In the mind of innovators
Understanding key cognitions driving novelty

A white paper for innovation managers
ACKNOWLEDGEMENTS

Many people have contributed their time and advice to make this work possible. I thank them all equally. I am particularly grateful to each of the innovation practitioners who participated in the interviews. Without their time during the interviewing process, and commentaries after, this work would not have been realised. Any failure in accurately reflecting their experiences in innovation is my responsibility.

CARLOS VAZQUEZ
SYDNEY, AUSTRALIA. AUGUST 2017.
CONTENTS

Introduction.................................................................................................................. 1

Key cognitions driving novelty...................................................................................... 3

Innovators on making Australia an innovation powerhouse........................................... 11

Final remarks................................................................................................................ 12
Innovation is a central issue in contemporary organisations (1). Despite many theoretical definitions, innovation practitioners consider innovation to be the recombination and implementation of novel ideas that create value. Examples of innovation can be found throughout the course of human history. From early agricultural practices to advances in machine learning, innovation is a human endeavour that is as old as the first human settlements and as current as the latest developments in cryptocurrencies.

Modern conceptions of innovation were developed at the beginning of the 20th century, particularly with the seminal work of Joseph A. Schumpeter who coined the term creative-destruction (2). This concept proposes, at its most basic level, that there is an ongoing cycle of recombining the “old” to create something “new”, and underpins contemporary descriptions of innovation across the world. For instance, the processes used by organisations to innovate have Schumpeterian notions of creative-destruction at their core.

These innovation processes tend to follow two paths. The first follows an inside—outside logic, where organisations look for the best way to recombine their own capabilities to deploy new offerings into the market. The second is outside—inside, where the customer is at the core of the innovative endeavour and drives paradigm shifts within organisations. Through this outside—inside lens, new investments are proposed, real-time feedback from the market is sought, and larger amounts of data gathered from customers become available, which in turn improve decision making.

Many innovation processes are implemented following one or other of these approaches. The penetration of these approaches with innovators is high because innovators find them useful in solving the problems that arise in any innovative endeavour. For example, taking an outside—inside logic, the tools provided by design thinking and creativity training are becoming as ubiquitous as the word innovation itself.

In their attempts to be novel, innovators have become quite skilled in understanding the problem they are trying to solve and in evaluating the available tools they have at their disposal. A team of innovators can make use of competitive maps to understand the positon of similar offerings in the market, in much the same way as they might use a business model canvas to clarify a business proposal.
While the various innovation processes and tools are often presented as the ultimate requirements for innovation, in practice the innovator’s toolkit is varied. It is dynamic and evolves depending on the stage of the innovator and innovation. In practice, innovators are not married to one process, one method, or one tool. They use, experiment, and dispose of as many of processes and tools as demanded by their innovation journey. However, there is structure underpinning their attempts to be innovative. This is particularly evident in companies and organisations where innovation is the driver for growth.

At the individual level, regardless of established processes and tools within organisations, innovators access many different tools. It is in this context that innovators perform innovation with a sense of value creation, pragmatism and enthusiasm. In their practice, they especially demonstrate a set of cognitions and understandings that assist them in their attempt to be novel. Surprisingly, little is known about what drives the innovative endeavour at the individual level. Understanding this is highly relevant, however, because at the core of the innovation journey is individuals: that is, individuals generate innovation (3), and without comprehending what is happening in their practice through their own lens, organisations are prone to fail in their attempt to be innovative.

This document shows an initial exploration of the key cognitions experienced by innovators. Cognitions are understood as the different mental activities humans perform to process information to acquire knowledge (4,5). Presented herein is a set of mental activities that innovators experience while innovating.

The findings identified in this document are part of a larger doctoral research project conducted at The University of Sydney Business School, and have unveiled a need to continue researching the constitution of the practice of innovation.

