

A NEW PERSPECTIVE ON ENTREPRENEURIAL TRAIT ANALYSIS: ADDING NON-LINEAR VIEWS TO TRADITIONAL PERCEPTIONS

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Introduction

The field of entrepreneurship is sometimes divided into two communities of interests. One group of entrepreneurship researchers focuses on the external forces and investigates the situations in which entrepreneurial opportunity is recognised and exploited, while the other is interested in the individuals involved and views entrepreneurship as a function of core human attributes (Campbell, 2003; Burnett and McMurray, 2004).

Both communities of interest seek to explain a wide range of complex entrepreneurial activities. Proponents of the first school argue that entrepreneurial actions are episodic with little evidence of permanence, and hence concentrate on external forces. The second school counters that every external force requires the action of those individuals who identify and pursue opportunities. This last notion finds resonance with authors like Bygrave (1989a & 1989b), Bygrave & Hofer (1991), Gartner (2001), and Mitton (1989). Bygrave & Hofer (1991:14) define an entrepreneur as “*someone who perceives an opportunity and creates an organization to pursue it*”, adhering to the notion that the creation of a business is driven by an individual who has the skills to both recognise business opportunities and being able to build a business around these. Some ten years later, Shane & Venkataraman (2000), similarly maintain that: “*entrepreneurship involves the nexus of two phenomena: the presence of lucrative opportunities and the presence of enterprising individuals*” (Shane & Venkataraman, 2000:218). Shane (2003) takes this further by integrating both views, offering an overarching conceptual framework consisting of different components of the entrepreneurial process together with the characteristics of entrepreneurial opportunities and the individuals who discover, pursue and exploit them. These incorporate the skills and strategies necessary to do so. This paper leverages on this overarching framework, by linking the entrepreneur's behaviour with the situations occurring during the process of new venture growth. This is accomplished by investigating entrepreneurial characteristics from a broader (non-linear) perspective. The focus thus turns to the interactions between the entrepreneur & the opportunity, and to defining more comprehensive non-linear traits that will better typify the successful creation of new ventures.

Entrepreneurial traits and characteristics

Entrepreneurial characteristics and traits are elements of a personality that attempt to differentiate entrepreneurs from the average, such as the willingness to bear uncertainty, tolerance for ambiguity or the ability to innovate. Historical origins of trait identification begin with the likes of Say, Schumpeter and Cantillon, but perhaps one of the most enduring traits is the entrepreneur's "need for achievement" advanced by David McClelland in 1961. However, even today among researchers of traits and characteristics there are a range of debates. For instance, some researchers believe that entrepreneurs are risk takers while others argue instead that they are skilled at avoiding risks. There is also debate about the motivations for becoming an entrepreneur (Carland, Hoy, Boulton, and Carland, 1984) which have generally been categorised as either push or pull situational factors, such as models derived by Shapero and Sokol (1982) and Vesper (1983). People become entrepreneurs as a result of situational pushes or pulls that include frustration with present life-style or retrenchment, childhood dreams, family business environment, education, work history, entrepreneurial role models and support networks (Hisrich 1990; Krueger, 1993; McMullen, 2001; Mueller and Thomas, 2000).

There has been criticism in the past of the traits and characteristics approach in entrepreneurship research, arguing that it is hard to measure (e.g., Brockhaus and Horwitz 1986; Gartner 1988; Shaver and Scott, 1991) and the ongoing nature of this uneasiness is underscored by Sorensen & Chang (2006:30) *"Despite a large number of studies examining entrepreneurial performance [and links to traits], it is difficult to draw any strong inferences about what characteristics of entrepreneurs ... are conducive to new venture performance"*.

