives (Rindova & Kotha, 2001). While technically feasible, this expansion further diluted focus and internal consistency. The firm lacked distinctive capabilities in most of the domains it entered, facing specialized competitors in search (Google), e-commerce

(Amazon), and online communities (Messenger). Moreover, its reliance on acquisitions and partnerships for delivering their services created integration challenges and further decreased the firm's internal coherence, and decreased consilience with market realities. Ultimately, Yahoo! likeliness steadily declined over time as competition intensified and users migrated to alternative platforms, culminating in the company's absorption by Verizon in 2017.

Yahoo!'s experience illustrates a trajectory in which successive pivots sought to expand scope but failed to achieve strategic–operational coherence (Agarwal et al., 2025). Its oscillation among competing theories, without fully validating or implementing any, progressively eroded likeliness and ultimately led to decline. This pattern reflects the path of ventures that begin with a viable ToV but fail to sustain their position because they misread or overlook market disruptions, technological shifts, or evolving customer preferences. When pivots lack internal coherence with the venture's existing capabilities, internal coherence and execution fails.

Everyday Entrepreneurship: Discovery Through Pivoting: Inkdom

While iconic ventures trace transformative trajectories across the lovely–likely matrix, most entrepreneurial activity unfolds within SME's which operate in the middle zones of the lovely–likely matrix (Aldrich & Ruef, 2006; Cassar, 2004). Their ToV are neither exceptionally compelling nor implausible. They tend to be moderately lovely, addressing recognizable problems with positive economic potential, but without radically reimagining industries (Bhidé, 2000; Gartner, 1985); and moderately likely, since these ventures are typically technologically feasible, but are based on untested assumptions about demand or product-market fit (Camuffo et al., 2019; McMullen & Shepherd, 2006). Such ventures begin with plausible but unproven assumptions that test and validate over time (Camuffo et al., 2020).

Inkdome illustrates this incremental evolutionary path (Camuffo et al., 2019). Initially conceived as a search engine connecting users with tattoo artists, through hypothesis testing and customer discovery, the founders learned that clients valued trusted human advice over algorithmic search. This finding prompted a pivot toward an expert-mediated matching platform, redefining the ToV around recommendations. By articulating and testing assumptions, Inkdome increased in likeliness by validating the problem and the solution. Incremental testing improved the ToV's consilience with observed evidence and its coherence across activities. The case exemplifies how experimentation may uncover new ToV, or causal mechanisms, and improve the coherence and precision of a ToV (Kirtley & O'Mahony, 2022; McDonald & Gao, 2019).

For most entrepreneurs, testing and pivots represents the primary mechanism of theorizing and validating the ToV to ensure likeliness of the solution and potential successful implementation. Ventures begin with partially specified or descriptive theories and advance by progressively refining causal assumptions, validating feasibility, and adjusting scope (Ott & Hannah, 2024; Ries, 2011). Each cycle of testing and adaptation can reposition the ToV within the matrix in several ways. When empirical testing validates core assumptions, *likeliness* increases, moving the theory upwards. When discovery reveals more attractive or higher-order problems, *loveliness* increases, moving it rightward. When feasibility cannot be demonstrated, likeliness is threatened, moving the theory both downwards and leftwards. This process is inherently dynamic and cumulative: entrepreneurs learn by iteratively aligning their beliefs about opportunity with observable evidence, gradually improving some virtues (i.e., consilience, coherence, and precision) of their theories (Agarwal et al., 2025).

The Inkdome case captures a trajectory characteristic of “everyday entrepreneurship”, in which learning occurs through systematic testing. Such ventures rarely move into the high-lovely,

high-likely quadrant but instead evolve through a series of pivots driven by empirical validation. By engaging in iterative experimentation, entrepreneurs refined both the cognitive and empirical components of their theories, ensuring that value creation logic remains coherent with evidence of feasibility validated with customers' feedback (Agarwal et al., 2025). This path underscores that the evolution of ToV, and the movement across the lovely–likely matrix, is not confined to exceptional unicorns but constitutes the core of everyday entrepreneurship.

Together, these archetype trajectories illustrate the distinct paths ventures may follow as they test, refine, and implement their ToV. Some paths lead to successful evolution, where learning, validation, and effective resource mobilization progressively align loveliness with likeliness, while others result in stagnation or decline when such alignment fails. Collectively, these archetypes reveal that ToV are provisional causal models that entrepreneurs continuously test, refine, and reframe (Zellweger and Zenger, 2023; Valentine et al., 2024)