Innovation practitioners can use the information presented in this document as another tool to understand how innovation managers can trigger different cognitions in the face of diverse problems they will encounter in their innovation journey. As such, this document does not attempt to present the ultimate solution to how to innovate; rather it showcases different tools for innovators to use.
The document establishes the ten main cognitions experienced by multiple Australian innovators. Six of these ten cognitions are described in detail, and four are briefly mentioned. This paper is an account of more than 450 minutes of in-depth interviews with people directly involved in an innovation project — that is, the innovators. The industries represented here are varied. It reflects the direct experience of innovators from agriculture to professional services, to online technology, and more. The document concludes with list of recommendations from innovators outlining how Australia can become an innovation powerhouse.

This is a document targeted at innovation managers. Many other business professionals can also benefit from its contents. Not only does this document aim to provide information about the different cognitions innovators access, it also attempts to encourage further discussion about what innovators understand as affecting their own practice.

The list of key cognitions that drive novelty described below are ordered according to the declared experience of innovators during the different interviews conducted in the past 12 months. At the end of each description a main proposition is highlighted to suggest what innovation managers can do, and think about, to make their practice of innovation more effective.
DIVERSITY

Proposition 1: Effective innovation managers think about team diversity as a conduit to increase their innovation’s rate of success.

Innovation is not an activity of single individuals. To be effective, it requires the effort of a group of people acting as a team with shared objectives and mutual accountability. This is a daunting task, and perhaps more research should be dedicated to examine the impact of team effectiveness in innovation. The experience of innovators suggests that team composition is relevant because different points of views enrich the innovation journey, and employee diversity seems to be fundamental to accelerating innovation output (6).

With this in mind, it is interesting to highlight that a sense of diversity forms part of the main cognitions innovators access while innovating. They are clear that a diverse team in terms of gender, cultural background, age, and professional experience is likely to bring different points of view and come up with more robust answers to the problems arising from their innovation journey. As a result, richer solutions and avenues to move forward with their own innovation projects are likely to be developed.

Innovation managers should attempt to keep activating and reaffirming a sense of diversity for their teams when thinking about how to approach an innovation problem. They might be exposed to points of view that they never considered. They might be able to better evaluate a situation because of the variety of experiences and expertise in their teams. They might also be better placed to envision new opportunities for their projects should they incorporate a different cultural vantage point. In diversity, innovation projects seem to thrive (7). Team diversity helps to accelerate innovative endeavours.
EXPERIMENTING

Proposition 2: Effective innovation managers think about experimenting as a means to test new ideas in their projects, and to gather new information about an innovation problem.

The uncertain and ambiguous nature of innovation (8) suggests that it is an activity of trial-and-error. The more individuals test their ideas, the more opportunity they have for acquiring new and more information about what can make their innovation projects successful. The declared experience of innovators suggests that a combination of testing ideas, hypothesising, and trialling facilitates their innovation journey.

It is hardly surprise that the idea of experimenting forms part of the main cognitions innovators access while innovating. They want to try new ideas about an innovation project and learn from it. The latter perhaps is motivated by their ongoing efforts to test new propositions affecting their projects, and to minimise the rate of failure.

The idea of experimenting is challenging in itself because of organisational constraints that innovators experience in the real-world. Such constraints might arise in the form of internal policies that preclude them from further testing different ideas, or, most commonly, budget limitations. However, the practice of innovation is one where managing constraints becomes part of the everyday life of innovators (9). In this context, innovators make bold decisions and experiment with new methodologies and tools, and incorporate new ideas that can help make their innovation a reality.

Innovation managers should attempt to keep activating the idea of experimenting when thinking about their practice. They might benefit from the results arising from trialling different proposals in their projects. They should be aware that failure in innovation is a common phenomenon and, above all, a source of information that will assist them to minimise uncertainty and ambiguity in their projects. The idea of experimenting is closely related to innovation because it is actionable and, above all, it is relevant (10). Without experimenting, the development of new technologies might be limited, and the potential transformation of an organisation is left to the will of external forces.
Intuition is a complicated concept to grasp in the context of innovation because for different people intuition means different things. In a pragmatic sense, the definition of intuition is the understanding that happens without a full rational comprehension. The experience of innovators is that intuiting appears to be fundamental for driving novelty.

This might come as a surprise when talking about innovation. Innovation practitioners are heavily trained in structured and scientific-based methodologies, yet the incorporation of “gut-feeling” is an unspoken reality (11). The declared experience of innovators suggests that intuiting has assisted them in their innovative endeavours.

