

# Beneath the surface of conscious patterns: using narrative to characterise the culture of innovation at a leading R&D organisation

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## Abstract

*The South African Council for Scientific and Industrial Research (CSIR) was founded in 1945 and knowledge has always been a core asset of the organisation and is a direct determinant of the organisation's relevance. Strategic management of innovation is seen as both a social and a key business process for converting knowledge into value. Current reality is projects that typically entail a high degree of new knowledge generation as opposed to repackaging of existing knowledge. Human skills and knowledge are the primary limiting resource for an R&D organisation. Most work is multi-disciplinary in nature and project teams are assembled by drawing experts from a number of organisations. The challenge is to effectively leverage human skills or knowledge towards innovation excellence and to achieve this it is necessary to understand the prevailing culture associated with innovation. Narrative techniques are used to uncover behaviours, themes and archetypes beyond the everyday conscious patterns of recognition.*

*An important area of impact is the change process currently underway at the CSIR. Here, the aim is to shift the CSIR back to a stronger R&D basis in line with the organisation's mandate. Aspects include processes to understand the current underlying organisation values and culture and narrative can add value to these complexities. Outcomes from this exercise support the change process at the CSIR.*

*The main objectives are to investigate or explore the usefulness of narrative techniques for making sense of complex social processes and; gain insights into the cultural issues surrounding innovation.*

**Keywords:** Narrative techniques, culture, innovation, archetypes, values and themes, change process

## Background

*Narratives connect ways of knowing with ways of organising* (from Patriotta, 2003, pp 353).

### Industrial Context

The South African Council for Scientific and Industrial Research (CSIR) was founded in 1945 and has developed into the largest research-based science and technology organisation in Africa. Environmentek is a core business unit within the CSIR that focuses on environmental research to support sustainable development within the context of national priorities and global challenges. Note that while this case study subsequently refers to the CSIR the research was confined to the Natural Environment research unit. Knowledge has always been a core asset of the organisation and is a direct determinant of the organisation's relevance. Strategic management of innovation is seen as both a social and a key business process for converting knowledge into value.

The CSIR defines knowledge simply as the *capacity for informed action* (Roux, 2004), which is closely related to definitions provided by Karl-Eric Sveiby, namely *a capacity to act* (Sveiby, 1997); and Ross Dawson, namely *the capacity to act effectively* (Dawson, 2000). For the purpose of this chapter, innovation is defined as “an idea, practice, or object that is perceived as new by an individual or other unit of adoption” (Rogers, 2005). CSIR strives to facilitate effective transfer of innovations, where the adopter has both the absorptive capacity (understanding) as well as the emotional and financial commitments to allow sustained use of the acquired knowledge.

### Problem

Current reality within CSIR Environmentek is that typical projects entail a high degree of new knowledge generation as opposed to repackaging or reusing of existing knowledge. Projects often draw on a variety of specialist skills, necessitating project teams that draw experts from both within and outside the organisation. Availability of human skills or knowledge is seen as the primary constraint to achieving business objectives. Flowing from these realities, a key business imperative is to attract and retain key talent, but also to effectively utilize internally (within the CSIR) and externally (outside of the CSIR) available knowledge. An overall challenge facing the organisation is to effectively leverage human skills or knowledge towards innovation excellence.

It is increasingly acknowledged that an organisation cannot manage knowledge per se (Snowden, 2003, Ungerer and Roux, 2005 and Denning, 2002) rather it is the processes and tacit aspects that require management attention. Furthermore, Snowden (2003) believes that knowledge is both a thing and a flow that requires organisations to focus more on context and narrative (which caters for tacit features) than content; ‘...*human knowledge is deeply contextual – it is triggered by circumstance*’ (Snowden, 2003b, pp 24).

It should be noted that the larger the organisation, often the more difficult it is to clearly distinguish patterns (e.g. related to innovation) in complex, social space. While leadership skills are not necessarily control orientated, they are about trying to create order, and leaders need to sense and respond to the emerging patterns from observation and experience. Leadership responses may include the encouragement of patterns perceived to be favourable and discouragement of patterns perceived to be unfavourable.

To avoid ending up with “the same old answers”, narrative techniques and storytelling can be used to uncover values, issues and characters or archetypes beyond the everyday conscious patterns of recognition. For example, anecdotes represent a source of unguarded information, which may not surface through usual question and answer techniques. Typically, patterns that emerge from the anecdotes differ from the answers that people involved in innovation may give if asked to fill in a questionnaire or during an interview. This rationale has led to a narrative enquiry into the patterns

that characterise innovation at CSIR, the outcome of which provides a baseline from which to influence behaviour, lead change, share knowledge and guide decisions regarding CSIR's future direction.

### **Learning Objectives:**

- To explore the usefulness of narrative techniques for complex social processes
- To uncover the archetypes present in innovation at a R&D organisation and understand where they add value or hinder innovation
- To understand the cultural complexities surrounding innovation at CSIR Environmentek

## **Approach**

James and Minnis (2004) believe that the more intricate organisational knowledge is, the less effectively it can be codified. Stories provide examples of nuances that otherwise may be difficult to write down and may even remove some ambiguity and make meaning more clear. Further benefits of organisational storytelling include: allowing people to track or benchmark their own behaviour and theories; generating new knowledge and ideas; obtaining a deeper understanding of underlying cultural issues; providing a means of communicating possibly difficult issues in a non-threatening manner; allowing a far greater depth and texture of knowledge to be conveyed; and using anecdotes to provide repositories of accumulated wisdom (Mitchell, 2005, Patriotta, 2003, Snowden, 2001b). The assumption behind using narrative techniques is that innovation within the organisation has happened in complex space, that is; patterns of knowing can only be recognised in retrospect and emerging patterns can be seen (Snowden, 2003).

