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**Title:** How Chinese SMEs Innovate with A ‘Diegetic Innovation Templating’?

- The Stimulating Role of Sci-fi and Fantasy

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**Abstract**

Use of established fiction provides a connection to society at large, tapping into the creative abilities of great authors and filmmakers, which can offer a valuable source of creative ideas. This paper explores how science fiction and fantasy, particularly in the form of films, is being used to stimulate creativity and produce innovation outputs in non-science SMEs in China. We argue that fiction has the potential to inspire innovation through a constructive organisational process, we provide a simple metric, the ‘*Diegetic Gap*’, as a means for illustrating this. In particular, we present four empirical case studies that explore the application of science fiction and fantasy to product and process innovation, utilising a concept we call a *Diegetic Innovation Template* to merge fictional narrative and tangible innovation output.

**Key words:** Diegetic innovation, science-fiction, fantasy, creativity, SME, China

**1. Introduction**

*It is change, continuing change, inevitable change, that is the dominant factor in society today. No sensible decision can be made any longer without taking into account not only the world as it is, but the world as it will be. . . . This, in turn, means that our statesmen, our businessmen, our everyman must take on a science fictional way of thinking.* Isaac Asimov (Asimov 1978: 5)

Well-presented fiction has the power to transport the reader to a plausible artificially constructed reality. Most often these artificial realities are constructed to entertain, but some are written to exercise and test new ideas for technology, business and society. Moreover, the creative processes employed in imagining such fictional worlds can be used as an engine for creativity and innovation, to generate new ideas and invent new products, business models or even socio-political structures. A number of researchers have proposed methods such as Design Fiction (Bleecker, 2009), Science Fiction Prototyping (Johnson, 2011) and Socio-Cultural Fiction Prototyping (Schwarz and Liebl, 2013). Both design fiction and science fiction prototyping use fictional stories written specially to describe the workings and benefits of particular product

innovations that are set in realistic social settings, which are described to a level of detail that allows a type of pre-market test, before building and deploying the real product. Socio-Cultural Fiction encompasses novels, films etc. that are characterised by imaginative and creative content which, while created for entertainment, may provide an implicit source of inspiration for product innovation. Successful socio-cultural fiction authors are usually professionals in contrast to science-fiction prototyping writers who are frequently scientists extrapolating their work forward in time. From a product or process perspective, the key ingredient is imagining novel options which can, of course, arise from any fiction but are most commonly associated with science fiction or fantasy. Since this paper will use both genres, it is useful to consider their differences. In brief, science fiction draws imaginatively on scientific knowledge whereas fantasy draws on imagination, unrestricted by reality. As such, fantasy derives its plausibility not from science but from the observation of life as we experience it. However the boundary between science fiction and fantasy can be blurred as in, for example, the 2012 novel, *Cinder* (loosely based on the classic fairy-tale "*Cinderella*") sets the leading character, Linh Cinder, as a young female cyborg living in a city of androids and humans as a second-class citizen. In reading this paper, it is important to understand that we do not draw a fine distinction between these genres, rather we seek to see either as a container of imaginative ideas to support the process of creative thinking.

## 2. Definition of 'Diegetic Gap' and 'Diegetic Innovation Template' (DiT)

In this paper we will describe how some firms in China utilise Socio-cultural fictions to gain competitive advantage for non-technology based innovation, which goes beyond earlier research concerning the application of bespoke fiction to technical innovation (Graham et al 2013; Bell et al, 2013). To assess the potential for such fiction to support innovation for any particular industry we have introduced a measure we call the '*Diegetic Gap*'; the distance between a particular fictional style and the type of products produced by a particular firm. An alternative view of this metric is to regard it as a measure of how useful these fictions are to business innovation. The concept of diegesis in film theory addresses "*this reality's experience by viewers [represented reality of a film], its figurative location and its relation to other aspects of a narrative film work, as well as the so-called real world.*" (Yacavone, 2012:21). It provides an important way of thinking about stories/narratives within fiction, which refers to the notion of the 'fiction world' vs. the "real world" (Prestopnik and Tang, 2015). The term *Diegetic* is borrowed from film studies to refer to things which are embedded into a fiction, playing an integral role in the story, such as the use of a mobile phone by one of the characters (Kirby, 2010). Thus, as a mobile phone already exists, the '*Diegetic Gap*' would be essentially zero, whereas in a 'replicator' (a fictional machine, that featured in Star-Trek, which is capable of copying atomic structures thereby being able to replicate almost anything), would have a very large '*Diegetic Gap*', less viable to be realised as a real world innovation. As fantasy is generally seen as being less connected to scientific principles, one might expect it to have a much larger '*Diegetic Gap*' and be less useful to business innovation. However, as our case studies will illustrate, this is not necessarily the case since the '*Diegetic Gap*' is dependent on the industry's market and product, which can be equated to the conceptual acceptance of the customer and availability of the technology, both of which can be either small, big or even impossible. Later in this paper, we present examples of both fantasy and science fiction derived business

innovations which we will use to illustrate how the diegetic gap can be understood and possibly managed.