However, despite these uncertainties, there is a continued interest in determining why some individuals initiate a successful venture while others do not (Baron 2002, Mitchell et al 2002; Shane & Venkataraman 2000). For example, the focus on the entrepreneur who 'somehow' is the critical factor in the success of a new venture is now explained through newer approaches using the cognitive perspective (Baron, 2002; Mitchell, Busenitz et al. 2002; Moore, 1986). This cognitive approach endeavours to explain the way entrepreneurs use their minds. They may be storing information in a different way or, 'see' less risk or know intuitively how to mitigate risk better or are more solution based etc. In other words: *"The cognitive perspective emphasizes the fact that everything we think, say, or do is influenced by mental processes--the cognitive mechanisms through which we acquire store, transform, and use information"*, (Baron 2004:221). Entrepreneurs, it is argued, may be more adept than other people at using counterfactual thinking (imagining what will be or might have been) or they may recognise patterns that others simply don't see.

Looking back, most of the trait analysis studies have looked at "stand-alone" characteristics of the entrepreneur. These are static (linear) traits and don't take into account the fact that entrepreneurs will often exhibit different traits depending on the situation that they find themselves in. For example, an entrepreneur may act as a risk-taker in one situation, and risk averse in the next, depending on the given situation.

Defining the Entrepreneurial traits in a non-linear way

This paper argues that looking at entrepreneurial traits and characteristics in isolation is not enough; in essence, they are a necessary but not sufficient condition for success. Entrepreneurial behaviour is very much driven by particular events during the entrepreneurial process and more specifically it is the reaction to these events at that particular time that sets entrepreneurs apart from the general populace. For instance, reactions like staying 'cool' through the continuous upheaval during the start-up phase of a new venture, being flexible or quick to react, understanding creativity and innovative practices – these all describe the entrepreneurs' interaction with their environment – and the actions are therefore situation-dependent.

To illustrate more generally, consider an everyday example of a "linear" trait used in isolation. Asking "what is the speed of your car?" naturally evokes the response: "it depends" – on traffic, road conditions, speed limit, even mood. Importantly, classifying cars according to this arbitrary question about a speed value (linear trait) will of course produce nonsense results.

Why should we expect anything different when we ask linear trait questions of dynamic entrepreneurs? – the answer in most cases will be: "it depends" – on the interactions with the environment (the new venture). Psychology research has in fact asserted for some time that behaviour is a function of both the person and the environment (e.g. Mischel 1968; Shaver & Scott 1991). The seminal work in the field of psychology by Mischel (1968) argues persuasively that behaviour should be regarded as paired person-situation interactions, rather than being a function of either the person or the external situation alone.

Shaver & Scott (1991:25) extend this into the equation $B = f(P, E)$ which shows behaviour (B) as a function of both person (P) and environment (E), thus further reinforcing the point that trying to explain the entrepreneur's actions using either P or E in isolation will likely produce spurious results. This is borne out in the previously mentioned inability of trait-analysis to reach a clear consensus on the characteristics of a quintessential entrepreneur (Sorensen & Chang 2006).

Consequently, the focus on the entrepreneur as a critical factor in the success of a new venture will be investigated in this explorative study by defining traits in non-linear terms. This will capitalise on recent research (Baron 2004; Shane 2003; Campbell & Gillin, 2004; Shane & Venkataraman 2000; Sarason, Dean & Dillard 2006), which focuses on the dynamic nexus between the entrepreneur and the opportunity, in order to build a distinct new perspective on trait analysis.

The defining of entrepreneurial traits in a non-linear fashion is thus centred on identifying a link, a situation or trigger between the entrepreneur and the new venture environment. This perspective aims at advancing the trait analysis to include the dynamic interactions within new ventures, rather than working with static personological traits which have been unreliable descriptors of entrepreneurship success.

In order to do this, this study compares some key traits of successful start-up entrepreneurs and major players during the entrepreneurial process, with the various circumstances under which they occur. This can be phrased as the following research question:

Is there a distinctive link between situations during the entrepreneurial process and specific entrepreneurial behaviour? (i.e. non-linear entrepreneurial traits)
 For instance, there may be specific times or conditions that trigger entrepreneurs to use specific skills or exhibit certain characteristics. The action and environmental condition need to then be expressed as a single non-linear trait.