Within an organisation work occurs in a complex social environment where anecdotes (told around the water cooler or photocopier) allow people a means of distilling information on behaviours and values that influences attitudes and shape the prevailing culture. Narrative enquiry can be used as a mechanism to organise human cognition and make sense of multiple signals in anecdotes (Snowden, 2001a). This study made use of two techniques developed by the Cynefin Centre for Organisational Change, namely:

- **Discovery technique:** Anecdote circles were used to facilitate the informal sharing of experiences by participants within a peer group. An anecdote is a real life account of an individual's or a community's experience. They are usually unstructured, simple, convey various values, messages and rules, and are told from a particular perspective. Anecdotes are associated with a historical event or experience and as such have a time imprint. Anecdotes differ from stories in that they are based on fact and real experiences, where stories reflect altered realities and carry a specific message (Snowden, 2003).
- **Sense-making technique:** Two-stage emergence was used to extract emergent constructs (Values, Themes, and Archetypes) from the outputs (anecdotes) of the anecdote circles. The first stage uncovers ordered properties from the outputs (characters, issues and behaviours), and the second stage reveals unordered properties culminating in the archetypes, themes and values.

## Case Analysis

*“The real voyage of discovery consists not of seeing new lands but in seeing with new eyes”* Marcel Proust (quoted in Snowden, 2004, pp5)

During November 2004 two anecdote circles were held, the aim of which was to capture anecdotes and experiences of participants relating to innovation. Researchers were selected to participate in this exercise because of their levels of experience and represented three different geographic locations (Pretoria, Stellenbosch and Durban). Two groups of senior researchers sat in informal circles and told anecdotes of their experiences of innovation in various projects and contexts. Using an informal setting (e.g. an open plan lounge area with bean bags and snacks) created a comfortable environment conducive to sharing of stories. Each session was facilitated by a member of the facilitation team familiar with the Cynefin techniques and supported by a young researcher.

It was emphasised that an anecdote should focus on an experience and not on opinion or personal knowledge. During the anecdote circle, a number of open and ambiguous prompting questions were asked by the facilitator upon which the participants self-selected the order in which the anecdotes were shared. Anecdotes were recorded with a digital recorder and manual notes. The final collection of anecdotes was captured in a narrative database, following a protocol that allows future extraction according to themes, issues, characters, emotions, behaviours, etc. One of several uses of this narrative data is to, through a further facilitated session, extract organisational archetypes, emerging themes and emerging values, which in turn should be used to inform organisational strategies and change management.

This discovery phase resulted in 144 anecdotes being captured which became the basis for a two-stage emergence workshop held in March 2005. A new set of participants worked together to extract the character attributes, behaviours and issues from the anecdotes. The participants followed a facilitated predetermined process allowing the attributes to become archetypes, the behaviours - values and the issues - themes. A cartoonist was present during the later stages who, with no prior briefing, sketched the attributes of the archetypes according to the discussions.

The final step in the process was to populate the narrative database that examines each of the original anecdotes for the extent to which the archetypes, values and themes are present. This data was captured by using participants from the two-stage emergence workshop working in pairs. This data was then analysed in order to determine any emerging trends. The sense-making stage yielded ten archetypes, twelve themes and fourteen values associated with both supporting and hindering innovation at the CSIR.

## Results and Business Impacts

*“Narrative is the way human beings actually manage to understand and interact with other human beings in the world ... if you want to understand the world of human beings – and organizations are fully of human beings – you’ve really got no choice. **You have to understand narrative**”* [own emphasis] (taken from Denning, 2002, pp18).

### Results

#### The Archetypes

Ten archetypes that characterise innovation resulted from the narrative process namely the; Clumsy Puppy, Couch Referee, Courageous Captain, Bright-Eyed-Bushy-Tailed Researcher, Inspiring Coach, Intellectual Maverick, Intrepid Explorer, Meticulous Bureaucrat, Narrow-minded Nitpicker and the Willing Victim.

The archetypes were developed during the two-stage emergence workshop, and the method allowed the final archetypes to be mapped back to the characters that were contained in the original anecdotes. For example, 29% of the students and/or learners in the anecdotes are associated with the Clumsy Puppy Archetype. The cartoon drawings of the archetypes are provided below with explanatory text of their typical attributes. The text box refers to the original characters from the anecdotes, and the extent to which, each archetype is composed thereof. Only the dominant characters are shown, those that constitute at least 60% of the archetype.



The Clumsy Puppy is a new recruit with **little working experience** and always raring to try new things. They are most in need of **support, mentoring** and are **dependant** on more experienced staff for **nurturing** and **skills development**.

Once they overcome their **insecurities** and given the **space and opportunity to learn**, the Clumsy Puppy can be a valuable contributor. However, in their **enthusiasm** a Clumsy Puppy may **not listen well** and will need **constructive feedback** from others to build their

confidence.

