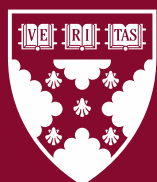


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ADVICE AND THE BAYESIAN ENTREPRENEUR¹

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Introduction

Bayesian entrepreneurship starts from the premise that entrepreneurs' beliefs guide their theorizing, experimentation, and choices (Agrawal et al., n.d.). Since each entrepreneur has unique beliefs based on their own set of past experiences, cognitive ability, and disposition, individual entrepreneurs are likely to take different actions even if they stumble upon the same entrepreneurial opportunity. Beyond initial beliefs, Bayesian entrepreneurship is rooted in the idea that experimentation can be a valuable tool to update beliefs and improve choices. From the Bayesian perspective, any purposeful information gathering activity testing the promise of a new venture or strategy—from seeking advice to A/B tests—can be treated as a Bayesian experiment (Kerr, Nanda, and Rhodes-Kropf 2014; Agrawal et al., n.d.).

While Bayesians can learn from multiple forms of experiments, the study and practice of experimentation in entrepreneurship has largely focused on tests involving customers (Ries 2011; Eisenmann, Ries, and Dillard 2012). This idea was seeded in the popular Lean Startup Methodology which encourages entrepreneurs to develop and share minimal viable products (MVPs) to test customers' reactions to a product's core value propositions. While newer academic frameworks widen the lean startup lens, the examples and cases used to motivate these approaches – like consumers shopping for tattoo artists or a new pair of shoes—largely highlight how entrepreneurs benefit from experimenting with users. Yet, these broader frameworks—including the Bayesian approach—also allow entrepreneurs to experiment by testing ideas in other ways, including with advisors.

Advisors can fundamentally alter the trajectory of a nascent venture. Yet, how and what the Bayesian entrepreneur learns from advice is unclear. In this paper we highlight how the fundamentally *social* nature of advice yields unique challenges and opportunities in the context

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of Bayesian learning.² First, information from an advisor is shaped not only by the entrepreneurs' beliefs, but also by the advisor's own unique beliefs. As a result of these differing beliefs, a Bayesian entrepreneur is less likely to seek out advice, and when they do, that advice is likely to be biased. Second, the presence of differing beliefs also has benefits. Because advisors draw on their own unique theories and experiences, advice is especially beneficial in broadening and extending an entrepreneur's theories of value creation and capture. Third, since advice is cheap, but correlated, Bayesian entrepreneurs can iterate on their beliefs quickly, but with greater potential for over-confidence, herding, and bubbles. Fourth and finally, the iterative and heterogeneous nature of advice promotes more efficient experimentation and so in and of itself encourages Bayesianism.

The founding, growth, and pivots of the direct-to-consumer (DTC) online framing startup Framebridge illustrates the promise and perils of learning from advice (Koning and Dadlani 2023). Framebridge's founder, Susan Tynan, gained conviction in her idea for an online framing business after multiple expensive and frustrating trips to local picture framing stores. Her initial idea was to build a smartphone app where customers selected a frame, mailed their art, and then received back a framed piece ready to hang. Yet, early advice on her idea was often biased: investors — most of them men — who had never thought or tried to frame anything themselves advised against building an online business in the framing category. More broadly, much of the early feedback and advice Tynan received was focused on "why this [idea] wouldn't work." As we explain below, negative advice on early ideas is common for Bayesian entrepreneurs determined to launch new businesses.

Despite early negative signals, Tynan raised a million-dollar seed round from a group of VCs. Momentum in the round was sparked by her first investor Dayna Grayson, whose belief in the idea was motivated by her own prior experience trying to search for a framing service. Tynan used the seed funding to launch a minimum viable framing business out of a small local warehouse, validating that there was a real market for online app-based framing. Based on these test results, the board invested \$65 million dollars over three years so Tynan could scale quickly. While Tynan's original pitch deck hand waved at the idea that scale would drive defensible margins, it was advice from her board that helped her create a new theory about how to capture value: Invest in expensive Kiva-style robots, like those used in Zappos and Amazon fulfillment

² Miller and coauthors (2024) define advice as “information provided by any party outside the firm drawn from their knowledge or experience intended to inform firm decisions” (page 2). Advice can come from formal advisors like board members and investors, as well as informal advisors such as seasoned entrepreneurs, entrepreneurs at similarly staged ventures, managers from incumbent firms, and professionals like accountants and lawyers (Cohen, Bingham, and Hallen 2019; Garg and Eisenhardt 2017).

centers, to position Framebridge as the "Zappos for Framing" and fuel growth and defensible margins from scaled automation.