Methodology

Two recent PhD studies investigated a number of core non-linear skills among 91 technology start-ups inside & outside incubator environments. The one study polled the views of 38 individual informants on the process of new venture creation and the role of the entrepreneur in that endeavour. This consisted of semi-structured depth interviews, focus groups and transcribed workshops, which gathered the views of entrepreneurs, intrapreneurs & innovation managers, entrepreneurship practitioners (VCs, incubator managers, etc), and a few non-entrepreneurial managers. In the second study, 46 structured face-to-face interviews were conducted, followed by 12 additional semi-structured interviews with start-up entrepreneurs in their first years of operation. These probed new venture creation aspects ranging from business practices to innovation, staff and general challenges and issues encountered during the first phases of starting a business. Questions focused on entrepreneurs' individual motives, skills and traits, using themes such as innovation, risk taking, pattern recognition and ability to react to change.

In both cases the qualitative data was transcribed and coded following the principles outlined in grounded theory (Glaser and Strauss, 1967) and using NVivo software to draw out reactions and meanings beyond the mere statistical approach of questionnaire techniques. Rich primary data such as this benefit greatly from using an ordered theory-based approach during the coding process, chiefly because in grounded theory, "...data are broken down, conceptualised, and put back together in new ways (Strauss and Corbin, 1990, p.57). In this way new conceptualisations are better able to emerge from the data.

Analysis

The coding process consisted of sifting through the many pages of text identifying traits mentioned in the interviews and labelling (coding) passages, words or paragraphs either as specific nodes (independent variables) or as dependent variables under those specific nodes. In line with the grounded theory approach, the research database was carefully examined through a continuous and cyclical process of familiarising, coding, conceptualising, cataloguing, re-coding and evaluating of the data. In particular, the coding process began with open coding (coding text into free nodes, or meaning units), followed by axial coding (identifying relationships between the open coded units) and then moving on to selective coding (selecting core variables and dependent variables).

The researchers were thus able to identify the distinct parts that describe the behaviour of the entrepreneur in relation to the environment. For example being '*Cool-with-Chaos*' has both the elements of the entrepreneur (cool) but also elements that are conditional on the environment (chaos) – in other situations entrepreneurs might be anything but "cool" – sometimes even fiery! This situation-dependency (non-linearity) of the traits emerging from the analysis was essential in obtaining coherent results from the interview data.

Table 1 Tree nodes (Variables)			
Tree Nodes resulting from Search & Coding Procedure	No of sources	No of references	Node Description (Meaning Unit)
Tolerance of Risk and Uncertainty	15	53	Assesses risk-taking on a scale of 1-10 and the thought process behind this. Allows one to be 'Cool' with Chaos. A relaxed (or at least unpanicked) attitude to (temporary) disorder or uncertainty. Will wait before introducing order.
Cool with Chaos	6	13	Cool is the focus in this node - the Chaos side is the ever-changing environment of NVs. Evidence of a different sense of order, awaiting vital clues to progress
Flexibility	5	6	Another of the factors that helps to keep Cool with Chaos. Helps the Entrepreneur maintain a balance between behaviour (Entrp) and environment (NV)
Opportunity recognition	11	42	Looks at how the entrepreneur responded to a particular situation and how they decided to build a business around this opportunity. Also why they 'see' it and others do not.
Pattern Recognition	11	28	A particular type of awareness that seeks Patterns, borne of experience & observation, also fits with the patient, tantric attitude of being Cool with Chaos, seeks alternative, simple, effective controls for NVs
Strategic Skills Sets	8	14	The plans developed and skills used to grow and push the business along strategically in the first years of operation
Social Capital Strength	29	64	The ability to develop and use networks and relationships to access resources and to keep cool under pressure. Relationships in NVs The day-to-day business relationships that make NVs work
Seeking advice from Multiple Experts	66	16	A keenness to use a range of contacts to source advice from the best people, to make decisions & achieve NV goals
Expertise	15	34	The educational knowledge, life experience and business know-how the entrepreneur brings into the NV and business environment
Innovate around Obstacles	18	59	Contains innovative ways of thinking, development of processes and products /services in NV creation. These obstacles may range from technology to competitors, from market forces to traditional mindsets

Coding

The coding process described here, thus identified ten major variables from the data, representing entrepreneurial traits and characteristics of the interviewees as they interacted with their environment. Table 1 shows these variables and explains the

meanings attached to each node, the number of sources each node was made up of (i.e. number of different respondents) and the number of references made by these informants towards each node.