The precursor for our work was Science-Fiction Prototyping developed by Johnson (2011) which, in simplified terms, uses bespoke science fiction to communicate or test innovative ideas that have been inserted into the fiction. In contrast, our work seeks to *extract* ideas (called innovation templates) *from* fiction that is already well-established in the social domain. To distinguish this process from Johnson's, we refer to our model as a *Diegetic Innovation Template (DiT)*. As will be discussed later, we make explicit use of these templates as the currency of innovation. Furthermore, we contend that the use of established fiction provides a connection to society and the market which brings significant business advantages, acting as a facilitator to organisational creativity, innovation and communication. To gain a better understanding of how the DiT method can be applied to non-science industry, we have conducted an empirical inquiry into four emerging business organisations characterised as innovative firms operating in the rapidly growing economy of China. In this paper, we particularly investigate the research question: *To what extent can DiT be used as a creative method to inspire a different dimension of innovation that may give business organisations a competitive edge in non-science industries?* This question is explored via a case study approach which investigates manufacturing and marketing service sectors in fast growing Chinese industries.

### **3. Literature Review**

#### **3.1 Approaches to Innovation Capabilities**

A business innovation can be a new product, service, process, technology, management structure, administrative system, work plan or marketing program pertaining to organizational members (Damanpour, 1991: 556). Innovation effects companies in complex ways that depend on its degree of newness to the adopting firm and whether it is a product or process change, or a market position and business model differentiation (Tidd and Bessant, 2009; Ulrich and Eppinger, 2004). The degree of innovation that an organisation can develop and introduce depends upon its innovation capabilities and, in turn, on such factors as its creative assets. An accumulative body of research has identified various factors that contribute to an organisation's innovation capability. Internal factors can include, for example, the knowledge and skills of the individual members of an organization, the investment in formal and informal R&D practices (Hoffman et al, 1998; Malerba, 1992; Romijn and Albaladejo, 2002) and the organisation's creative assets. External factors typically encompass the interactions and networking with suppliers, customers, industry associations and other agents (Lundvall, 1988; von Hippel, 1988). Innovation capability thus becomes a strategic asset for a firm seeking to achieve competitive advantages (Conner, 1991).

The extant literature on innovation suggests that radical innovation requires strong innovation capabilities which are accumulated over time and are non-tradable, rare and inimitable, whereas incremental innovation could be facilitated with low internal innovation capabilities complemented by a buy-in process of acquiring specific assets (for example, technically qualified personnel, creative resources, knowledge and technology) on open markets. On the other hand, innovations in emerging market economies do not necessary need or aim to extend the knowledge and technological frontier as they can compete on other grounds, such as cost (McMullen, 2011). Furthermore, most firms in emerging economies do not possess strong internal innovative capabilities (a pre-requisite according to current innovation

theories) for radical innovations while time compression diseconomies and casual ambiguities do not allow them to build-up these assets in a short time interval. Hence, the majority of small and medium size companies in these countries will focus on less radical and more incremental innovations, which in combination with cost leadership (associated with the availability of large pool of inexpensive labour) will bring them a competitive edge (at least in the short run). Firms in these contexts will perform adaptive and imitative R&D, learnt by watching and observing their competitors, and acquire assets in the open market (Kambil et al., 2006; Keupp et al. 2010).

To survive a firm needs to develop processes that can cause, or respond to, market changes and lead customer's expectations (Eisenhardt and Martin, 2000). Often an organisation can find it hard to build up the renewal competency that enables the discovery of a new product or production function leading to new market opportunities.

### 3.2 The Need for Creativity

Numerous product innovation studies have emphasized that the ability to generate creative ideas for new products, and related marketing programmes, is key to an organisation being able to respond to changing market needs (Im and Workman, 2004). Employee creativity is regarded as crucial for organisational innovation and new product design (Amabile, 1983; Oldham and Cummings, 1996). Creativity can be engendered by use of appropriate tools and methodologies (Johnson, 2011). Despite the fact that business leaders broadly acknowledge the importance of creativity, the methods for achieving creative ideas remain elusive (Burroughs et al, 2011). Creativity is thus regarded as a critical research priority. This need is being addressed in various ways. For instance, Design Fiction, a term coined by Bruce Sterling and further developed by Julian Bleeker, seeks to use fictional scenarios to envision and explain possible futures for design (Sterling, 2005; Bleeker, 2009). Sterling has emphasized the importance of the diegesis approach, defining Design Fiction as "*the deliberate use of diegetic prototypes to suspend disbelief about change*". Diegetic prototypes are a concept introduced by the film scholar David Kirby (2010) to describe how film can serve to introduce society to a technological change and opportunity, which is a central tenant of design fiction. The gesture interfaces in Spielberg's *Minority Report* film provides a good example of this principle. Science Fiction Prototyping is a similar method but takes a longer-term and more speculative perspective at product innovation (usually over 10 years out) providing a larger and richer narrative that intertwines more intimately technology, people, with plots to exercise the innovation in a manner akin to testing a real product, but without building it (Johnson, 2011). This approach is also used for future-casting, where fictional narratives act as exemplars to persuade people to adopt (or avoid) a particular kind of future. Both Design Fiction and Science Fiction Prototyping can be interpreted as being propositional and grounded in the physical world since they concern real technology, or extrapolations of that technology which place some constraints on the freedom of the narrative that, together with amateur writers, could risk it becoming less engaging and thus counterproductive to its aims.

