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Strategic Change

What can venture capitalists and entrepreneurs learn from behavioral economists?

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- *Building upon new findings from the field of behavioral finance and economics, this article provides fresh insights into how venture capitalists (VCs) and entrepreneurs perceive, experience, and deal with risk; and how they go about making decisions in their respective areas of venture creation, venture evaluation, venture growth, and investing.*
- *By helping VCs and entrepreneurs to be cognizant of the many psychological traps that continuously get turned on at and around decision-making times, such findings would certainly help both parties to avoid committing costly mistakes in their businesses.*

> *It is well recognized by psychologists that to make a decision, emotion is the necessary trigger. Without emotion, one would be reduced to the state of an idiot savant who goes on endlessly calculating without the ability to make a choice.* (Olsen, 2008)

Venture capitalists, entrepreneurs, and the psychology of decision-making

Financing a venture is among the most contentious, and yet most critical, functions for both entrepreneurs and venture capitalists (VCs). The reason for this is that almost all venture capital contracts are negotiated and entered into under conditions of extreme moral hazard and adverse selection. Moral hazard is a situation where the entrepreneur, acting as the 'agent' for a venture, takes self-interested and unobservable actions at the expense of the VC who acts as the 'principal'. Adverse selection enters into the equation because by definition the entrepreneur ('agent') possesses superior knowledge about the venture that is useful to her/him but the VC is not aware of such knowledge or possibly its existence.

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The resultant agency costs and information asymmetry situations make any venture financing deal very complicated and therefore risky for both sides. Increased risk in turn increases venture financing costs and in some cases increased costs may actually suffocate many

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otherwise promising enterprises. Agency theory — which has its roots in Berle and Means (1932) and was further developed by Jensen and Meckling (1976) — has been proposed as a model to mitigate such problems. However, recent research findings show that '*evidence supporting the theory's predictions is mixed and weak*' (Bitler *et al.*, 2009). Such conclusions are not surprising at all to behavioral economists because, in all agency theory-based venture capital and financial contracting analyses:

(i) the entrepreneur is seen as the agent (hired labor) and the VC as the principal (hirer and firer of the entrepreneur/agent); and
(ii) the presumed conflict of interest issues and other agency problems are solved using the traditional and 'God-ish' expected utility (EU) algorithm.

The reality is different on two counts:

In fact, the human brain is not capable of doing what theory expects it to do

1. Laboratory research from the field of cognitive psychology and decisions science, especially over the past 30 years or so (e.g., Tversky and Kahneman, 1973, 1974), has clearly shown that when it comes to judgment and decision-making under uncertainty, individuals do not do the complicated and humanly impossible calculations prescribed by the normative EU model. In fact, the human brain is not capable of doing what theory expects it to do. Instead, individuals use a set of heuristics, or 'rules of thumb', to make judgments and come up with the needed decisions. Such findings have also given rise to a whole new area of behavioral finance and economics, which is the main platform for our discussion and advice on venture financing issues in this article.
2. A reality of our times is that entrepreneurs take on all types of business functions throughout the whole entrepreneurial process — from opportunity recognition and self- or co-financing stages to follow-up phases of growth and exit. This means the entrepreneur *can also* be the principal (investor) and the investor/VC *can also* be the agent (the entrepreneur).[1] In other words, venture capital contracts and deals are practically partnership agreements and not principal/agent (or effectively employer/employee) contracts as stipulated by agency theory. Those who are even slightly familiar with the venture capital industry can easily attest to this reality.[2]

Further, understanding risk and risk-taking behavior — the essence of any entrepreneurial endeavor — is now studied within a framework that considers the human brain as a dual-process system. Such an approach to understanding risk is based on the latest findings in the areas of neuroscience and decision theory.[3]

[1] This is especially true given the fact that the complexity (read risk of success or failure) of entrepreneurs and their new products and services has increased tremendously. Examples can especially be found in more complicated fields of IT, biotech, nanotech, and similar industries.