The following examples, also later used to guide the design of a conceptual model, consist of raw data quoted directly from the interviewees and transcribed as digitally recorded. It should therefore be noted that they can have some slight grammar or spelling imperfections.

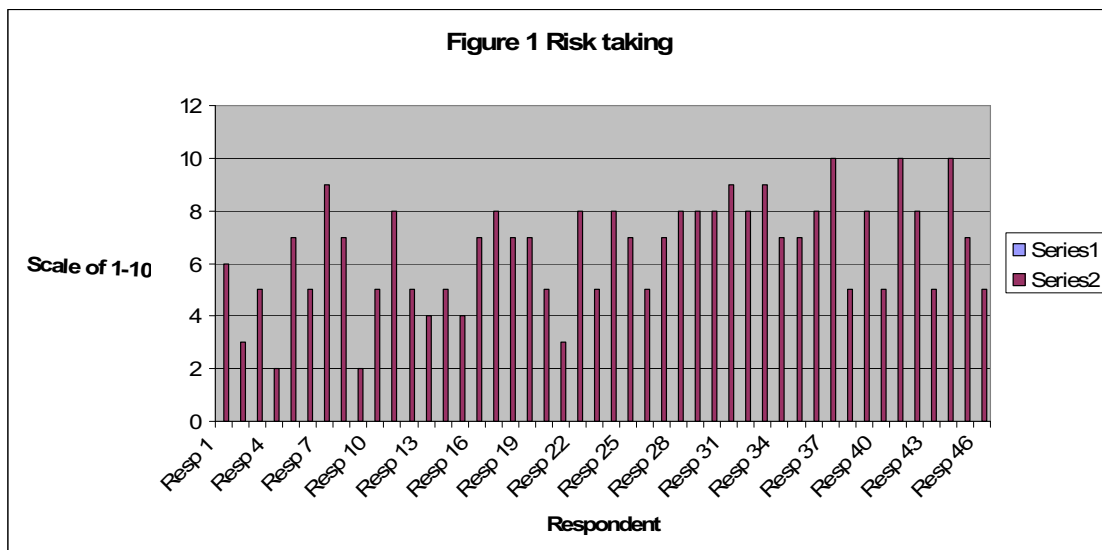
Findings and discussion of results

i). Risk tolerance. There were 53 references to risk tolerance and uncertainty, coming from 15 different sources. This means that per source the meaning of the unit including the word ‘risk’ or risk taking’ was referred to three times or more on average by 15 different informants during the interviews. This is significant. The concept of risk was also referred to as ‘having the guts to do something against all odds’, ‘not being afraid of failure’ , ‘having the freedom to try something no matter what’ and ‘you really have to stick your neck out sometimes’. In addition to these qualitative NVivo responses, 46 start-ups had been asked how they rated themselves as risk takers on a scale from 1-10 during the structured interview phase. This result is shown in figure 3.

At first glance it is clear that more than half of the respondents score in the upper region of 5 and above. However, in most cases when probing deeper during the semi structured interview phase, it is made clear in many cases that risks are only taken under certain circumstances. Consider the following examples:

“If you looked at it from the point of view of gambling, then I'd be about 3 on a scale of 10, because when it comes to gambling, I'm not a gambler. I know this technology inside out, what I risk is whether people want it now...”

“What I do is risky, except I have a strong basis of research to underpin what I do, so I



would consider I'm a 5. You see, to do nothing is potentially a bigger risk than to do something. To do nothing could take you down a hole. To do something, at least you have the opportunity of survival. I take a very measured risk”.

“I'm a risk-taker, but I'm reasonably good at bringing together teams and making things happen and part of that is bringing out the entrepreneurial qualities of the team. My team are highly qualified and very specialized people, we discuss every opportunity; they in fact lower my risk”.

“...we're now pushing more into operational areas as well, like designing test equipment that can be used by airlines and operating ground station: we saw this gap and are going for it. Risky? Not really, in this case we know what we are doing because we have been working in the field and have a feel for this market”.