Figure D1: Evolutionary Pathways of Entrepreneurial Theories of Value

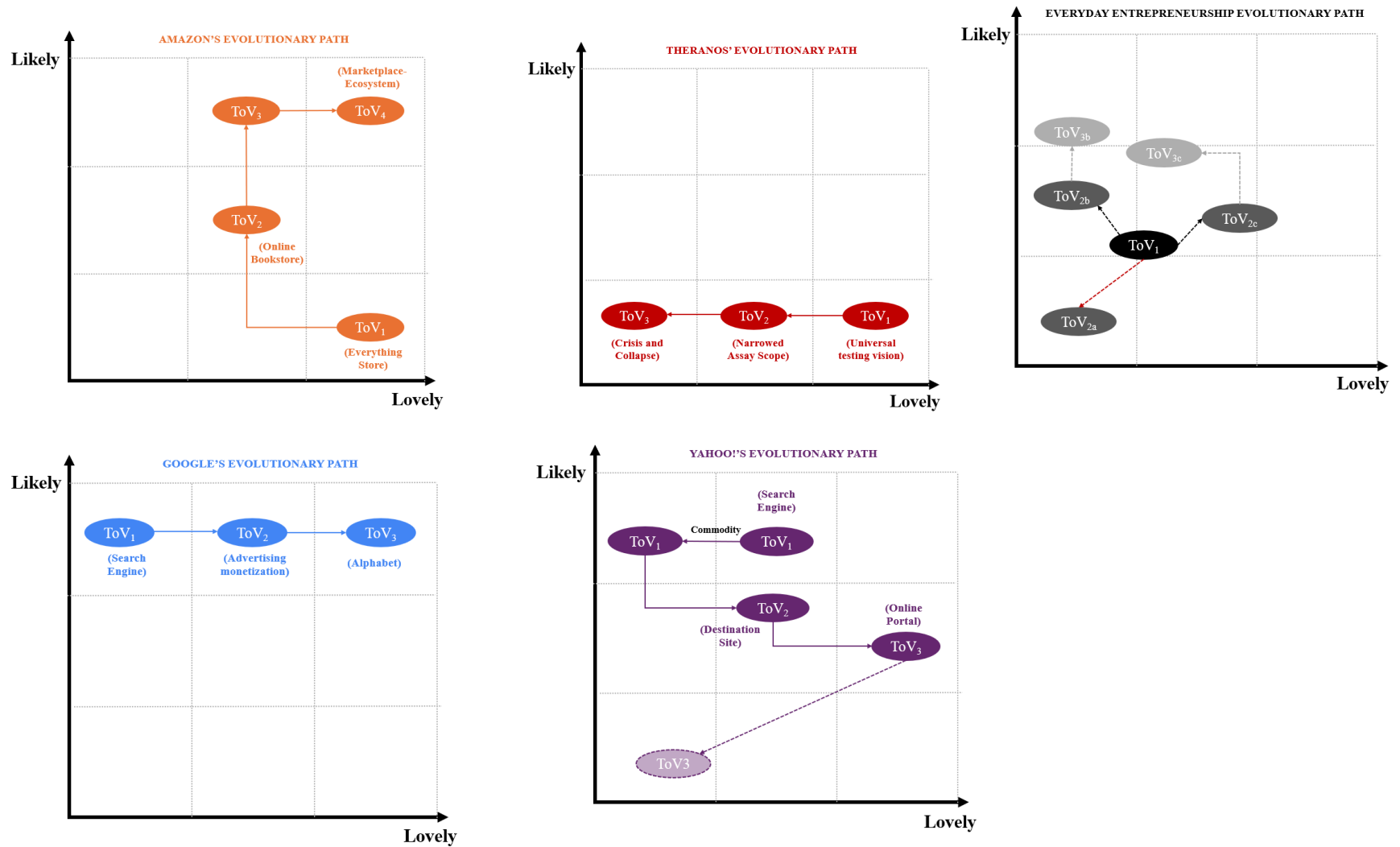


Table D1: Epistemic Virtues Across Amazon's Evolving Theories of Value:

	Original ToV (Everything Store)		Pivot ToV (Online Bookstore)		Reintegrating ToV (Expanded categories)		Current ToV (Marketplace-Ecosystem)	
Generalizability		High - Broad vision of redefining retail		Low - Narrowed focus on books only		High - Applied model across product lines		Very High - Applies to multiple sectors (retail, cloud, media)
Parsimony		Moderate - Big idea but vague on execution		High - Simpler, executable business model		High - Operational model remained streamlined		High - Unified platform with modular extensions
Coherence		Low - No clear system linking assumptions		Moderate - Clearer connection between activities		High - Strong logic linking scale with experience		Very High - Coherent vision across services and products
Consilience		Low - Few observable customer behaviors		Moderate - Some early evidence of traction		High - Growing data on customer behavior		Very High - Extensive empirical validation and metrics
Precision		Low - Lacked specificity on how value would be delivered		High - Well-defined product, operations, and channels		High - Repeatable and scalable mechanisms		Very High - Deeply refined operational and strategic precision

Table D2: Epistemic Virtues Across Theranos' Evolving Theories of Value:

	Original ToV (Universal Testing Vision)	Pivot ToV (Narrowed Assay Scope)	Later ToV (Crisis and Collapse)
Generalizability	 Very High – envisioned transforming diagnostics for hundreds of diseases through a single drop of blood	 Medium – applied concept to pharmacy-based testing model but without technical proof.	 Very Low – no validated applications; the theory's domain effectively collapsed
Parsimony	 High – simple, elegant vision of universal testing via micro-sample analysis	 High ; same causal claim expressed in simpler form (narrower disease range)	 Low – technical and organizational complexity obscured the core logic.
Coherence	 Low – compelling story but no empirical link between technological assumptions and outcomes.	 Low – narrowing scope did not clarify causal mechanisms	 Very Low – internal and external inconsistencies fully exposed.
Consilience	 Very Low – no observed evidence of technological functionality or accuracy	 Very Low – tests inconsistent with external lab results.	 Absent – empirical disconfirmation ended credibility.
Precision	 Low – broad, aspirational causal claims lacking operational specification.	 Low – no increase in measurement accuracy or technical detail.	 Very Low – ToV invalidated.