<b>Made up of Characters:</b>	Students and Learners - 29%
	Followers - 14%
	Scientists - 14%

The Couch Referee is a **'know-it-all'** who believes things would have worked out if only they were listened to in the first place. This is the type of person who can be heard saying; "I told you so!"

They are more often than not negatively perceived by colleagues who see the Couch Referee as **demanding, insensitive** and **arrogant**, with **unrealistic expectations**. The Couch Referee on the other hand, feels that **no one listens** to them or **values their inputs enough**.



<b>Made up of Characters:</b>	Clients - 45%
	Scientists - 22%



courageous captain

The Courageous Captain is **enthusiastic, inspirational** and **forward looking**. Their energy, **dedication** and **strength of character** afford many followers and is likely to be heard saying; “Right everyone, follow me I know where we need to go...”

**Self motivated, energetic** and **appreciated** for being reliable, the Courageous Captain is generally optimistic and **unperturbed** by what lies ahead on the horizon. Within the CSIR they are seen to have **access to funding** and great research projects.

The Courageous Captain is the subject of many an organizational story and these stories are likely to take on mythical status.

<b>Made up of Characters:</b>	Achievers - 39%
	Followers - 23%

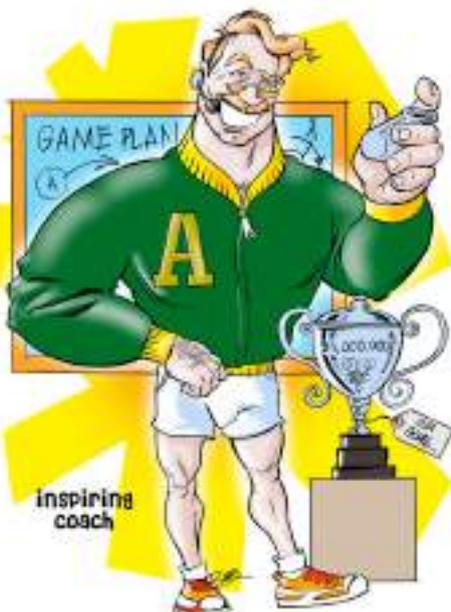
The Bright-eyed Bushy-tailed Researchers are young, **enthusiastic, goal orientated** people. They can be **relied upon** to achieve results, organise and **get things done**. This does tend to pull them into **managerial** and **operational tasks** (as opposed to research).

The Bright-eyed Bushy-tailed Researchers tend to be highly **productive over-achievers** who continually **moving their own goal posts**. However, as a result of their management tasks they are often **office bound** and **don't get to see the bigger research picture**.



bright-eyed bushy-tailed researcher

<b>Made up of Characters:</b>	Managers - 46%
	Leaders - 18%
	Achievers - 18%



inspiring coach

The Inspiring Coach is a true **team player** and the organizational cheerleader! This is a **people-person** who is **supportive** and committed to making a **team** successful. An Inspiring Coach **adds value** by providing support where it is needed, focusing on a **common goal** and having the **ability to accept criticism**.

**Sharing knowledge** and **communicating** is important to an Inspiring Coach. While acknowledged as an achiever, the Inspiring Coach likes to have a **hands-on approach** to getting things done. An Inspiring Coach tends to **multi-task**, but always remains **committed to the team**.

<b>Made up of Characters:</b>	Team member - 19%
	Achiever - 19%
	Follower - 19%

The Intellectual Maverick is a **visionary** who has **insights** into the bigger picture and a broad spectrum of knowledge to draw upon. They are **lateral thinkers** who enjoy the challenge of solving **complex problems**.

Intellectual Mavericks **love a challenge** and are not afraid to take **risks**. New, original ideas often come from Intellectual Mavericks and they will **focus on an idea** until it is conceptualised to a manner that they feel can be passed on to someone else to take further. An Intellectual Maverick is seen to have **strength of character** and key **insights to the market**.



<b>Made up of Characters:</b>	Achievers - 15%
	Analyst - 15%
	Scientist - 15%
	Leader - 15%



Intrepid Explorers love to **explore new directions** or ideas and are **creative, lateral thinkers**. They have an **adventurous** spirit and love a challenge. Where the Intellectual Maverick is not afraid to take risks, the Intrepid Explorer is not afraid to take the **initiative** and make the first move.

The Intrepid Explorer gets **bored easily** and constantly needs new stimuli in his/her environment. Colleagues see the Intrepid Explorer as **arrogant, individualistic, opinionated** and **complex**. In top form an Intrepid Explorer could be heard saying; "Guess what I just discovered ... I bet you couldn't!"

<b>Made up of Characters:</b>	Innovator - 38%
	Scientist - 38%

The Meticulous Bureaucrats are **perfectionists** who like to focus on **details** and are painstaking particular with their work. Unlike many of the other innovation archetypes they are driven by targets and **deadlines** and are **analytically minded**. Come what may, a Meticulous Bureaucrat will deliver their work on brief, on budget and on time.

A Meticulous Bureaucrat will **clash with others**, get involved in organisational **politics** and is **not easily swayed** from their values. They are easily **stressed** by errors or change. Colleagues see the Meticulous Bureaucrat as **dictatorial** and **inclined to sabotage**.