Diegetic Innovation Templates (DiT) avoids such risks since it explores the use of socio-cultural fiction that is generally written by professional authors (and often translated to film) for the purpose of entertainment and has already achieved a level of quality assurance associated with its wide public acclaim which has embedded it into social collective consciousness. An example of such a fiction is the Harry Potter fantasy, which is used by one of our case studies. These ideas have some resonances

with the socio-cultural prototypes proposed by Schwarz & Liebl (2013) who made the case that science-fiction prototyping could benefit from being extended by complementing it with socio-cultural fiction. In particular they pointed out that popular socio-fiction plays an important role in the construction of our reality and, for example, that it could greatly stimulate the desire for the technologies. Schwarz (2015) further argued that cultural products in general, such as literature, movies, art or computer games can play an important role by influencing foresight based innovation through the use of weak signals and trends to construct a future reality. While Schwarz's work alluded to the potential of socio-fictions and literature for developing new innovations and foresight, it did not provide any empirical evidence, which this paper does.

Furthermore, as far as empirical research in non-science industries, little evidence is available to understand to what extent socio-cultural science fiction can impact a company's product innovation strategy or outcomes. This is especially the case in emerging economies where management practices are rapidly evolving.

### 3.3 Foresight and Innovation

The issue of foresight and innovation is an important research topic that has been explored in a number of studies. Graham et al (2013) addressed the debate of how scenarios differ from prototypes by arguing that scenarios are mechanisms that test strategic directions, while the prototypes offer a mechanism for the analysis of business vision. Numerous researchers have identified '*corporate foresight*' as a key requirement for companies to sustain their competitive advantage. MacDonald (2012) conducted a detailed investigation into the effect of culture on scenario narratives, considering whether archetypes are '*hard-wired*' into our narrative imagination or whether they are created by our culture. His study analysed some 64 stories, representing five countries, and six different themes, concluding that scenarios are strongly influenced by organisational and social culture. Pattinson & Sood (2010) described how scenario planning can underpin all elements of a marketing strategy (goals, position and execution) and proposed a story based methodology they labelled as the '*scenario planning for marketing action*' (SPMA) model. In similar fashion, Visser, & Chermack (2009) presented their research findings of scenario planning in multinational firms operating in competitive industries and reported that scenario planning made a positive contribution to a firm's performance, especially for identifying future risks, isolating trends, understanding interdependent forces, and considering the implications of strategic decision-making. Postma et al (2012) provided evidence that scenario analysis can be used to increase the quality and effectiveness of new product development. Heinonen & Hiltunen (2012) proposed a product innovation method, the '*Futures Window*' (FW) that used visually weak signals to trigger innovative thinking in organisations. They describe weak signals as, for example, a slide show on a large screen aimed at encouraging people to innovate futures. Furthermore, Schwarz et al (2013) also explained how the use of novels can help to detect weak signals, trends and even new business opportunities related to the market and customer. Especially, they argued that the use of a science fiction prototype can lead to a future product or service; and suggested that future research should investigate how cultural products can be used in organisations for this purpose. Our research aims to fill in this gap by providing some empirical evidence and offer a conceptual framework (see Figure 7 & 8) to explain the process of what involved and how to assess the gap between fiction and reality.

### 3.4 Using ‘Diegetic Innovation Templates’ as an Instrument for Innovation

At the heart of our conceptual proposition will be the use of what we term a *Diegetic Innovation Template*, which can be regarded as a type of stencil or outline for the innovation derived from a fictional narrative or film. In our case studies, we will show how such templates manifest themselves in either ambient forms (e.g. colours, shapes, moods etc.) or much more tangible devices (e.g. technology). Our study will largely focus on illustrating how pre-existing science fiction or fantasy can drive business innovation. Socio-cultural fictions such as movies, that are not explicitly written for new product or business innovation, contain significant aspects of human culture, lifestyles and aspirations embedded into them (Schwarz and Liebl, 2013; Schwarz, 2015). These embedded cultural artefacts also encompass corporate and market facets, as business and lifestyles are inseparably intertwined. Thus, we argue, by associating business to socio-cultural fictions, organisations can connect to their markets in a new dimension. Schwarz & Liebl (2013) also describe how prototypes derived from popular socio-cultural fictions, through the processes of diffusion and normalization, will become part of the customer’s world, thereby making the markets more receptive to those products.