Unfortunately, the "Zappos for Framing" theory was wrong. In just three years annual revenues exceeded \$20 million, but losses also exceeded \$20 million a year. As it turns out, selling shoes online has fundamentally different economics than online custom framing. Shoeboxes are relatively uniform, requiring little variation in the packing, shipping and handling processes, whereas pieces of framed art are essentially unique, each requiring different handling, framing techniques, and operational care. Why was Tynan's theory of value capture so off? As we argue below, when multiple advisors share similar backgrounds and networks—as Tynan's advisors of online tech executives did— advice can lead entrepreneurs to incorrectly apply theories from other firms and develop overconfident beliefs, which reduce further learning.

Fortunately, one of Susan's closest advisors, Tim O'Shaughnessy, expressed doubts about Framebridge's long-term viability. Concerned over the mounting losses, O'Shaughnessy skepticism injected enough doubt into Tynan's prior to trigger a search for alternative strategies for how to capture value from the core Framebridge idea. Her search led to a manufacturing executive from outside of the tech startup ecosystem, and thus with low network overlap with her board. He advised Tynan to experiment with a robot-free operational strategy with lower fixed costs and steeper learning curves. The operational experiment yielded promising improvements in metrics that previously were unappreciated. She doubled down on a new "custom manufacturing" strategy, inspired not by tech unicorns but door fabrication companies. The pivot yielded both profits and continued growth. While the "correlated" advice Tynan relied on to develop her Zappos inspired robot-based strategy almost bankrupted the venture, the new strategy based on advice from a true outsider illustrates how, when properly structured and considered, advice can act as a valuable catalyst for better experimentation and learning.

The Bayesian Entrepreneur: A Primer

At the heart of the Bayesian approach to entrepreneurship lies the concept of priors - the initial beliefs an entrepreneur holds about their idea (Parker 2006; Agrawal et al., n.d.). An entrepreneur's priors are not single point estimates, but rather probability distributions that represent the range of possible outcomes and their likelihood, reflecting the uncertainty inherent in entrepreneurial ventures and allowing for nuanced updating as new information is acquired. Priors, also referred to as beliefs, are subjective constructs shaped by an entrepreneur's background, experiences, circumstances, cognitive abilities, self-efficacy and so on.

Importantly, the decision to pursue an entrepreneurial venture hinges on the strength of these priors. A Bayesian entrepreneur must have sufficiently strong beliefs in their idea to take action, as weak priors are unlikely to result in meaningful entrepreneurial activity. For instance, an individual contemplating leaving a stable job for an entrepreneurial pursuit must not only

believe in their idea but also be convinced that this path will yield more favorable outcomes than remaining in wage employment.

In the Bayesian framework, these initial beliefs serve as the starting point for a dynamic updating process. Based on their priors, Bayesian entrepreneurs develop theories about how to create and capture value. For example, early scooter rental companies like Bird and Lime may have theorized that if they offered an inexpensive and convenient way for students to get around campus, enough students would pay to ride them to drive economies of density and network effects. They next articulate hypotheses based on these theories, conduct experiments to test their hypotheses and finally update their beliefs through the theory-guided interpretation of experimental data. Theories often center around consumer behavior, but can also consider a wide array of factors related to entrepreneurial strategy, and serve as the "likelihood function" that helps entrepreneurs map the data they collected into inferences (Felin and Zenger 2017; Agrawal et al., n.d.). As entrepreneurs conduct experiments to gather new information through various means — including advice, as we will explore in this chapter — they update their priors, constantly refining their beliefs and theories, including their strength, and adjusting their strategies accordingly. This iterative process of belief and theory updating lies at the core of Bayesian entrepreneurship, driving decision-making and shaping the entrepreneurial journey.