<b>Made up of Characters:</b>	Analyst - 19%
	Family - 19%

The Narrow-minded Nitpicker is **detail focused** with a very **narrow perspective** on what is acceptable or not. They prefer to operate alone or in a **silos**, **do not communicate** well and generally have a **low morale**.



A Narrow-minded Nitpicker will work hard on **micro-task details**, which is seen as **selfish** or **non-value adding** work by bigger picture thinkers. Colleagues perceive the Nitpicker as **lacking commitment** to the organization or team and **selfish**.

The Narrow-Minded Nitpicker is the archetype that displays the most negative qualities.

<b>Made up of Characters:</b>	Victim - 33%
	Follower - 17%
	Analyst - 17%

Willing Victim is the gloomy person who **feels sorry for him- or herself**. They **believe** that their contributions are **never adequately acknowledged** or properly appreciated. A Willing Victim is **pessimistic** and quick **pass blame**.

Colleagues see the Willing Victim as **egotistical**, **overly critical** and generally **naïve** to larger issues. The Willing Victim will **not take the initiative or volunteer an idea** as they believe that their inputs will not be appreciated anyway.

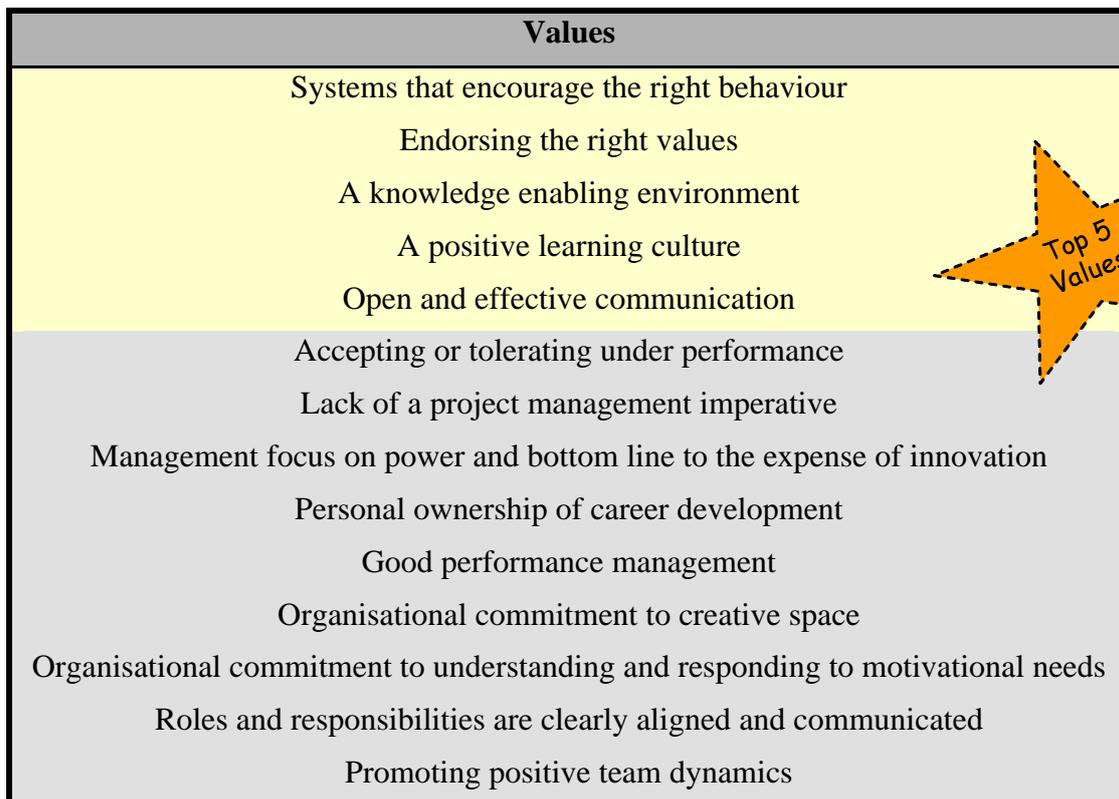
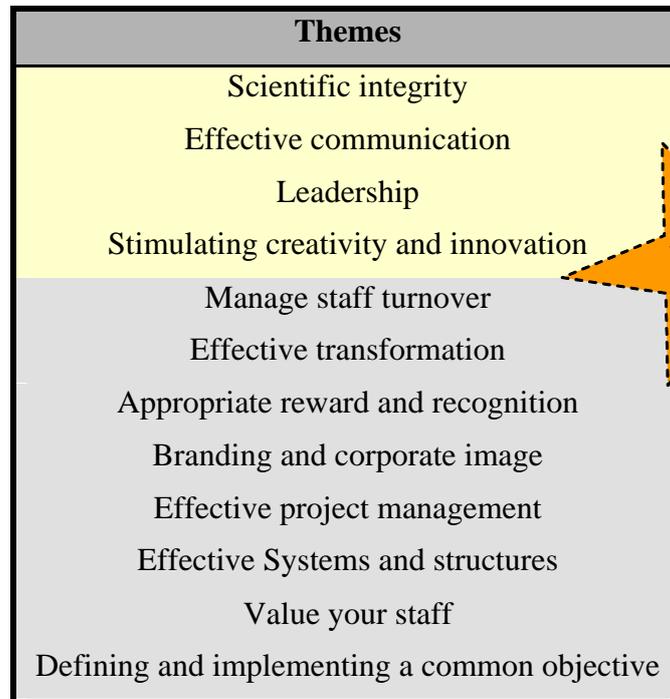
<b>Made up of Characters:</b>	Victim - 46%
	Innovator - 16%