[2] For example, when a venture reaches its 'fundability' stage (meaning annual revenue potential of $75–100 m in three to four years), the founding entrepreneur is already a major investor in that venture regardless of other existing ownership interests in such a venture. The entrepreneur is a major investor not only functionally but even more importantly in a *perceived* manner. In fact, her/his stake in the said venture is most probably his one and only asset that he possesses at such a financing time. By the same token, when a VC helps a funded venture in attracting next-round investors as well as other value-added services like new managerial talent, advisors, and other forms of service, that VC in fact is acting as an agent for such a venture. Besides, considering an entrepreneur as an agent, effectively an employee, who can be fired through different conditions built in a typical venture capital agreement, goes against the whole notion of entrepreneurialism, creativity, and innovation; and may in fact explain why some ventures fail.

[3] Given the limited scope of this article, discussion on this issue as related to entrepreneurs and VCs is postponed for another writing. However, for the latest research summary and analysis see Olsen (2008).

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And this takes us to our main discussion in the present article. More specifically, our goal is to discuss how laboratory findings from the fields of cognitive psychology and neuroscience can help venture capitalists and entrepreneurs make more effective decisions and avoid costly mistakes in their respective lines of businesses. The following section briefly discusses some key heuristics and biases and how they affect our judgment and decision process. We then summarize the article and provide practical advice to both VCs and entrepreneurs.

Heuristics and biases and how they affect our judgment and decisions in entrepreneurial settings

Silicon Valley's famous entrepreneur and investor, Guy Kawasaki, uses online dating as an analogy to describe the working of the venture capital industry and the way entrepreneurs are initially selected. Specifically, he uses two extreme types of online dating services, 'Hot or Not' and 'e-Harmony', to make his point. According to Kawasaki, VC funding is more like the 'brainless' 'Hot or Not' service, where initial decisions to choose potential life partners are made in around 15 seconds; and not like the highly analytical 'e-Harmony', where detailed profiles and sophisticated analyses play key roles in choosing a partner. Although the analogy may be somewhat off for the VC industry, it also serves as an example for making our point regarding how individuals make their daily decisions at work and elsewhere.

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Skipping many volumes of supporting laboratory findings and academic research on the issue, it can safely be stated that individuals mainly rely on a limited number of *mental strategies or heuristics*, which '*reduce the complex tasks of assessing probabilities and predicting values to simpler judgmental operations*' (Tversky and Kahneman, 1985). These heuristics are the same strategies that have served human beings for thousands of years against all sorts of nature's hazards and date back to the cave ages.

We as humans have our own biases because in actuality we operate on heuristics and mental short cuts

Such heuristics or rules of thumb work in some instances but not in all. Just by their nature, such experience-based heuristics may lead to persistent biases that might harm one's judgment and decision. We as humans have our own biases because in actuality we operate on heuristics and mental short cuts. This is true for lay men and women as well as well-trained professionals and industry experts.

Even more dangerous is the finding that our brain may not even accept evidence and otherwise credible data and information if we already have developed an 'affect or feeling' toward an object like a business venture or a new technology. Research has shown that strong initial views may not be changed easily or changed at all because such initial views influence the way our brain processes subsequent information and arrives at a sought-after decision (Slovic, 1987). This now seems more like the 'brainless' 'Hot or Not' dating service and not the more sophisticated 'e-Harmony'.

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> *New evidence appears reliable and informative if it is consistent with one's initial belief; contrary evidence tends to be dismissed as unreliable, erroneous, or unrepresentative.* (Nisbet and Ross, as reported in Slovic, 1987)

The above findings have major implications for risk and risk-taking by all individuals, including and especially VCs and entrepreneurs. And this now takes us to a brief discussion on the main heuristic principles and the way such heuristics influence our judgment and choice in an entrepreneurial setting.