Creativity and innovation can sometimes be an elusive qualities being dependent not just on skills or knowledge, but also on the potential for an inventor to imagine a new kind of service or product. There is considerable debate on how best this can be achieved. While some companies will have an ample supply of employees who are interested and able to create science fiction stories, that is not the case for all companies, particularly for low-tech and non-science industries. For such companies, the use of DiT negates the need to create in-house fiction, making such innovation methods more accessible. For these reasons we argue *Diegetic Innovation Templating* (DiT) will offer a guide for companies to assess the diegetic innovation gap (DiG) between the appropriateness of particular literature and a firm’s innovation outcomes. Our research explores the role of DiT in a firm’s innovation process and offers an understanding of the explicit and implicit links of DiT’s impact on developing a firm’s innovation capability.

## 4. The Rationale Underpinning Our Research Design and Data Collection

Small and medium size firms make a significant contribution to economic growth, yet most of the studies into innovation management focus on large organizations or technology-science based firms (Terziovski, 2010; Fu et al, 2011). Likewise, most work reports on established rather than emerging market economies. In addition, there has been little investigation of science fiction and fantasy for business innovation, especially in non-technology focused firms. This research, addresses these imbalances by focusing on small and medium sized firms in the emerging market of China, exploring how non-science SMEs develop unique innovation capabilities through use of science-fiction and fantasy based approaches. The selection of case study companies is based on the following aims: (1) to focus on small to medium size enterprises (SMEs) in non-science industry with innovation outputs; (2) to compare production-focused with marketing/customer focused companies; (3) to compare the innovation processes in different types of organisation, from production based business to marketing focused, extending the study into creative design centred businesses in order to understand whether there are differences or similarities in different positions of the value chain (from low end to high end and production to service market). In addition, between 2012 and 2013, we did a pilot investigation in a number of candidate case companies in order to gain an initial understanding of

fiction-inspired innovation in organisations. In 2014 to 2015, we continued our investigation in more firms to further explore the application of ‘Diegetic Innovation Gaps’ (DiG) and ‘Diegetic Innovation Templating’ (DiT) concepts. From this we selected four companies, with a range of ‘Diegetic Gaps’, to assess how this method might perform in different organisational contexts. The four companies that met the criteria above were: Case 1 – a fashion design company; Case 2 – a PR marketing company; Case 3 – a creative design and marketing company; Case 4 – a cashmere product manufacturer; (see table 1).

Through our case studies, we aim to examine connections between fiction literature and innovation practice in different organisations. Making these connections is not easy since the concepts, are frequently used in an implicit, sometimes unconscious, way but ultimately manifesting themselves as linked actions such that, if we do a, then b will occur, enabling us to confirm our predictions and illustrating that theory and practice are inseparable (McGregor, 1987). Given the shortage of empirical evidence for explaining the role of *Diegetic Innovation* in non-science business organizations, especially in emerging markets, our research question adopted an exploratory form. This decision is motivated further by the inability of quantitative approaches to obtain insights into what is beneath the organisational processes. The nature of this research question would require a qualitative research to reveal people’s complex perception and longitudinal actions toward the Diegetic Innovation concept, whether it functions via a conscious or unconscious mechanisms (Stake, 1995; Yin, 2003; Eisenhardt and Graebaner, 2007).

In the four case studies, open-ended interviews were conducted with key informants from each organization’s management (often the owner/manager or company president) and chief designer(s). The interviewee was given the freedom to talk and ascribe meanings (Noaks and Wincup, 2004; Byrne, 2004). In order to obtain the required depth of data, to get ‘*inside the minds*’ of those being studied to understand the values, meanings, motivations and logic which govern their actions (Curran and Blackburn, 2001), researchers in this study aimed particularly at looking for close-up details of the underlying reality (Gummesson, 2000) through naturalist modes of inquiry such as participation, observation and semi-structured open ended interviews (Silverman, 2000), within a predominantly inductive framework. For example, in addition to lengthy interviews (each around 2 hours), the researcher participated in meetings, production workshops and company inspection tours led by owners of some case companies during the investigation. This immersion gave the researcher a deeper and richer appreciation of how respondents behaved and operated in various situations.