Advice Aversion and Bias

Our first insight is that the Bayesian entrepreneur is *advice averse*. A decade of research has documented that entrepreneurs fail to seek, receive, and listen to advice, despite the fact that advisors are both willing to provide advice and the advice they provide is often valuable (Miller, O'Mahony, and Cohen 2023; Grimes 2018; Parker 2006; Dimitriadis and Koning 2022). Nascent entrepreneurs often keep their precious ideas private, or in "stealth" mode, rather than seeking feedback (Bennett and Chatterji 2019). One reason entrepreneurs keep their ideas private could be that entrepreneurs of all stripes —from founders of high tech startups to small businesses in emerging markets—appear to be under-networked and so often lack access to advisors who could help them iterate on their ideas (Chatterji et al. 2019; Dimitriadis and Koning 2024). But, even when given access to advisors, entrepreneurs struggle to generate and incorporate relevant advice (Miller, O'Mahony, and Cohen 2023; Dimitriadis and Koning 2022).

Given the potential value of external information, why would the Bayesian entrepreneur be advice averse? Crucially, getting advice requires acting on beliefs. If an entrepreneur's beliefs are weak, entrepreneurs will fail to seek advice. Why might an entrepreneur have weak beliefs? If an entrepreneur was pushed into starting a business, perhaps because of a lack of outside options, they may not believe strongly in the business idea nor even have the necessary business theories that advice can inform. And of course, entrepreneurs on the side-line still lack conviction in their idea, as otherwise they would have entered. With low conviction, an entrepreneur will see little reason to seek advice, even from a cheap source like a peer or mentor,

a fact that is confirmed in Bennett and Chatterji's (2023) survey of nascent US entrepreneurs and Dimitriadis and Koning's (2022) study of Togolese small and medium businesses.

Conversely, entrepreneurs with high conviction believe in the potential of their idea more than others and are likely to prematurely satisfice (Cohen, Bingham, and Hallen 2019) or filter advice to confirm their priors (Nickerson 1998). Not seeking advice may be rational in the short term for these entrepreneurs because advisors bring their own set of biased experiences, priors and mental models, which are likely not only different from the entrepreneurs (Bacon-Gerasymenko and Eggers 2019), but also less enthusiastic. An entrepreneur with strong priors may find negative advice distracting, rather than helpful. Moreover, given strong priors, even if solicited, negative advice is not likely to change the entrepreneur's priors (Grimes 2018; Nickerson 1998). As a result, left to their own devices, high conviction entrepreneurs are likely to avoid seeking out what they view as unduly pessimistic and skeptical advisors prone to producing "false negatives."

Entrepreneurs with exceptionally novel ideas also may not benefit from advice. The aim of the entrepreneur is to build a new business that can meet the needs of customers in future, yet the experience that advisors draw on is rooted in the past (Bacon-Gerasymenko and Eggers 2019). As a result, if the theories and data of the past no longer apply — for example because of a technological disruption fundamentally shifting how firms compete (Tripsas and Gavetti 2000) — then the entrepreneur may only receive historically biased advice that undermines forward-looking performance. Similarly, because advice is often proffered by former entrepreneurs who were successful, advice is often riddled with selection biases that can favor especially risky strategies. Yet, even in the face of such biases, advisors who are more successful and have richer experiences appear to drive greater improvements in entrepreneurial decision making and performance (Lerner and Malmendier 2013; Chatterji et al. 2019). The value of advice appears to outweigh these biases, suggesting that even information drawn from outdated or selectively sampled experiences is often informative for the typical Bayesian entrepreneur.

Drawing inferences from past successes has another unintended consequence, specifically for underrepresented founders. Highly successful and experienced entrepreneurs are disproportionately male and white (Guzman and Kacperczyk 2019), presenting several related challenges. What worked for a white male entrepreneur may not work for others. In some cases, the advisor's bias is rooted in taste-based discrimination by the advisor against outgroups (Brooks et al. 2014). Ironically, simple taste-based discrimination is easy for the Bayesian entrepreneur to debias. If advisors are more likely to give harsher advice to female entrepreneurs, she can adjust the signal upward given she knows the bias exists. However, it is more difficult to correct bias affecting the content of advice. If, for example, advisors focus advice to female entrepreneurs on how not to fail rather than how to grow (Kanze et al. 2018), then debiasing the signal is potentially impossible. For the Bayesian entrepreneur, a merely downwardly biased

assessment can be adjusted with the appropriate mental model; however, bias in the types of information cannot.