These responses show that the entrepreneurs consciously chose their circumstances under which to take risks or not. Some rely on research, technique and technology, their know-how of the market or their team. They directly interact with their environment using cognitive processes, complex non-linear elements of entrepreneurial behaviour, not just stand alone personal characteristics or traits. The last respondent for instance, might not have gone into this market if the circumstances were any different (such as not knowing the market or not having worked in this area before) yet his ‘feeling’ told him that he could take the risk.

ii). Cool with chaos.

This trait is about 'keeping your head when all around are losing theirs' and was supported by 13 references from 8 separate sources. New venture creation is typified by change, especially when unannounced, unexpected setbacks, and the arrival of unknowable events. Successful entrepreneurs have the uncommon ability to remain cool and calm despite all this chaos, and remain focused on the single goal that will keep the venture going.

An illustrative example from the transcribed database is told by Al Ramadan who launched Quokka Sports as a net-based sports media platform. Their most optimistic estimate of first-day hits was about 200 000. As it turned out, the hit-counters registered 4 million, just before the servers crashed – that was 20 times their best estimate. Great problem to have, in his own words: *“...it's like drinking from a fire-hose!”* but the big question was: what could they **do**?

They needed to buy more servers but had no money, especially as wages were due soon... which is what gave them the clue – they quickly consulted all the staff and got them to agree to halve the payroll until the money came in – next day the truck backed into their loading bay stacked with servers – the rest is a NASDAQ-listed success story.

Despite a critical level of chaos that threatened to halt the venture almost before it began, a cool eye on the only thing that mattered (getting revenue-earning customers on-line) launched the venture into a future that surpassed expectations.

iii). Flexibility. Flexibility scored 5 sources and 6 references. It was regularly referred to as part of staying cool under difficult circumstances and less referred to on its own. For instance:

*PF: ...I don't know whether it relates at all, but those three points [their mission statement] over there, "We Focus On", it took a year to get to the simplicity of those three points. ...yea, a kind of random walk, yea. But I always kind of try to describe it... you've got to know where you're going, broadly... what the mission is I suppose, **but don't expect to know how you're going to get there.** Don't try and plot out the winding road, be very prepared for divergence.*

This means that for a whole year, while seeking funds, government support, customers, etc this not-for-profit IT startup organisation (www.citi.org.za) was unable to answer the most basic of management questions: "what is your mission statement?" Most VCs won't speak to you without a business plan, but this entrepreneur needed to keep the mission statement flexible (unstated) so that he could simultaneously suss out the market and craft a mission statement, all while building this entrepreneurial organisation.

Despite the expectation of all around, he was happy to tolerate this serious organisational flaw until he saw an order emerging that he felt was right – and it was: that 3-point, 15-word mission statement remained as is for over 3 years, and then they added one extra point.

iv). Opportunity Recognition, was discussed by 11 different sources and was referred to 42 times. On its own regarding the recognition of opportunities relating to specific situations it was mentioned frequently by around 15% of the informants, so this finding is significant for a particular percentage. The following examples provide some evidence that opportunities sometimes take time and are circumstantial and situation dependent. This also sheds light on the dynamic and non-linear nature of entrepreneurship.

"...we thought Ansett might be interested in developing these test tools, but it wasn't their core business so they said 'not interested'. So, we just nurtured it for a few years and then we found we had probably a viable idea and then took another couple of years to gather the finances through doing some jobs until we were able to take the punt and go out.

"...the concept of 'opportunity' needs to be separated from the concept of commercialization. I saw an opportunity for us and with great resilience, pursued. We have not pursued commercialization with the same level of vigour, because it wouldn't have been appropriate technically – we could not do both at the time, but we can now".

Again, these examples highlight that circumstances have to be right for the entrepreneur to act, entrepreneurial skills alone do not make it.

v). Pattern Recognition

This node was supported by 28 references coming from 11 different sources and has its origins in De Bono's (1992) models of thought processes view the brain as a self-organising patterning system. In this context, pattern recognition refers to the entrepreneur's ability to find meaningful patterns of order in what others merely see as chaos – to see opportunities where others sense only risk.