## 4.1 Illustration of Data

Table 1. Key Attributes of Four Case Study Companies

	<b>Case 1 Fashion Design Co.</b>	<b>Case 2 PR Marketing Co.</b>	<b>Case 3 Creative Design Co.</b>	<b>Case 4 Cashmere Product Manufacturer</b>
<b>Type</b>	Foreign joint venture	Foreign joint venture	Indigenous entrepreneurial firm	Indigenous entrepreneurial firm
<b>Size</b>	260 employees	200 employees	70 employees	85 employees
<b>Age</b>	1998 - 2017	2005 - 2017	2006 - 2017	1999 – 2017
<b>Sector</b>	Fashion, brand marketing	PR, marketing design, events planning	PR, media, design, consultancy	Textile Manufacturer
<b>Core Business</b>	Women's luxury fashion brand and flagship retail shops	PR management, design, marketing, promotion and events planning	Creative design, brand management and market research	Men & women cashmere clothing manufacturer, raw material production
<b>Strategic focus</b>	Brand marketing and retailing	Marketing, PR & design	Creative design, brand design and market research	Manufacturing and exporting
<b>Sales (2013)</b>	USD 3.86 million	USD 1.80 million	USD 1.10 million	USD 8.94 million

Table 2. Summary of Organizational Characteristics of the 3 Case-Study Categories (by McKinsey 7-S Framework, Pascale &amp; Athos, 1986)

Organisational factors	<b>Category 1 (Case 1) (Customer-focused)</b>	<b>Category 2 (Case 2 &amp; 3) (Marketing-focused)</b>	<b>Category 3 (Case 4) (Production-focused)</b>
<b>Strategy</b>	High value product strategy based on formalized short and long-term business plans.	High value added service strategy based on knowledge management.	Low cost strategy based on spontaneous market-driven decision-making.
<b>Structure</b>	High specification of job tasks and duties in written job descriptions; flat hierarchy with high delegation in functional departments.	Flat hierarchy and team-based structure with considerable individual freedom and informal relationship between supervisor and subordinate.	Absence of formalized duties and tasks; flexibility undertaken according to needs; centralized total control with low delegation.
<b>Systems</b>	Formalized procedures and well-designed in-built learning processes.	Flexible and result-based, rule-guided.	Semi-formal, less rule-based and 'ad hoc'.
<b>Staff</b>	Highly-skilled workforce and specialized roles, with explicit written criteria for rewards.	Knowledge and creative talents based workforce, with clear HR policies for performance & rewards.	Low skilled and multi-roles, with arbitrary-allocated rewards.
<b>Style of Leadership</b>	Open and democratic style - supportive with an emphasis on delegation, teamwork and shared decision-making.	Mixture of laissez-faire and path-goal styles – focus on empowerment, teamwork and individual performance outcome monitoring.	Directive and dictatorial style – emphasis on employee compliance and micro management control, centralized decision-making.

<b>Shared values</b>	Western style management culture with an emphasis on self-actualization, responsibilities, innovation & capability development.	Rationalized management approach with hybrid west and east organisational culture, emphasis on value of talents, creativity, innovation and recognition of an individual's outstanding performance.	Nepotism, family culture with an emphasis on harmony and compliance.
<b>Skills</b>	Highly-skilled management team and advanced knowledge management skill centred.	High-skill/talent centred, focused on individual knowledge and team skills	Personal capabilities and experience of owner entrepreneur, owner-dependence centred.

### 5. The Discussion of the Fictional Inspirations in Case Study Companies

Science fiction can be regarded as a type of virtualised prototype or simulation for imaginative ideas. If such a fiction contains a plausible amount of reality then innovations it may contain, that people like, are likely to be desirable in real life (Berger and Luckmann, 1966). Diegetic Innovation Templates takes pre-existing fiction (not written for innovation) and, through interpretation, produces ideas that can motivate the innovation process. Part of the power of using such fiction as a design tool is that it is rooted in our societies and cultures (the market) while, at the same time, encapsulating our aspirations for the future (Kirby, 2010). The fashion industry is especially well-connected to the world of fiction as it enables people to realize their aspirations, even fantasies, by modifying their visual persona to match their desires or alter-ego that, in turn, may be driven from popular fiction. Thus, materializing ideas from science-fiction can take customers to an alternative world that may be filled with impossibilities and fantasies which may add a whole new experience to customer satisfaction. As the president of the fashion company in our case-study (Case 1) said:

*“Fashion is about constantly catching the popular trends at both national and international levels. What influences people the most is the cultural, art and fictional work as well as those popular fictional films which connect vogue and fashion. Fashion customers need more new and exciting experiences from a brand design. Science-fiction books and movies are our never-ending source of new ideas to keep up with customer’s demand... the ability to identify and generalise ideas from science-fiction is critical as not all science-fiction is appropriate so you need to know what customers expect and what can be used to transform these ‘fictional imaginations’ into a tangible product.”*

The chief designer of Case 1 explains:

*“We understand the need and expectations of the customer. Our design targets are young professionals and middle class women, who live a busy and high-pace life style, who need an escape from the hectic reality to relax their mind and enjoy some very different experiences. ... For example, the Twilight movies became very popular in China, which inspired me. I have thus taken a cue from the vampire look, dress style and blood colour to integrate into my autumn 2011 collection. The runway shows are fully embodied with references to the movies in terms of models’ make-up, music, lights, sound, forest background (eg fighting scene), smoky and scary atmosphere...”*

In the following sections we have provided examples taken from the four case study companies in three categories (illustrated Table 2) namely; Cat 2 - Customer-focused (Case 1) and Cat 2 - Marketing-focused (Case 2 & Case 3). Cat 3 - Production-focused (Case 4).