Similarly, a bias towards providing less informative advice cannot be "adjusted" by the Bayesian entrepreneur into a stronger signal. Given that entrepreneurial action rests on an entrepreneur having sufficiently strong beliefs, receiving less detailed and informative advice is more likely to result in inaction and failure (Cao, Koning, and Nanda 2023). For example, an innovator working on a novel breast pump may seek advice on how to commercialize his venture. If his male advisors have little experience breast feeding themselves, and little understanding of the breast-feeding industry, even if they are generally supportive of his idea, their feedback can, at best, be positive, but vague. With vague information, the inventor's priors may never strengthen enough to fully commit to the venture, leading him to prematurely abandon the idea. More broadly, given that the informativeness of an advisor depends on their experiences and backgrounds, gaps in who has relevant entrepreneurial experience is likely to lead to systematic biases in the value of advice for different types of founders and different types of ideas (Cao, Koning, and Nanda 2023).

Advice Broadens Theory

Given the potential biases outlined above, why even try to learn from advice? One compelling reason is that advice can be especially effective at shaping theories, causal beliefs about how a venture will create and capture value. Such theories are crucial because entrepreneurs cannot test every aspect of their nascent businesses due to resource constraints, time pressure, and the irreducible complexity inherent in building a new business (Agrawal, Gans, and Stern 2021). Instead, the Bayesian entrepreneur prioritizes where to experiment based on the theories they believe (Felin and Zenger 2017).

Advice is especially valuable because the different priors and mental models of an advisor can help the entrepreneur evaluate aspects of their strategy that are difficult to assess otherwise (Bacon-Gerasymenko and Eggers 2019). For example, when the founders of Rent the Runway approached Diane von Fürstenberg, a famous designer, with their theory about why designers should allow the firm to rent their high-end designer dress for a fraction of the purchase price she warned that designers would likely be concerned about cannibalizing their expensive dresses. While a "user test" with von Fürstenberg might have resulted in a simple "no," her advice was more nuanced. von Fürstenberg offered an alternative theory informed by her decades of experience in the fashion business: position dress rentals as a marketing channel to build relationships with younger, aspirational customers. The new framing worked. Similarly, one of the firms in Miller et al., (2024), Agri Lignin, was deciding between two potential markets for their Lignin product – "biodegradable mulch films" or "pulp and paper trays." Advisors cautioned against both markets due to long sales cycles and government regulations. Instead,

they suggested a third, novel, market opportunity: garden nurseries. The firm updated their priors, ran additional customer-oriented tests and pivoted to offer lignin pellets to garden pot manufacturers.

That even "simple" businesses like Rent the Runway have complex entrepreneurial theories, with multiple moving parts and intricate interactions, compounds the value of advice. Unlike user-experiments, which often narrowly focus on testing customer-facing elements of a strategy, experiments tested with advisors can evaluate multiple parts and alternatives of an entrepreneurial strategy simultaneously, albeit with lower fidelity. Advisors are particularly effective in informing comprehensive theories quickly and inexpensively, including those that extend beyond customer interactions to encompass strategic partnerships, distribution, supply, hiring, and organizational culture. These broader strategic elements, often encapsulated in little "t" theories, are critical for a venture's success and can be efficiently learned from advisors who bring a diversity and breadth of experience, including peers (Hallen, Cohen, and Bingham 2020).

The complexity of entrepreneurial strategy partially stems from the fact that great business theories often follow "weakest link" or O-ring type behavior: a clever entrepreneurial strategy in a promising market, built around a disruptive technology, and with an amazing team will still fail if customer acquisition costs are simply too high to achieve profitability. Experienced advisors are particularly well suited to identify these fatal flaws having observed hundreds of startup ideas and the types of O-rings that doomed them (Bacon-Gerasymenko and Eggers 2019). This expertise can be invaluable in helping entrepreneurs avoid common pitfalls and refine their strategies. For example, Cohen and coauthors (2019) observed a startup in the solar industry that initially followed a distribution model, believing that combining quality products with industry knowledge would lead to premium prices. While the startup gained traction, an experienced advisor identified a critical flaw: the distribution model's heavy reliance on inventory would require an amount of capital that would almost surely deter investors. The company pivoted and serviced the same customer base, but with a cloud-based technology solution that improved their customers' operations, thus requiring no inventory. By adapting their approach based on this guidance, the startup was able to test and validate a new theory with existing customers, averting a fatal flaw in their original strategy.