It is unclear as to how intuiting develops and operates, and perhaps much more research is needed to understand how to maximise this type of understanding for innovation. What is clear is that even the most structured and rational innovators (i.e., scientists) have experienced the benefits of thinking intuitively. It provides them with preliminary answers to a problem, and helps them to navigate through the obstacles presented by difficult and complicated situations. As a scientist, for example, logical thinking is paramount. However, intuition can fill gaps, allowing individuals to accept that they don’t know all the facts but can make informed decisions in the face of the unknown and uncertain.

Innovation managers should further develop their intuitive capabilities so that they overcome the apparent clash between observing hard facts and understanding something instinctively. Indeed, they might benefit from further utilising intuition as an exercise to narrow uncertainties arising from insufficient data. As such, expertise becomes as important as experience, and logical thinking becomes as relevant as “gut-instinct”.

Proposition 3: Effective innovation managers think both logically and instinctively to better consider the most appropriate path to follow in their innovation projects.
COLLABORATING

Proposition 4: Effective innovation managers think about collaborating as a key activity to bring individual efforts together and successfully innovate.

Innovation is fundamentally a team effort where different individual skillsets contribute towards the fulfilment of a common objective – to innovate. The evidence from major past innovations suggests that the course of innovation is rarely ideated, developed, and delivered by a single individual. It requires a collaborative approach, in which individuals contribute different elements to an innovation project.

In the experience of innovators, thinking about collaborating comes naturally in the context of innovation. They acknowledge that individual contributions are important, however, innovators are clear that collaboration is a necessary concept to grasp and know how to exploit. Innovation for them is a multidisciplinary and interconnected endeavour because collaborating with other individuals eventually leads to the enactment of capabilities that promote the emergence of novelty.

Innovation managers should keep in mind the idea of collaborating to successfully innovate. In this sense, individual capabilities alone underpin innovation in so far as they are part of a larger team effort to be novel. Indeed, they might benefit from knowing how to exploit different collaborations. Potentially, further training in this regard might become a fundamental part of the innovator’s toolkit. The innovation endeavour, with a collaborating mindset, becomes communal and individual contributions in collaboration become the pillars upon which novelty is built.
IMAGINING

Proposition 5: Effective innovation managers think about accelerating innovation by entertaining the whimsical and allowing their minds to wander around different possibilities.

Innovation is an activity that uses imagination (12). Innovation practitioners ponder the different possibilities of their activities in a way that allows them to engage in a “what could happen if ...” type of thinking. Closely related to experimenting, imagining is a more fundamental cognition. It helps to shape thoughts and feelings about a situation, to expand the possibilities of the innovation journey.

In the experience of innovators, imagining is used to see the bigger picture of an innovation project. It also helps to inspire others to a particular vision because it is key to explaining what different innovation scenarios can look like, and plays a large part in motivating hypotheses. Imagining is a complex concept to explain, as subjective as intuiting. Nevertheless, even the more structured and science-based innovators have experienced imagining at some point in their journey.

Innovation managers might benefit from maintaining an imaginative mindset when managing an innovation project. This could potentially help them to show what may be possible and accelerate a course of action, while inspiring the team into making those possibilities a reality. It also further paves the way for experimenting with new ideas and ways of working. The innovation endeavour, with an imagining mindset, becomes one where facts are paired with further interpretation, and decision making incorporates both probabilities and possibilities.
PIVOTING

Proposition 6: Effective innovation managers think about being flexible and nimble with their innovation projects as the best way to adapt to external (market and organisational) forces.

The uncertain nature of innovation requires a sense of nimbleness and flexibility. The innovation idea, at its inception, provides a fulcrum upon which other activities can be developed, and further ideation exercises performed. In the practice of innovation, the initial idea might not necessarily be the ultimate outcome. In this sense, innovating is difficult because the innovation practitioner must be ready to move forwards, backwards, sideways, upwards, and downwards as required by the different situations their innovation projects require.