### **5.1 Customer-focused Case 1. Fashion Design Co.**

#### **5.1.1 Fashion design example A**

The Twilight movie series inspired the fashion designs in photo 1 & 2. According to the designer, Photo 1 depicts a coat that was designed with references to the film's powerful vampire character, Volturi, adding elements of power, legend and a fusion of fantasy. Photo 2 illustrates a dress packed with cues from the vampire's nature; blood-like dark red colour and rough fabric to match the style in the film scenes, showing the vampire's satisfaction after hunting with messy blood effects on the dress. The popularity of the Twilight film provided the company with a new market for the fans of vampire fiction. These two designs enabled the company to give a luxury vintage touch to this desire, providing an emotional experience for this specific customer group.



Photo 1. Twilight Movie: design inspired by the vampire look and long coat



Photo 2. Twilight Movie: design inspired by blood effect and vampire's cool look

#### 5.1.2 Fashion design example B

The 'Harry Potter movies' inspired design (photo 3), reflecting the unique style of Harry Potter's cape style of coat. According to the designer, the idea invokes connections to the wizarding world and flying effects, especially a scene from "*The Chamber of Secrets*" where Potter played Quidditch with flying broomsticks. The design was modified to be more practical by shortening it and introducing more elegant material. This cape became the best-selling item in Sunfed's autumn 2011 collection.



Photo 3. Harry Potter Movie: design inspired design by the film's capes

#### 5.1.3 Fashion design example C

The 'Frankenstein's Monster' movie inspired design (photo 4). Based on her childhood encounter with the film, the designer had a deep sympathy and sadness for the monster, feeling his loneliness and helpless, despite his power. The product of these thoughts and feelings were reflected in a free style coat that mirrors the lonely, mysterious and wild nature of our existence and feelings in the reality of our daily lives. The designer deliberately selected the rag-like wool material, with holes and irregular shapes, resulting in a clever fusion of fantasy and reality that turned a rag-like coat into a chic fashion item.



Photo 4. Frankenstein Movie: design inspired by the monster's long coat

#### 5.1.4 Fashion design example D

The 'Lord of the Rings' movie inspired the design shown in photo 5. It is based on a somewhat mysterious coat in 'The Return of the King' which the design mimicked using a fur collar and sophisticated fabric to capture the power and mystery from the magic world; consequently, this design turned out to be another success for the fashion company in case-study 1's winter 2011 collection.



Photo 5. The Lord of the Rings Movie: the inspiration was a mysterious coat

Table 3. DiT Measurement<sup>1</sup> of Case 1

DiT Criteria	Case 1. Fashion Design Company			
Perception of SF	Strong	X	Weak	
DiT-inspired ideas	Direct	X	Indirect	
DiG-linked new products	Explicit (Diegetic gap small – metric position 0)	X	Implicit (Diegetic gap big – metric position 1 or 2)	
DiT-linked employee creativity & learning	Deliberate	X	Emergent	
DiT-linked future vision	Customer-oriented	X	Technology-oriented	
Outcome of DiT	Product Innovation: Brand added value & speedy introduction of new products	X	Process and Paradigm Innovation: Technology advancement strategy, change of market position & reduced management cost	

### 5.1.5 Summary of key interview data of Case 1 based on DiT criteria in Table 3

#### Perception of SF – strong

*“Science fiction gives new ideas and fantasy for our cloth design and creates a vision of what virtual reality we are taking our customers to.” (Designer, Case 1)*

*“We have used science fiction or fantasy as a means to create a dream world for our customers. It is important of part of the unique experience that our brand offers.” (President, Case 1)*

#### DiT inspired ideas - direct

*“Our 2011 collections in different seasons were all designed based on different popular films, Lord of Rings, Harry Potter and Frankenstein movie. It achieved a huge success and our customers absolutely loved the design and fashion shows.” (President, Case 1)*

*“... new design ideas are sometimes from different films and stories I may have perceived over prolonged period of time. For example, one design was based on my childhood memory of a fairy tale, but I can't explain completely whether it is from science fiction or fantasy as some product concepts are developed upon the integration of various sources, such as books, stories, any fictions or films I watched over times. The recreation is part of the creative process ...” (Designer, Case 1)*

#### DiG-linked new product – explicit (diegetic gap small – metric position 0)

*“... ‘Harry Potter’ is the inspiration for our ‘Magic Series Cloth’ and another best-seller design is based on ‘Twilight Breaking Down’ film series... (see sample design photos for examples).” (Designer, case 1)*

*“...We need to find what customers like if some science fiction or fantasy stories are too far from the reality or difficult to replicate the experience for our customers, then it would not be suitable for adoption.... Well, as a brand we put lots of effort in educating our customers so that we can create the demand.” (President, Case 1)*

<sup>1</sup> ‘X’ is marked in each column against the criteria the case study company fits in.