While advisors can draw on a breadth and depth of experience to invalidate and broaden a Bayesian entrepreneur's theories, advice alone, even a lot of advice, cannot validate theories. In this regard, traction is king. Data showing users want the product, will pay for the product, and that the business model is profitable will always be better at persuasion, especially because hard evidence like customer purchases can strip away the biases and blind spots present in social learning. That said, as we discuss below, advisors can also help improve the experiments entrepreneurs run. Thus, advice is a complement, not a substitute to, customer experiments.

Advice Enables (Correlated) Iteration

At the heart of the Bayesian view is the "iterative process of belief adjustment" (Agrawal et al., n.d.). Despite the risk of receiving biased signals, an entrepreneur who learns from advice has the advantage that they can iterate on their beliefs much faster than relying on experiments with users. Advice, for better and worse, is "cheap" talk. Not only is the advice itself relatively cheap, but because advice often focuses on critiquing the design of the business, shifts in strategic direction, and what experiments to run next, testing new ideas through advice often only requires changing a pitch, business model canvas, or strategy memo. While writing is not easy, user experiments are harder and much more costly. As a result, advice can allow an entrepreneur to iterate over both big strategic pivots and small tactical changes, potentially exploring a broader space of potential ideas.

In fact, recent research shows that a key benefit of accelerators is that it structures advice to facilitate this iterative updating process (Cohen, Bingham, and Hallen 2019). At the most basic level, accelerators push entrepreneurs to overcome their advice aversion by normalizing and even requiring entrepreneurs to seek advice. For example, some accelerators arrange meetings with upwards of 100 different mentors in the first month of their programs.

Why would accelerators require entrepreneurs to test their theories with so many mentors? While the founders of the Solar Distribution company mentioned above heeded advice, this is not always the case. When an entrepreneur's priors are particularly strong, they likely will reject negative advice. For example, in another case studied in Cohen et al. (2019), the entrepreneur's idea was to sell excursions to travelers – activities like ziplining and tours. His theory rested on the idea that active travelers would purchase tickets in advance of their trip. He ran initial tests with travelers, who responded favorably to the idea. But, an advisor cautioned that customer acquisition cost was going to be prohibitively expensive. Based on the positive response from user tests, and his strong prior, he ignored the advice. However, after meeting with dozens of mentors in quick succession who offered nearly identical warnings, he conceded and updated his beliefs: His initial theory was not going to work. With the help of his advisors, he identified a new B2B distribution strategy, selling the same excursion tickets but through well-established travel partners who would add his offering as a valuable complement to their existing products, a theory that worked.

An additional benefit of learning from a multitude of mentors in rapid succession is that aggregating information across advisors can mitigate the impact of advisor bias. By averaging the signals from many of advisors, the entrepreneur can recover a debiased signal and still potentially benefit from the diversity of ideas each advisor brings to the business. However, reducing bias through information aggregation is not without downsides. As with investment committee decisions, relying on averages risks reducing the variance of outcomes. An

entrepreneur who leans into learning from dozens of advisors and incorporating what appear to be individually valuable pieces of advice, may end up with a good, but not exceptional, business. This tension suggests that accelerators, entrepreneurs, and advisors might benefit from experimenting with alternative ways of aggregating and iterating on advice that might better balance the value of learning "from the crowd" with the benefits from identifying outlier strategies.

Of equal concern, aggregating advice can lead to false confidence in the form of overly strong beliefs. Talking to two advisors is not necessarily akin to running two experiments. Precisely because advice is cheap and easy, advisors often learn from each other, study the same business cases, and often share experiences from working in the same firms. As a result, what appear to be two independent sources of information are not. Within the context of advice networks, fully accounting for this non-independence is computationally burdensome for network theorists, let alone entrepreneurs. As a result, models of Bayesian social learning---like the canonical DeGroot model---often assume agents are naive Bayesians who treat each signal they receive as independent (Golub and Jackson 2010). Indeed, behavioral research on "correlation neglect" largely confirms this assumption, even in the presence of market feedback and competition (Enke and Zimmermann 2019). As a consequence of this correlation neglect, learning from multiple related advisors is likely to yield over-confident entrepreneurs whose beliefs are stronger than they ought to be. With stronger beliefs, entrepreneurs will be both more likely to shut down promising venture ideas prematurely and double-down on fatally flawed ideas. Within the context of accelerators, variation in how connected, and thus correlated, advisors are may well explain performance heterogeneity both across programs and within accelerators overtime (Hallen, Cohen, and Bingham 2020).