Another example from Al Ramadan's Quokka Sports was the way he borrowed "patterns" from other areas of interest and applied it to his new venture. For instance their employment criteria was termed: *"finding great DNA"* and the points all related to previous areas of experience, especially his being a keen all-round sportsman:

"I want winners, but who've experienced failure – there's an honesty there to admit failure, but they've proved their endurance through tough times; I want to see a passion for sports – it fits the business, plus there's the concept of losing some games but winning the season; I look for diversity – of religion, race, background, sexual orientation, everything – I want to triangulate on everyone's assessments, especially when we're "sailing in the fog"; and then we looked for integrity – the business was just moving too fast – I don't want to find out later I shouldn't have relied on your word".

All of these aspects rely on patterns observed in other areas of experience, which are now transferred to a new context to help guide the venture toward success.

vi). Strategic Skill Sets were referenced 14 times by 8 different informants. Often respondents refer to both: the interaction with the environment as well as relying on their own intuition or awareness of the market. The following example is a combination of strategic planning and actively looking for future opportunities.

" I'm working on something where we're trying to fund the business either by manufacturing or buying components from China, and then when all goes well, we want to sell to Europe and US, so we're looking for cash-flow or commercial opportunities to keep the business alive".

Here, the entrepreneur shows a 'big' picture mentality, displaying characteristics of foresight and of adding value when the time and relationships are in place, so again their behaviour is situation dependent.

vii). Social Capital Strength also scored high. 64 referenced pieces of text were coded relating to social capital coming from 29 different sources. Because of this high number, the data was further broken down into three major areas of interest. These were:

- a.) Networks (8 sources; 12 references)
- b.) Relationships (17 sources; 45 references)
- c.) Trust (4 sources; 7 references)

The way in which informants have referred to social capital in regards with situations can be captured by the following examples:

"When I first became involved with the bio-tech, I knew nothing about bio-tech, so the first thing I did was join the Bio Melbourne Network. I was at the launch and I thought 'this is the network for me', you learn the jargon, who's who, who's doing what without being a scientist. The flow-on effect is that I'm also known in bio-tech circles now".

"Steven does a bit of work for me and he's looking at getting into our technology centre and will do a lot more. We also use a software company to do some development in different environment forums together. We sit down with them and talk about our ideas and concepts and have brainstorming sessions together. We're doing some joint

projects with Kel Multimedia and we also have students work for us. We are small, so for us, networking is everything”.

Both these examples refer to the importance of networking and the building of relationships as strong attributes for the entrepreneur. However, it is not just the trait or specific characteristic of the entrepreneur that makes networking work; it is clearly the whole dynamics of ‘people’ communicating in specific situations.

viii). Seeking advice Multiple experts

This node is confirmed by 66 individual references from 16 independent sources. It is a type of networking that is focussed, yet copious. Given the vagaries of the ever-changing environment of new ventures, the advice from these multiple experts are vital to help the new venture survive and flourish. The multiple views help triangulate the best solution, especially when *"you're sailing in the fog"*, as one entrepreneur describes new venture uncertainties. Another view on multiple experts comes from an incubator manager: *"I mean it would be very easy for me to grow from 6 to 60, but it doesn't accomplish anything, because my overheads and my cost base goes up quite significantly, and this way I can keep a budget that allows me to tap into a range of consultants and expertise as I need it".*

ix). Expertise. Having multiple skill sets rather than ‘specialist’ skills sets is what this example is about.

"Some entrepreneurs have the skills and passion for the product they're making, but they don't have management or small business skills, they don't necessarily have people skills or staff skills and so what's a good idea limps along for the first little while and then flops”.

"So, if you've got the commercial as well as the technical expertise on hand that's what will make a small business succeed not whether you are able to get \$50 off your rent”.

Even though coming from different angles, both viewpoints have in common that they believe that having broad general skills sets and using skills at a particular time leads to success

x). Innovation. Last, an example of innovation during the first years of start-up business, because also these scored high. There were 59 referenced pieces of text from 18 different sources referring to entrepreneurship and innovation. Some of these remarks were opinions about innovation and some how innovation can make a difference to their business, which for this study we were not really looking for. However, there were common remarks about issues around commercialisation.