The Intrepid Explorer is by far the most common and strongest featuring archetype in innovation anecdotes, followed by the Intellectual Maverick. While the Bright-eyed Bushy-tailed Researcher does not have as great an impact, this archetype is featured consistently in the anecdotes. The least frequent occurring archetypes are the Narrow-minded Nitpicker and the Willing Victim; however the Willing Victim is the only archetype to score high on project management, an important part of leveraging innovation. Many of the archetypes share similar weaknesses and strengths, for example, effective transformation is consistently weak. Interestingly, transformation is a core organisational theme and this exercise shows that innovation is probably not the most effective ‘home’ to achieve transformational goals; however, mentoring has been shown as a key aspect of successful innovation. The highest ranking archetypes (Intrepid Explorer and Intellectual Maverick) are role models for innovation and the type of characters around which coffee table talk and mythical stories form.

## Themes and Values

Anecdotes extract shared views and meanings for a community (Patriotta, 2003). From an organisational culture perspective these shared worldviews are important to understand the common features of an organisation's culture. For learning to be most effective a certain degree of overlap in understanding is needed (James and Minnis, 2004; Roux et al., 2005,) and sensemaking of the anecdotes helps understand where these overlaps may be.



The most notable feature from the themes and behaviours is that they are very positive. It became clear in the sensemaking phase that the results, particularly the values, show some manipulation to reflect what *should* happen for successful innovation and not necessarily what *did* happen. For this reason the archetypes will remain the focus of this chapter. However, in this context it is worth noting the results and some observations.

A dominant theme in the anecdotes is an obvious one: ensuring the ability to stimulate creativity and innovation. Other dominant themes include effective communication, leadership and scientific integrity. Interestingly, the ability to manage staff turnover, effective transformation and appropriate reward and recognition do not feature strongly, yet these top the list of organisational level goals.

The strongest values for innovation are open and effective communication, having a positive learning culture and creating a knowledge-enabling environment. The least frequent values are the negative values of lacking a project management imperative and accepting or tolerating underperformance.

Effective communication is shown to be very important for innovation, ranking high as both a value and a theme. Put in other words; if you want successful innovation you need a culture that values and encourages the sharing ideas in a safe and honest environment. Communication is important for sharing knowledge and leveraging ideas into something 'do-able'. There are very few anecdotes that tell of an experience where innovation happened because someone did not want to share an idea for fear of lack of recognition or losing control of the idea. Sharing and communicating across teams is a clear theme throughout the anecdotes.

#### ***The value of experiential learning...***

*“When you get a heart bypass you don't pay for the hours that the doctor work you pay for the hours that he spent learning and working on other people. “*

#### ***Reward and recognition...***

*“After we completed a huge EIA [Environmental Impact Assessment], one of the vice presidents indicated that they wanted to reward the team appropriately. As project manager I got up and said: ‘I think you can't do better than just give us the space to go on a game drive. That will reward our families as well for having put up with us.’ We were then allowed to spend a week at the Victoria Falls. Our families joined us for two days and stayed for free. The core team was there for a couple of days afterwards. It was the best reward they could have given us.”*

## **Key Findings**

In general outputs from the Sensemaking process reveal a number in interesting issues which are characterising innovation at the CSIR Environmentek. This section provides a brief overview of the key concerns and findings.

It is important to note that the values, themes and archetypes identified arise directly from the anecdotes and thus the actual experiences of staff. While there may appear to be certain gaps in the list, this is because these issues did not arise strongly from the anecdotes and is an indicator of those values that pattern entrainment tells us must be a part of innovation, but may be rarely practiced in the organisation.

Snowden (2003) believes that an individual builds his or her own patterns through learning processes and experience which enables them to understand complex situations and thus make decisions when surrounded by uncertainty. The anecdotes collected for this exercise clearly point to uncertainty and risk being present in the innovation environment, thus breaking previously existing patterns to form new ones.

Pattern entrainment in communities can result in ‘group-think’ and the unwillingness for a particular community to recognize or accept patterns outside of their own paradigm (Kurtz and Snowden, 2003). Retrospect and internalization of experience, is a good collector of patterns.

### ***The Innovation Environment***

The CSIR case study revealed a number of archetypes that raise concerns for innovation practices namely; the Coach Referee, the Willing Victim, the Bright-eyed Bushy-tailed Researcher and the Intellectual Maverick.

A key concern emanating from the outputs of this exercise is the client-scientist relationship. To demonstrate, the Couch Referee archetype composes 45% of the client character. From Couch Referee you are most likely to hear ‘if you had just listened to me in the first place we would not be in this situation.’ Understanding exactly what the client wants and can use effectively is critical to the success of any project and requires good listening and interpretation skills; which are lacking in some of the archetypes (notably the Couch Referee, Intellectual Maverick and the Intrepid Explorer).