The affect heuristic

Simply stated, the very powerful affect heuristic has been defined as a feeling state, such as niceness and awfulness or, better yet, goodness or badness when, for example, one faces an investment opportunity or a start-up potential. Affect can also be viewed as a quality, such as acceptable and unacceptable, associated with a hazard like a business venture. Additionally, affect can be described as behavior that places heavy reliance on intuition, instinct, and gut feeling.[4]

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The affect heuristic is probably among the top mental shortcuts because it has been able to explain the otherwise peculiar negative relationship between risk and required or expected return or gain in investment situations.[5] For example, a 'good feeling' toward a *high-risk* proposition like a start-up would lead to a higher perceived *benefit* in that start-up and a *lower risk* perception in that venture. And this is perfectly *rational*, too!

New research has shown that '*affective reactions to stimuli (like venture proposals) are often the very first reactions, occurring automatically and subsequently guiding information processing and judgment*' (Finucane *et al.*, 2000). Based on such findings, it follows that entrepreneurs start businesses they *like* (and not necessarily the ones they consider as having high potential) and VCs finance ventures they find *attractive* (and not necessarily the ones they consider as highly profitable).

If the above hold true, then in the real world of start-ups and venture financing, even if VCs are more rational (and less affective), which probably they are, entrepreneurs may not see risk/return tradeoffs the way VCs see them. Consequently, and as far as risk/return perceptions and *motivations by entrepreneurs and VCs* are concerned, we will be dealing with possibly two different market forces that do not see eye to eye.[6] This then calls for new ways to design, negotiate, close, and monitor venture capital contracts.

Overconfidence and illusion of control

The significance of an overconfidence heuristic lies in the fact that it can shape the way we as individuals perceive and understand risk; and consequently, take risk. Overconfidence in an entrepreneur or a VC would lower the risk seen by her or him in a given venture. The

[4] For a good coverage of the latest literature on the issue, see Olsen (2008) or Shefrin (2007).

[5] Normally, in investment situations investors in high-risk assets require high returns. However, from what we have learned from psychology, if an individual develops a 'good feeling' (positive affect) for a high-risk investment, she/he may require low return from such an investment.

[6] This can also explain why agency theory may not be as helpful in mitigating the moral hazard and adverse selection problems that arise in venture capital contracting.

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feeling of control seems to be even stronger in entrepreneurs.[7]

In numerous psychological studies researchers have found that most people are overconfident about both their *abilities* and their *knowledge*. For example, in a study of entrepreneurs, it was found that over 80% of the entrepreneurs perceived their chances of success as 70% or better. Moreover, 33% of them characterized their success as certain! The mean chance of success that entrepreneurs placed on a business like theirs was 59% (as compared with a historically stable survival rate of 33% during the first five years of a venture; Kahneman and Lovallo, 1993).

Such unreasonably high numbers in the real world explain why so many ventures fail in their first few years of operation.

Availability or recency

To understand this judgment heuristic, we just need to know that people *disproportionately* recall the salient events that they have observed; those that are very recent, and/or those that individuals are/were emotionally involved with, especially in the very recent past. The more salient an event is, the more likely the probability that we can recall that event. With the availability heuristics, people search their memories for relevant but recent information and data.

The result is that this sort of bias prevents us from considering other potential and related outcomes that may not have occurred just as recently. For example, a San Francisco Bay Area entrepreneur may assess the risk of starting a new venture by recalling all the positive reports on all successful start-ups that she/he has recently been reading about in the business section of the *Silicon Valley Mercury News*. The problem, however, is that not all memories are equally retrievable (read available), and this leads to error in judgment. In the above example, more recent incidences and more salient events (all positive reports on successful start-ups) will weigh more heavily than possibly non-occurred and non-reported incidences and this will lead to prediction biases and would distort one's judgment or estimate.

The more salient an event is, the more likely the probability that we can recall that event

Biases implicit in the availability heuristic affect estimates of risk.