"We are trying to solve a problem here. That's what we're all trying to do. We're trying to build our events and networks around being able to bring experience in on the commercial side of innovation. There's lots of people in the university that can help on the technology development side, but there's a real shortage with commercial experience and how to take a product to market”.

"It's more innovative about the way we go about things. We try to be innovative about the solutions we provide our clients in a way that meets their timeline, budget and abilities”.

In both examples, the entrepreneurs explain that other people have great influence in the way they innovate and develop their products. In the second example, the innovativeness is influenced by timelines, budget and abilities of the client.

General Structure of Non-Linear Traits

In compiling the traits for this research a general pattern emerged, and this is explained here in Table 2 to help generalise the non-linear conceptualisation of entrepreneurial traits as they relate to the environment in which new ventures are created. As can be seen from the table, the basic structure begins with the trait in its linear or stand-alone form, then a connecting-word to indicate the interaction, and finally the object of this interaction, namely a description of the environment.

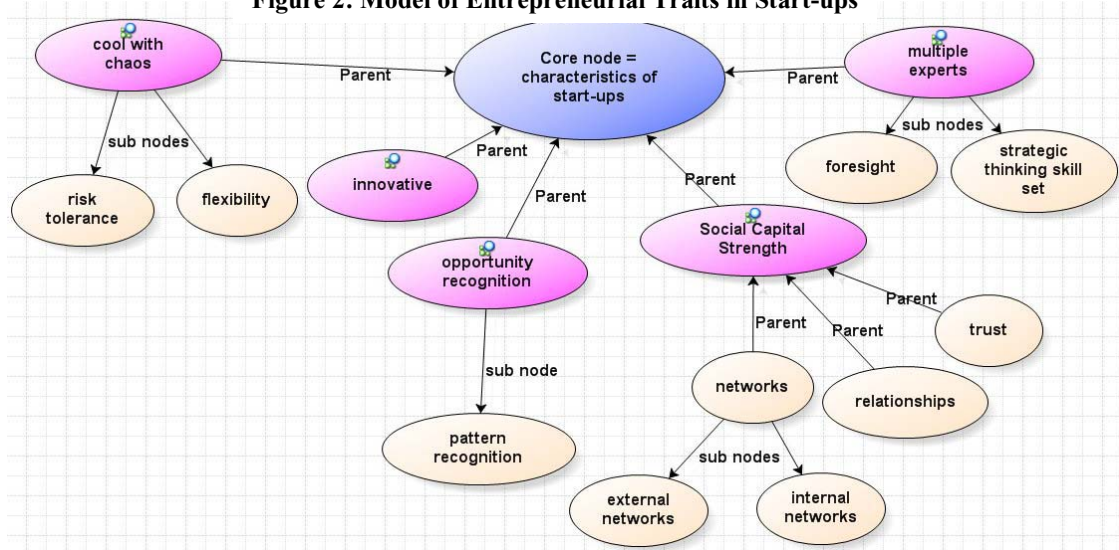
It will be noted that the descriptions are generally cryptic in nature, a natural result of reducing the trait descriptions to a minimum number of words. The verb-preposition-noun structure also requires a little poetic licence but makes for convenience and easy recall. For a better understanding of the nature of each non-linear trait there are the more comprehensive descriptions in Table 1. Importantly, given the growing body of literature centring on the entrepreneur-opportunity nexus, describing non-linear traits in a generalisable format such as this allows further research to build on the concepts outlined here.