*“Having finished the project the client rejected all the solutions in our big report because he said it would be too complicated for the people to understand.”*

The results point to issues where clients may have trouble relating to scientists and getting them to listen and understand to their needs. This may mean that new ideas or solutions may either not be tailored to the client’s actual needs, or they can be overlooked. Furthermore, a trend is one where the automatic reaction to a client may be a negative where the client is seen as interfering. The likelihood of successful innovation is limited if active engagement and conversation does not occur.

#### ***An anecdote on success...***

*“We were having problems relating to our client. During a discussion about why the project was not running smoothly we were surprised at one of the key things that the client insisted on, namely that we work from their offices. He asked how we can understand our clients when we don’t experience their working environment first-hand – and the suggestion was to work for a year in their environment to learn how they do things and get a better sense of how we can deliver value into that environment.”*

At first glance the Bright-eyed Bushy-tailed Researcher represents the young scientists eager to contribute ideas and work hard at tasks; someone you most likely would want in your team. However, closer examination of this archetype reveals that two thirds of the characters that make up this researcher archetype are the manager and leader. This is concerning as it shows that staff that are still young inexperienced and in need of mentoring and growth from senior scientists, are taking on managerial tasks. This reflects a situation where enthusiastic new researchers brought into the organisation are pulled into project management and administrative tasks and not primarily into R&D activities.

Concern for the development and growth of young researchers at the CSIR has led to the establishment of a Young Researchers Forum and funding is set aside specifically for young researchers to study further. A recent survey of young researchers to determine what the necessary skills were that they needed to develop revealed a strong demand for practical experience on research projects to grow their basic science skills and opportunities for networking and linking to other leading scientists. Looking at the Bright-eyed Bush-tailed Researcher and the Clumsy Puppy this firmly supports outcomes of this narrative exercise.

***Anecdote...***

*“It is a disheartening thing; you can so easily get caught up in politics. You then try to keep to the rules so much that you forget what you are [employed] there for.”*

The Willing Victim archetype shows that within the CSIR there might be a lack of recognition and respect of those people with new ideas (16% Innovator character). That is, there is a danger due to the underlying bureaucracy that the organisation may be rewarding bureaucratic behaviour and not the true lateral thinkers.

The Intellectual Maverick, while showing a strong tendency towards innovative behaviour, does, however seem to be very scheming and is not perceived favourably. The Maverick likes to set him or herself apart from everyone else and is not worried about being unpopular or disruptive to a process that they might not agree with. This may lead to suppressing or holding back good ideas by less confident and outspoken staff.

While the Clumsy Puppy is likely to volunteer for a task, if paired with the less sensitive archetypes (like the Intellectual Maverick or Intrepid Explorer below) this may develop into a destructive relationship where the Clumsy Puppy may become despondent and lose their enthusiasm. The short anecdote below demonstrates some of the behaviour of the Intellectual Maverick.

***Anecdote told by a Clumsy Puppy about his/her mentor the Intellectual Maverick...***

*After a lot of hard work and I had finished writing up the report I asked him [mentor]: “What do you think?”*

*He stared into the distance and said; “I am really worried about this project.”*

*And then I panicked and thought there must be some fundamental design fault. “Where did I go wrong? Did I misconceptualise [sic] the whole thing? Was there something wrong with my science procedures? “*

*All of this went through my mind, as he remained silent.*

A further trend seen in the archetypes is that the scientists are seen to be working towards achieving the greater good in contrast to the management types who are seen as bottom-line driven and hindering the innovation process.

The very strong positive bias in all the outputs paints a very rosy and probably skewed picture, of innovation. This positive approach may be masking a reality where people might be conforming too easily and even suppressing new ideas to maintain the current status quo. Many of the answers or

results from the values and themes show standard answers and there may be fear to tell the truth or unconscious adherence to the ideal picture.

It is interesting to note that during the emergence workshop people were the least comfortable grouping values for likeness and continually tried to rather group according to what they thought the outputs should reflect.

### ***Myth and fable***

Anecdotes play a large role in building institutional memory and there are certain stories that most people know or have told themselves. These are typically the stories that new people joining the organisation are exposed to early on in their employment. Some of these stories have been around in different forms for many years and have developed mythical status. These stories carry messages about the values and behaviours that the organisation strives for.

Mythical stories are important to identify as they point to important cultural systems that are subtly embedded in the organisation (Snowden, 2001b, Ward and Sbarcea, 2001, Denning, 2002 and Kurtz and Snowden, 2003). As mythical stories grow and develop they become rich in metaphor and emotion and though they will be told by many story-tellers certain phrases will remain and become rooted in the lingo of an organisation.

While all the anecdotes captured were kept anonymous, many people involved in the process could easily identify the people from some of the stories as they had often heard the stories many times before. An emerging thread from these stories is that they are emotive, rich in metaphor, often scornful and self-reflecting. What binds the story together is the message which is mostly about bucking the system, learning through doing and taking chances and the emotions conveyed by the teller. It is worth noting that in many cases these specific stories are about unease or dissatisfaction in the way things are done, rather than supporting organisational processes.

A key lesson learnt is to keep to the facts as much as possible with these stories as people will easily pick up subtle changes from the version they are familiar with. An example of a mythical story in the CSIR is provided in the box below. This story is told to demonstrate a number of values in the CSIR. First, the story highlights the value of experiential learning of a scientist; the problem could not have been solved without having had so many years of experience. Second, that innovation and value can not be measured by filling in weekly timesheets to account for time. This is a story told often within the organisation and supports the message from the archetypes where emphasis and pressure is placed on scientists to make money; a message that can be in conflict with the time and space needed for good quality research.