Intriguingly, the network structure of the "market for judgment" may play a key role in shaping when iterating with advice aggregates into accurate signals and when advice is more likely to lead to bubbles and the inverse, areas with promise but that remain underexplored (Golub and Jackson 2010). When influence is distributed and entrepreneurs are naive Bayesians, the market for advice should yield accurate signals of an idea's potential. However, if certain advisors retain disproportionate influence, then iterating on advice can result in signals biased to the idiosyncratic views of these influential advisors.

More broadly, while advice enables cheap "experimentation" and so more iterations, the social nature of advice is not equivalent to merely lowering the cost of startup or user experiments (Koning, Hasan, and Chatterji 2022; Kerr, Nanda, and Rhodes-Kropf 2014). From the Bayesian perspective, the fact that advice is the result of an interdependent social process suggests that advice networks, markets for judgment, accelerators, and even the broader structure of startup ecosystems may determine how advice impacts entrepreneurial learning and choice. Indeed, the quick and steep investment in robots at Framebridge illustrate how relying on advice

from closed epistemic communities can result in adopting poor strategies, whereas advice from even a single outsider can radically improve a startup's situation. In fact, the structured nature of programs like the Creative Destruction Lab and Techstars suggests that institutions can play a pivotal role by designing the structure of advice networks to gain the benefits in terms of iterations and theory development, while minimizing bias and problems of correlation neglect, which may escalate over time as mentors socialize (Cohen, Bingham, and Hallen 2019; Agrawal, Gans, and Stern 2021). Left unstructured, getting advice from multiple advisors is likely to yield more choice and action, though with more bad advice and a higher risk of bubbles and crashes (Goldfarb and Kirsch 2019).

Advice Improves Experimentation

The fourth way advice informs the Bayesian entrepreneur is by improving the entire process of experimentation. We have argued that entrepreneurs are less likely to seek advice, largely because of concerns that the advice they receive will be biased. However, despite this risk, advice can both broaden an entrepreneur's theories and allow entrepreneurs to quickly test and iterate on their beliefs. With more developed priors and better theories, entrepreneurs can design and run more informative experiments, be they A/B tests with customers or interviews with suppliers. Further, advice can improve the efficiency of experimentation, and thus the reliability of tests.

First, advice broadens the scope of experimentation (Miller, O'Mahony, and Cohen 2023). Advice serves as a powerful antidote to confirmation bias and premature satisficing, particularly when structured to challenge the Bayesian entrepreneur's strong priors. As discussed above, programs like the Creative Destruction Lab and Techstars flood the entrepreneur with advice not only to help them dream up exciting theories, but more importantly help entrepreneurs generate the theories necessary to identify and prioritize critical experiments. For example, when Sabeer Bhatia and Jack Smith launched the free, ad-supported email company, Hotmail, initially, it struggled to acquire new customers. Tim Draper, a venture capitalist and investor, offered a creative solution: adding a simple tagline to every outgoing email, "Get your free email at Hotmail." Each email sent became a marketing message. The company tested the idea, fueling a viral marketing loop which attracted 30 million customers in less than 3 years. Without this clever idea that spawned the term "viral marketing," Hotmail would have been unlikely to achieve the same level of success.

Second, advice improves experimental design and interpretation (Agrawal, Gans, and Stern 2021). As Bayesian entrepreneurs move from theorizing to testing, the fact that advisors hold different beliefs and mental models plays a crucial role in designing valuable experiments. Experienced advisors, drawing from their diverse backgrounds and past successes, can guide entrepreneurs in designing more informative and resource-efficient tests (Bacon-Gerasymenko and Eggers 2019; Cohen, Bingham, and Hallen 2019). For instance, in the case of Framebridge,

an advisor from outside the tech startup ecosystem suggested experimenting with a robot-free strategy focused on internal operational metrics that the founder Tynan would have likely discounted or simply overlooked. Turning to interpretation, Kim (n.d.) highlights how theories often blind entrepreneurs from seeing the signal in the data. Advisors, by expanding the entrepreneur's likelihood model(s), can help reduce this problem of inattention.