Anchoring and adjustment

Anchoring refers to a tendency to anchor on, and stay around, an initial arbitrary value which may be suggested by the way a proposition is presented or by some initial computation. When forming estimates and predictions, perceptions can be influenced by suggestions. People adjust away from an initial value suggested to them (the anchor) insufficiently to arrive at the true value of the subject under consideration (Tversky and Kahneman, 1974). An example would be the way an investment banker uses the relative valuation model (multiples method) to arrive at an IPO price, or a VC uses the same method to price a venture

[7] Aside from research findings by Forlani, Olsen, and others, my own personal experience as a founding entrepreneur involved in launching a rather significant publishing venture can attest to the power that illusion of control or overconfidence has over our risk-taking behavior.

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capital deal. In both cases prevailing multiples which are chosen and adjusted up or down on an arbitrary basis are used to come up with a price. And that is where the bias comes in. Maybe a more sensible alternative would be to look at the risks involved and the types of cash flows expected from the business and then come up with a value.

From the VC's point of view, anchoring bias can be used to statistically argue that an entrepreneur may overestimate the chances of success of his/her business

From the VC's point of view, anchoring bias can be used to statistically argue that an entrepreneur may overestimate the chances of success of his/her business. Following Tversky, Kahneman, and Minniti, such arguments can go like this. Starting a business venture is a conjunctive event; for a start-up to succeed, it must succeed in all the steps needed for its success as a whole. It must first succeed in producing a working prototype, then employing the needed resources, including financing, to actually manufacture the product, and later hire a marketing and sales force to bring in revenue. However, from a statistical point of view, the overall probability of a conjunctive event like a start-up is lower than the probability of each elementary event if such events are independent. This means even if each of the steps is very likely, the overall probability of the venture's success as a whole is low. And this leads to overoptimism by entrepreneurs as they take the lower probabilities of elementary events as a reference point and adjust them up or down insufficiently to arrive at a desired overall probability for the venture as a whole.

Summary and conclusions

As a summary, let us recall that according to the latest findings from the fields of psychology and neuroscience as reported in this article, our brain operates as a dual-processing system where one process is rooted in cognition (analytical, rule-based, or what is known as rational operation) and the other is embedded in affect (experience-based, emotional, or what is known as affective operation). We discussed four major psychological phenomena that influence the way we make choice and judgment: affect heuristic, overconfidence, availability, and anchoring phenomena. We also confirmed that '*most investors' risk perceptions simultaneously contain affective and cognitive elements*'.

The experience-based affective operation of the brain has its own unique advantages as at minimum, it simplifies, reduces costs for, and speeds up the decision-making process for individuals across the board. However, the same operation can also lead to biases which in turn can lead us in the wrong direction at the time of a decision. And all this can happen 'in the background', in a seamless manner, so we may not even notice anything. The reason for this is that '*affective reactions are often the very first reactions, occurring automatically and subsequently guiding information processing and judgment*'. Even if we notice our biased way of thinking and we want to 'de-bias' such a process, our brain may not allow it because of the way our brain is hard wired!

In the end, it is our brain's human-like (affective) subsystem that calls all the shots!

What this really means is that we as VCs and/or entrepreneurs may do all the sophisticated analyses, formal due diligences, and complicated evaluations and valuations on a given venture using our brain's computer-like (rational) subsystem; however, in the end, it is our brain's human-like (affective) subsystem that calls all the shots!

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To improve our decision-making process, we need to:

(i) be aware of the inner working of our brain and get to know how in reality we as individuals arrive at a given judgment and choice; and
(ii) become aware of the main psychological traps and biases that continuously get turned on at and around our decision-making times. We may not be fully capable of de-biasing our choice process, but still this is much better than the alternative.

Although we have discussed the most relevant cognitive traps and biases that entrepreneurs and VCs may encounter in this article, there are still other phenomena like framing effect, confirmation bias, representativeness, and mental accounting that we have not discussed.

Biographical note

Rassoul Yazdipour is an academic as well as an entrepreneur and small business owner. He was the founding entrepreneur behind a national consumer magazine publishing company that also led some early-stage acquisitions in the same industry, and has advised a variety of businesses from start-up ventures to mid-market companies both as board member and consultant. He currently teaches entrepreneurial finance and other finance courses, and is the Founding President of the 21-year-old Academy of Entrepreneurial Finance (www.aoef.org).

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