*“A few years ago one a senior scientist who has been working at the CSIR for many years doing research into water resources was urgently called out to a mine to have a look at a water quality problem they were experiencing. This scientist was able to understand the problem and suggest a solution within a few minutes and without too much trouble. The client was very happy as the solution could be easily and cheaply implemented. When the time came for payment the scientist suggested that instead of paying the usual hourly charge out rate, the client should pay a small fraction of the savings they had achieved by implementing the solution. The client was only to happy to agree to this arrangement, resulting in a good day for all.”*

## **Working Relationships**

An aspect that came out of the anecdotes told during the anecdote circles were the values around *'how we treat each other'*; particularly relating to relationships between co-workers, mentors and mentees, as well as between managers and subordinates.

Many of the anecdotes were not related to innovation *per se*, but rather to creating the space for a new recruit (e.g. Clumsy Puppy) to pair up with a more experienced scientist (typically the Courageous Captain or Intrepid Explorer). These anecdotes less frequently related to the Intellectual Maverick who prefers to work on ideas independently and who is likely to intimidate an easily discourage juniors. Many of the anecdotes where the Intellectual Maverick was present relate to conflicts with management or administrative systems and procedures. The Intellectual Maverick is the archetype most likely to clash or rebel against organisational systems.

### ***Anecdote about the Intellectual Maverick:***

*“A key part of my research plan indicated the need for mathematical modelling and physical limnology skills that were not available in our group. No one else saw the scientific value of doing the work on this system so I decided that I would do the work myself. I worked out a suitable sampling and measurement program and borrowed the equipment I needed from local universities and consulting firms. I ended up doing the work in my own time over weekends as the research managers saw no technical value in the work. By the end of the study I had published 5 papers in international journals, made 3 international conference presentations, and in a four year period I had received requests from over 100 overseas guests visiting our institute to be taken on a guided tour of the study site. “*

### ***Anecdote about the Clumsy Puppy:***

*“I remember right at the beginning of my career going on a project field trip with a Marine Biologist and a Coastal Engineer (both PhDs) to a bridge at the mouth of the Kromme Estuary. Then, while standing on the bridge, this engineer and biologist started arguing for about an hour and a half about how the mouth dynamics of the whole system worked and should they dredge the estuary or not. Each had his own perspective and could not get the other to agree with their understanding of the problem. They were making such a scene yelling at each other that a bunch of people stopped to watch what was happening. I just stood staring at them; my eyes were big because they were at the point of being quite abusive of each other arguing their points. Eventually they resolved their problems, shook hands and went off for a beer! Looking back, at that point in my career it was a wonderful experience for me to learn about how these estuarine systems work from the two very different perspectives of an engineer and biologist.”*

A further point that the anecdote about the scientist working on his own demonstrates, concerns the conflicts that arise between scientists driven by ideas and the managers responsible for managing the organisation. This shows the culture of “us versus them” that has developed and which can, and has, lead to conflict.

The archetypes highlight the value and necessity of mentoring and peer support in innovation processes. It is interesting to note that this is not followed though in the values or themes. Stories about taking personal ownership of one's career are most closely associated with the young researcher taking initiative on his/her own and not pushed or driven by a mentor or leader. Stories of leadership speak mostly to someone who was willing to interface with management structures or clients.

## **Business Impacts**

An important area of impact for the results is the change process currently underway in the CSIR. The aim of the process is to shift the CSIR back to a stronger R&D basis, as opposed to a consulting focus, in line with the organisation's national mandate. Outcomes from this narrative case study largely support the change process at the CSIR, shifting focus back to strong innovation archetypes like the Intrepid Explorer. Aspects include processes to understand the current underlying organisation values and culture and narrative can add value to these complexities.

Impact can be achieved through the use of effective communication techniques to disseminate the results. The cartoons of the archetypes have impact as they provide a non-threatening mechanism for staff to see a small part of themselves in each of the archetypes. Archetypes are important KM tools as they allow complex adaptive systems (which organisations are) to be understood in a manner that does not involve expert interpretation (Snowden, 2001a). Snowden (2001) believes the archetypes are useful as;

- a representation of culture,
- a means to understand customers and,
- a means to bring two differing cultures together (situations of 'us versus them').

This is supported by Patriotta (2003) who sees stories as an important component in an organisation discourse because they;

- show how knowledge can be mobilised to deal with situations (i.e. 'how we deal with things here'),
- are connected to actual experiences and reveal common sense wisdom and,
- are able to highlight shared worldviews.

Anecdotes and the archetypes create role models and build a sense of identity.

## ***Patterning***

Capturing anecdotes from people will allow organisational patterns to begin to emerge (Mitchell, 2005). These patterns can add value by allowing a deeper understanding of the cultural patterns of an organisation, how problems tend to be resolved and can help describe the working atmosphere between colleagues. The archetype cartoons are intended to allow people to identify a small part of themselves in each cartoon, whether it is in retrospect or current experiences. For example, a senior researcher may have seen his or herself in the Clumsy Puppy when starting their career and now be able to identify more with another archetype like the Intellectual Maverick or Courageous Captain.