Table 2 General Structure of Non-Linear Traits		
The Entrepreneur <i>verb</i>	Interaction <i>preposition</i>	The Environment <i>noun</i>
Tolerance	of	Risk & Ambiguity
Cool	with	Chaos
Flexible	amidst	Changes
Respond	to	Opportunities
Aware	of	Patterns
Strategy	towards	Marketplace
Build/Leverage	up/off	Social Capital
Seek Advice	from	Experts
Have Expertise	in	Business matters
Innovate	around	Obstacles

Conceptual Framework

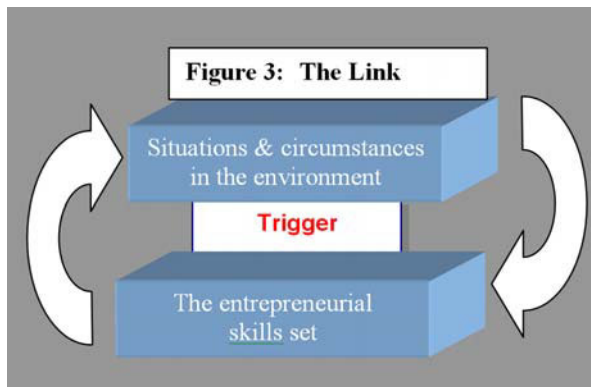
Figure 2 shows the conceptual framework as identified by NVivo. It shows the five major nodes (variables) identified by ranking them according to the number and range of references to each node extracted from the interviews. They are: i). Cool with chaos, ii). Innovative, iii). Opportunity recognition, iv). Social Capital Strength and v). Multiple experts.

Figure 2: Model of Entrepreneurial Traits in Start-ups



Implications

The findings of the study can be summarised using a simple conceptual framework. Figure 3 shows how in this paper we explored and found a distinctive link between situations and specific entrepreneurial behaviour during the entrepreneurial process and present them as non-linear entrepreneurial traits.



More conceptually, the findings indicate that using non-linear definitions for entrepreneurial traits & skill sets, supports a more objective description and explanation of entrepreneurial success, since this accounts for not only the entrepreneurs' personological traits, but crucially to what extent they are exhibited when interacting with the dynamism and change inherent in the exploitation of new venture opportunities as described by Baron

(2002).

The first impact of this paper is therefore in the role of theory building. The value in having models is the framework they provide, within which to think coherently about the reality that is being examined, in this case new venture creation. In this paper we have combined two key factors that have been the subject of recent entrepreneurship research, namely the nexus of the entrepreneur and the opportunity.

We argue that this more comprehensive conceptualisation of the experienced

reality could be a useful model to advance our thinking about the complex traits of entrepreneurs.

By embodying both aspects of this nexus in a range of single trait-concepts, we escape the limits of a linear path of thinking that looks at each aspect in isolation. Combining these traits into a coherent model allows one to contemplate key interactions that characterise new ventures and their creators.

At the same time, we have presented a generic way in which these so-called non-linear traits may be constructed, to ensure they take full account of the vital interactions between the entrepreneur and the opportunity.

Being empirical research the results quite naturally are applicable to the field of endeavour from which they were drawn, namely the practitioners in new venture creation. The anticipated impact here will largely be the incubator managers, venture capital interests, angel investors, etc that are closely tied to nascent ventures such as those surveyed. Being aware of the typical traits of successful entrepreneurs, defined in a way that also accounts for the dynamic new venture environment, and linked into a conceptual whole, will offer some academic rigour to the external management of new ventures that is typified by experience-based heuristics and linear stage-gate conceptualisations of new venture creation. At the same time, the non-linear traits offer a single cryptic concept that makes them relatively easy to recall and use in daily situations that arise.

In addition, these results could have important implications for teaching entrepreneurship. A non-linear definition of entrepreneurial traits inherently captures the key nexus between the entrepreneur and the entrepreneurial process, and therefore leads to a more comprehensive understanding why some people start businesses and why some others do not. This paper therefore offers some objective clarity on what typical behavioural traits entrepreneurs exhibit when interacting with their opportunities. This is likely to capture more of the dynamic human characteristics that, to paraphrase Mitton (1989): "we know when we see, but find so hard to describe".

In Conclusion

Given the dynamic nature of entrepreneurship, it is vital for a trait analysis to include the conditional element of the new venture environment. These non-linear traits are then generalisable over a wider range of people and situations.

We conclude that, especially when considering entrepreneurial traits, concentrating on the entrepreneur or opportunity in isolation is an outmoded linearization of the real world.

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