Third, advice helps prioritize critical and especially persuasive experiments. To thrive, a Bayesian entrepreneur needs not only to increase their own prior, but also must persuade others of their venture's potential. While advice can identify fatal flaws in a theory and offer alternatives, it offers, at best, weak signals of future potential. The Zappos case exemplifies this: investors were initially skeptical about online shoe sales. Only experiments showing strong actual customer traction could convince investors of the viability of their theory. However, knowing why investors were skeptical presumably helped the Zappos team design an experiment with the potential convince and persuade other stakeholders.

Conclusion: Advice and the Bayesian Entrepreneur

The topic of advice is a curious one. Entrepreneurial advice is valuable, but entrepreneurs are reluctant to get advice. Our exploration through a Bayesian lens illuminates this puzzle. The very same strong priors that motivate entrepreneurs to act on their ideas also make them resistant to advice. Bayesian entrepreneurs with high conviction in their ventures are likely to view advisors as unduly pessimistic, prone to producing "false negatives." Conversely, entrepreneurs with weak priors may not seek advice at all. This Bayesian perspective explains why entrepreneurs often keep ideas private and struggle to incorporate advice even when it's readily available.

Yet, when Bayesian entrepreneurs do get advice, it offers significant value when properly structured. It can substantially improve both theorizing and experimentation. Advisors, drawing from diverse experiences and mental models, can help entrepreneurs evaluate aspects of their strategy that are difficult to assess otherwise. At a meta-level, advice can enhance the entire experimentation process by broadening its scope, improving design and interpretation, and prioritizing critical tests. As seen in cases like Framebridge and Rent the Runway, well-structured advice can lead to pivotal strategic shifts and more efficient learning cycles.

Yet advice can backfire. The social nature of advice can lead to correlation neglect and overconfidence, particularly when advisors share similar backgrounds or when advisors are especially revered. Moreover, advice is fraught with biases, biases that are likely to disproportionately affect underrepresented founders. While the Bayesian entrepreneur can adjust advice for this bias when the advice is simply harsher and biases are known, when advisors offer different amounts or types of information based on founder affiliations or ideas, these biases can impact what underrepresented entrepreneurs learn.

For entrepreneurs, these insights suggest three useful practices. First, Bayesian entrepreneurs should take stock and actively seek to challenge their own priors, even (and especially) when conviction is high. This might likely involve deliberately seeking advisors with differing backgrounds or expertise, though with the understanding that this advice will contain a mix of valuable signal and biased information. Second, entrepreneurs should structure advice-seeking to maximize learning instead of confirmation: for instance, arranging intensive bursts of multiple advisor meetings instead of prematurely stopping after an advisor says an idea is promising. Within the conversation, asking advisors to help identify potential "fatal flaws" in the business model is more valuable than asking them to validate an investment pitch. Third, while valuing advice, entrepreneurs should remember that it complements, rather than replaces, direct market testing.

For researchers, we see three especially promising avenues for future work. First, there is a distinct lack of evidence on how "correlated" advice is and its broader role in entrepreneurial herding, bubbles, and crashes (Goldfarb and Kirsch 2019). We need to understand whether talking to ten advisors is closer to running ten unique experiments or if the same information is merely being repeated across conversations. Additionally, it's important to identify the factors that shape when entrepreneurial advice is more or less correlated. For example, research focused on determining the optimal composition of an advisor pool could provide crucial guidelines for both entrepreneurs and entrepreneurial training programs, ensuring a diverse range of insights that mitigate biases.

Second, future research could explore the applicability of these principles to various organizational contexts and methodological approaches. For example, qualitative studies might explore how managers in established corporations seek and incorporate advice on their strategic theories, especially those around new innovations and technological change. Experiments could be designed to train advisors to focus their guidance effectively: Rather than offer positive feedback, advisors should challenge and expand them, as well as offer insight on how to improve the effectiveness of experimentation.

Third, many of the arguments above rest on having access to a deep pool of diverse and experienced advisors. Yet, outside of top accelerators and thriving ecosystems like Silicon Valley, advisors can be hard to access, limiting the ability of many entrepreneurs to iterate on their beliefs. How can we scale helpful advisors to all? One promising approach pioneered in Otis and co-authors (2024) is to leverage generative AI tools to build artificial advisors for entrepreneurs. These advisors can be designed to have different priors, data, and mental models. Beyond the managerial and policy promise of artificial advisors, these tools also have the potential to help researchers more precisely manipulate and measure the mechanisms at the heart of both entrepreneurial advice and the Bayesian learning process.

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