While everyone should be able to identify with the archetypes most people will identify more strongly with one or two archetypes. The organisation is composed of a complement of all the archetypes that interact and work together on a daily basis. The very existence of the archetypes can enable the discussion of sensitive issues, by making it possible to move away from stereotypes to the discussion of the full complexity of a problem. This section above has tried to highlight what the possible impacts or benefits are for innovation of having these archetypes in the organisation.

Some of the key patterns emerging from this exercise include:

- Problems with client relationships and the communication gap that exists between the scientist and the customer. Some of the scientist-type characters are shown as always knowing better and clients as being angry and frustrated
- The very positive spin on the values and themes resulting from the emergence workshops point to a concern that staff at the CSIR are either unwilling or afraid to share their real feelings, or more likely, that the organisation has become smug. This is a perception that is often shared by non-scientists; cartoons depicting scientists often show them as aloof and arrogant.
- There is a danger with the underlying bureaucracy that we may be rewarding bureaucratic behaviour and not the real lateral thinkers, at the expense of innovation. This behaviour might also be pushing the Bright-eyed-bushy-tailed Researcher into managerial tasks in an attempt to allow the more experienced scientists to free up some time for research work and to comply with the administrative requirements.
- There is an encouraging trend that values mentoring of the Clumsy Puppy-types.

From a cultural perspective this points to a culture that values bureaucratic behaviour and can be suspicious of staff that pushes the boundary too far of what is considered acceptable behaviour.

Diversity in its multitude of facets has long been acknowledged as a contributor to organisational knowledge and innovation (Hill, 2004). Correctly managed diverse work groups can add value were homogenous groups never could. Having a diverse workforce means having to communicate key messages and values through a variety of mediums. The value of archetypes (as opposed to stereotypes) is that they resonate with a more diverse audience.

## Conclusions

Within a South African context, storytelling is an important element of cultural heritage. Oral histories and the use of story to communicate messages and values is an important component of South African society and audiences are often very receptive and appreciative of story.

The use of narrative techniques was a new technique that allowed a number of the staff to learn about the value of narrative sharing in an organisational context. As this was a new technique a number of lessons were learnt. Key issues that arose include managing representivity and diversity of participants, techniques or ways of extracting meaning from the data and communicating the outcomes. While knowledge management is an essential part of the CSIR's business, getting buy-in to the softer sides of knowledge sharing can be difficult.

Snowden (2003) sees the third- generation knowledge management as being *informed* by complexity and not *constrained* by it, recognising the differences between content, context and narrative management. The implications for organisations of this are that certain types of knowledge (particularly context and narrative) can not be elicited or managed by traditional techniques.

KM in CSIR embraces a human-centred approach where understanding culture and learning practices is important to grow our knowledge base. An additional KM activity is to entrench KM principles into business practices by developing strategies and plans for knowledge sharing and learning. Narrative has provided an additional tool in the KM toolbox.

The use of a narrative technique to understand aspects of innovation experiences at the CSIR highlighted a number of issues emerged that require further exploration:

- Client relationships and some exploration into the perceptions clients may have of the CSIR. This could be facilitated by running further anecdote circles with key clients who are willing to participate. The aim would be to gain different perspectives on how external people see innovation at the CSIR and whether new ideas are allowed to develop within the current systems.

- A related issue that surfaced was that perceptions between clients and the archetypes vary greatly, as well as how the archetypes see each other. Value can be added by using techniques that allow people identifying with aspects of these diverse archetypes to examine how archetypes illuminate the sources of conflict and thus find creative ways of dealing with conflict.
- There are areas of highly successful and innovative environments in the CSIR that continually push boundaries, but there are also pockets of failure. By examining and understanding what makes the successful areas successful, learning can be transferred or implemented in the less successful areas.

A key lesson from the exercise is that innovation can only happen when innovative behaviour is well-regarded, encouraged and enshrined in the organisational culture. People who contribute to successful innovations should be recognised for the particular value they add and role that they play. As much as an individual may add value, they can equally destroy it if their particular abilities are incorrectly used. For example, an Intellectual Maverick might be a brilliant generator of ideas, but will likely be a poor manager of daily organisational routines. Equally, a Narrow-minded Nitpicker is probably a poor choice to lead innovation projects.

### **Practical Tips and Key Lessons:**

- Stereotypes exist not only in the archetypes, but in values and behaviours too. This was particularly evident when patterning values. The stereotype represents the prejudices that exist in an organisation, or the answers that people think they should be giving and what they actually experience.
- Much of the value of narrative exercises lies in the Sensemaking process. It is valuable to involve people outside of the organisation and project team to give a fresh perspective and ask difficult questions which otherwise not have been considered.
- For people to truly participate effectively they need to see the value in the exercise and benefit from it.
- There are many stories (with subtle differences depending on the story teller) that most, if not all staff at CSIR Environmentek are familiar with even if the event occurred long before their joining the organisation. Many of these 'how we do things around here' will never be found in any orientation document or organisation document, but are rather communicated to new staff through story. These stories point to networks of 'invisible processes' whose patterns and purposes may be elicited through stories.
- Most stories about successful innovation have similar 'take-home-messages' that great things can happen when you take a risk, learn from a mentor and challenge the existing management systems. Innovation does happen when the boundaries our current paradigms are pushed.

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