Table D3: Epistemic Virtues Across Google's Evolving Theories of Value:

		Original ToV (Search Engine)		Pivot ToV (Advertising)		Reintegrating ToV (Alphabet)
Generalizability		Very Low - valuable as a search tool but no clear path to monetization beyond search		Medium – monetization logic works across many industries but still tied to search		Very High – model extends across multiple platforms (YouTube, Maps, Gmail, Android, Drive)
Parsimony		High – simple, elegant algorithm (PageRank) with clear user value		Medium – ad model introduces complexity but retains clarity (keyword targeting)		High – unified ecosystem logic across services remains streamlined for users
Coherence		Low – strong user logic (better search) but no clear link to revenue		High – clear causal chain: more users lead to more valuable ads, this lead to more revenue		Very High – coherent integration across platforms with network effects and data synergies, same revenue logic
Consilience		High – clear fit with user data (adoption, utilization) but no fit with revenue		High – advertiser willingness-to-pay validates model empirically		Very High – extensive validation across global markets and industries
Precision		Medium – strong technical mechanism but vague on business logic		High – well-defined monetization logic (CPC, targeting, AdSense)		Very High – refined operational precision across ad-tech, cloud, and platform businesses

Table D4. Epistemic Virtues Across Yahoo!'s Evolving Theories of Value:

	Original ToV (Search Engine/ Directory)	Pivot ToV (Destination Site)	Reintegrating ToV (Portal)
Generalizability	 Moderate – useful as a search tool but limited scope; novelty diminished as competitors emerged	 High – Yahoo! as a daily hub for news, finance, entertainment, increasing scope and ambition.	 Very High – expansive, integrated vision of the Internet as a single-entry porta
Parsimony	 High – simple curated-directory model, easily understood by users and advertisers	 Moderate – broader scope increased complexity, requiring heavy investment in partnerships and content.	 Low – proliferation of services and acquisitions created complexity and diluted focus.
Coherence	 Moderate – internally consistent early on, but weakened as search commoditized	 Low – reliance on external content providers and acquisitions reduced internal coherence.	 Low – lack of capabilities across services and fragmented integration eroded internal coherence.
Consilience	 High – aligned with observed user behavior in the early web; widely adopted by early users.	 Moderate – initial success in driving traffic, but weaker fit with consumer behavioral patterns.	 Low – inconsistent with emerging consumer preferences and outcompeted by specialized rivals.
Precision	 Moderate – clear search logic but lacked depth compared to evolving competitors.	 Low – advertiser logic partly defined but causality between investments and outcomes ambiguous	 Low – causal mechanisms diffuse across multiple services; limited clarity on how value would be captured without differentiation.

Table D5: Epistemic Virtues Across an SME Evolving Theories of Value:

	ToV1 (Initial Idea)	ToV2a (Failure / Avoiding Area)	ToV2b (Pivot to Feasibility)	ToV2c (Pivot to New Problem)	ToV3b (Refined Feasible Path)	ToV3c (Refined Higher-Value)
Generalizability	 Medium-Low – narrow scope, untested assumptions	 Low – no scalable solution	 Medium – validated in limited context	 Medium High – reframed around larger problem	 Medium – Scalable within chosen niche	 Medium High – potential broader industry relevance
Parsimony	 Medium-Low – simple but vague	 Low – overburdened with untested assumptions	 Medium – simplified, executable model	 Medium – still requires refinement	 Medium – still requires refinement	 Medium – more complex as scope expands
Coherence	 Low – usually lacks internal logic or causal clarity	 Low – usually lacks internal logic or causal clarity	 Medium – clearer connection actions to outcomes	 Medium – developing causal coherence	 Medium High – coherent logic linking resources and outcomes	 Medium – Stronger coherence across activities
Consilience	 Low – little fit with observable data	 Very Low – no customer demand or willingness to pay	 Medium High - Growing data on customer behavior	 Medium – Early signs of customer recognition	 Medium High – consistent with multiple data points	 Medium High – consistent with multiple data points
Precision	 Low – usually descriptive vague causal mechanisms	 Low – mechanisms implausible or invalidated	 Medium – mechanisms better specified but still narrow	 Medium – improved causal specificity	 Medium High – increase precision in operational mechanisms	 Medium High – increase precision in operational mechanisms

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