### DiT-linked employee creativity & learning – deliberate

*“... It is essential for our designers keep a close eye on popular films, science fiction elements, internet, TV shows and popular trends worldwide for new opportunities and new idea generation.” (President, Case 1)*

*“We play science fiction movies and tell fantasy stories in our regular training workshops to show employees the source of, and links to, creativity....” (Manager, Case 1)*

*“... We train our employees with open mind approach where workshops are designed to improve their imagination. We invested heavily in training and learning. For example, we send selected employees to Paris and Italy’s top fashion schools for learning different perspectives, new minds and popular cultures.” (Designer, Case 1)*

### DiT-linked future vision – customer oriented

*“The future fashion market will become more generalized and globalised, thus it may require highly integrated and standardized product for a mass market expansion” (Designer, case 1)*

*“It might be a completely digital world and based on virtual online shops instead of physical ones in order to improve customer’s shopping experience” (Manager, case 1)*

*“...as a leading brand for a wide range of product portfolio, we are dedicated to adopt high-tech materials to create new experiences, unique style and improve quality for our customers in future...” (President, case 1)*

### Outcome of DiT – product innovation

*“... Creative ideas play a very critical role in maintaining our leading design position ahead of the market competition.... We use the speed of launching new designs, constant updates and continuous creativity to beat the imitators as they can’t keep up with us and they don’t have the creative capabilities as we do.” (President, case 1)*

*“Science fiction is the foundation and sources of ideas and imagination for extraordinary designers. Transforming science fiction into reality is a creative process for product design.” (Designer, case 1)*

## **5.2 Marketing-focused Case 2 PR Marketing Co.**

### **5.2.1 An Example of Sci-Fi inspired PR Marketing Company (Case 2)**

Photo 6 presents a Sci-Fi inspired design from the PR Marketing Company that aimed to support an advertising campaign for a car-care product. This design was totally inspired by Transformer films that have been popular in China for a decade. The belief was that robotic-like car imagery, associated with a popularity of the ‘Transformers’ film would increase customers desire to buy their product. The designer believes that how the future will develop is largely based on the way people conceive the future in their minds and dreams (supporting Johnson’s ideas for science fiction prototyping being a vehicle for future-casting). From this perspective, Sci-Fi films, as part of the social-cultural fabric, influence people’s expectations. It is evident that different product ideas, media adverts and fashion design embody the dreams of designers for influencing the future.



Photo 6: Automobile Caring Product Design by Chief Designer of Case 2

Table 4. DiT Measurement of Case 2

DiT Criteria	Case 2. PR Marketing Company		
Perception of SF	Strong	X	Weak
DiT-inspired ideas	Direct	X	Indirect
DiG-linked new products	Explicit (Diegetic gap small – metric position 0)	X	Implicit (Diegetic gap big – metric position 1 or 2)
DiT-linked employee creativity & learning	Deliberate	X	Emergent
DiT-linked future vision	Customer-oriented	X	Technology-oriented
Outcome of DiT	<b>Product Innovation:</b> Brand added value & speedy introduction of new products	X	<b>Process and Paradigm Innovation:</b> Technology advancement strategy, change of market position & reduced management cost

### 5.2.2 Summary of key interview data of Case 2 based on DiT criteria in Table 4

#### Perception of SF – strong

*“It is a popular fashion with a futurist mind in design; you can always find interesting connections or embodiment from science fiction or fantasy.” (Designer, case 2)*

*“Sometimes it is not about what I want, it is more about what customers want. Science fiction is indeed interesting and inspiring but it has to be transformed or accepted by customers, otherwise it is meaningless in its product innovation value.” (Designer, Case 2)*

#### DiT inspired ideas - direct

*“... It depends on the product and customer needs, sometimes you may find fictional characters or technologies can be embodied or fit in our product design. However, sometimes you may find that even when it fits the product idea, if our customers can't understand it or don't like it, and we have to abandon it... The question is what customers want, the design is not totally determined by us.” (Designer, Case 2)*

#### DiG-linked new product – explicit (diegetic gap small – metric position 0)

*“... I used science fiction films like ‘Transformers’ as the source of an original idea for my automobile care oil product design, (an approach) which is common in our creative design as we pay attention to popular films or fiction since these are part our lives and popular trends influence our experience and thinking....” (Designer, Case 2)*