In the experience of innovators, pivoting is at the forefront of their thinking because organisational reality and context matters (13). Therefore, innovation projects are not all approached in the same manner. Although some guidelines are in place as to how to manage similar situations across different innovations, being flexible and nimble allows innovators to adapt, learn, and leverage old and new information.

Innovation managers might benefit from keeping in mind the notion of pivoting. This can allow them to adapt to new contexts and respond to new organisational and market situations. Thinking about pivoting their innovation projects makes their innovation journey more open to embracing the inevitably unknown situations that the journey is likely to encounter.
Other Key Cognitions

Outlined above are the six main cognitions that innovators access while innovating. Other cognitions worth mentioning are:

- risk-taking;
- learning and leveraging;
- prospecting; and
- structuring.

Risk-taking, from the experience of innovators, shows that when innovation happens, it happens to people.

Here, risk is inherently part of the innovative endeavour, and when individuals embrace a risk-taking attitude, innovation happens.

As for learning and leveraging, innovators think that innovation is as much the outcome of past skills that have been leveraged, and new skills that have been learned.

This seems to be applied in the context of prospecting, where innovators think that innovation is fundamentally a search for new value. This value cannot be delivered without a strong sense of structuring.

The innovators’ experience suggests that a structured framework can improve an innovation’s rate of success and increase problem-solving capabilities.
The experience of innovators provides rich insights into what they think about the state of innovation in Australia. They acknowledge that the country is in a privileged position to increase its innovation output. Some recommendations as to how to accomplish this are that Australia should focus on the science of innovation, where teaching problem-solving capabilities will streamline the innovative output, and will create new avenues for its commercialisation, while ensuring that such output remains valuable for the market.

Innovators agree that the best way to develop Australia’s ecosystem is not replicating best practices from other countries because innovation is essentially a reflection of a society’s mindset, cultural cues, and unique traditions. In this sense, looking to how other nations have instituted a successful innovation ecosystem has little to offer for Australia’s unique situation geographically, societally, and economically.

The development of Australia as an innovation powerhouse should be based on transforming the incentives available to innovators and on fostering higher tolerance for failure across society. This in turn can motivate people to take a chance, fail, learn, and eventually succeed in innovation.

It is also suggested that more training in science, technology, engineering, and mathematics, and more knowledge as to how to deliver innovation to international markets (and not only nationally) are elements to be considered in developing Australian innovation. Along with an increased and more developed investment platform, much needs to be done to transform Australia into an innovation powerhouse. For instance, fostering a business environment that promotes innovation is perhaps one of the steps that the country should initially take. The innovators believe that Australia should accelerate its innovation ideas, processes, and outcomes with a global mindset. This implies that the delivery of current and future Australian innovations should be based in an already internationally competitive mindset. Without it, Australia’s ecosystem will be limited by the economic boundaries of its domestic market. With the latter in mind, Australia should work to produce innovations that serve the world.
It is hoped that this document has shed some light into the understanding of the main cognitions driving novelty from an Australian innovators’ perspective. Its content suggests that an effective manager is an informed risk-taker who uses past experiences to inform current situations and is open to learning from new ones. She/he thinks about the search for value, and knows that a structured framework improves the rate of success of innovation. The effective innovation manager is one who thinks in terms of diversity and includes people from different backgrounds into her/his teams. She/he is a manager who understands that experimenting can provide solutions to complex problems and, in the worst case, provide new information about innovation projects. An effective innovation manager thinks both logically and instinctively to narrow down decisions in the face of incomplete data. She/he considers the innovation journey a shared endeavour that cannot be successfully undertaken without multiple individual inputs. The effective innovation manager entertains the whimsical by imagining what possibilities can be derived from the information at hand and, importantly, allows her/himself to pivot as the context of innovation requires.

Finally, this document is intended to inspire the reader to reflect on the way innovation is understood and enacted. The more innovation managers reflect upon their understandings of innovating, the better placed they are to allocate and prescribe action. Whilst the multiple propositions suggested in this document are indicative, they are in no way exhaustive, because the key cognitions driving novelty are likely to evolve as the practice of innovation evolves itself.
REFERENCES


(2) Joseph A. Schumpeter, Capitalism, Socialism and Democracy (Routledge, 2013).