### DiT-linked employee creativity & learning – deliberate

*“I believe a designer should have a futurism ideology that can be embodied in reality and play a positive role in influencing people’s mind and way of thinking.” (Designer, Case 2)*

### DiT-linked future vision – customer oriented

*“As a marketing focused company, we will be challenged as to how to apply and utilise the rapidly growing high-technologies (to meet) customer’s needs and integrate into future services. I believe that the fundamental structure of our service will be dramatically changed in 20 years.” (Manager, Case 2)*

### Outcome of DiT – product innovation

*“In my work, there are customers who want me to design a marketing plan and product promotion with futurism imagination. I need to be creative, constantly thinking how to integrate the future vision into our design and add value to the market effect.” (Designer, Case 2)*

## 5.3 Marketing-focused Case 3 Creative Design & Marketing Co.

### 5.3.1 An Example of Sci-Fi inspired Creative Design Company (Case 3)

This example illustrates the use of Sci-Fi to inspire architectural design. Photo 10 depicts a conceptual design of an entrance lobby for an industrial park, which was directly inspired from the ‘*Matrix*’ movie. The designer explained that *“there are two levels of influence from Sci-fiction and fantasy. First, this is part of the cultural foundation and content that’s inseparable from the source of knowledge the designer will use and depend upon. Second, it provides a breakthrough perspective when design ideas dry up, as it provides an ‘outside the box’ view to look further and beyond. The conventional way to prototype an architectural design is no longer the practice, as we begin to adopt computer hologram projection and interactive virtual reality to show the design image.”*



Photo 7: Architectural design of an industrial park reception lobby (Case 3)

Table 5. DiT Measurement of Case 3

DiT Criteria	Case 3. Creative Design and Marketing Company			
Perception of SF	Strong	X	Weak	
DiT-inspired ideas	Direct	X	Indirect	
DiG-linked new products	Explicit (Diegetic gap small – metric position 0)	X	Implicit (Diegetic gap big – metric position 1 or 2)	
DiT-linked employee creativity & learning	Deliberate	X	Emergent	
DiT-linked future vision	Customer-oriented	X	Technology-oriented	
Outcome of DiT	<b>Product Innovation:</b> Brand added value & speedy introduction of new products	X	<b>Process and Paradigm Innovation:</b> Technology advancement strategy, change of market position & reduced management cost	

### 5.3.2 Summary of key interview data of Case 3 based on DiT criteria in Table 5

#### Perception of SF – strong

“... There are many factors that may influence our design mind, although customer and market determine the style of design, we try to provide new and exciting experience to customers and differentiate ourselves from competitors, thus I think more designers will look into science fiction or fantasy as creative sources of inspiration...” (Designer, Case 3)

#### DiT inspired ideas - direct

“... As a creative art designer, the source of inspiration is very important, the quality and artistic sense are the result of cultural accumulation over time and from a combined understanding and appreciation of the past, present and future. The renewal of product design requires an imaginative ability to embrace future visions such as science fiction and fantasy.” (Designer, Case 3)

#### DiG-linked new product – explicit (diegetic gap small – metric position 0)

“... it's not very difficult to use science fiction in design concepts as the technological advancement has already allowed us to think ahead. For example, holographic projection is no longer a dream but a reality. Our design has to deliberately catch these new tech trends and apply it in our ideas.” (Designer, Case 3)

#### DiT-linked employee creativity & learning – deliberate

“I like watching Si-Fi films and fairy tales as this is part of rich cultures we need to learn, the more I learn, the better ideas I can have for my design.” (Designer, Case 3)

#### DiT-linked future vision – customer oriented

“We will be home-based workers, less and less people will go to office as smart technologies will equip us to work more efficiently at home. Especially service type of company will use artificial intelligent robot to work in office and human workers can control/remote them from home.” (Manager, Case 3)

“In future, the competition of creative design will depend on the future thinking of the company. For example, Jack Ma (Alibaba) is a very creative person who is always thinking ahead for what customers

want. He designed the face recognition pay system that attracted so much interest. His recent design of new smart supermarket (all purchases based on smart phone transaction online) is becoming so popular among young generation customers.” (Designer, Case 3)

#### Outcome of DiT – product innovation

“...Nowadays rapid technological change has enabled us to innovate without limits. For example, interactive games, immersive virtual reality, hologram technology, 3D printing etc; these used to be science fiction imagination but now these become reality due to advanced R&D. Without future visions, we would not be able to transform these science fiction based technologies into reality today.” (Designer, Case 3)

### 5.4 Production-focused Case 4 Cashmere Product Manufacturer

#### 5.4.1. Examples of Sci-Fi related orientation

The owner-entrepreneur transformed his small medium sized business (Cashmere Product Manufacturer) from a labour-intensive production unit into a high-tech manufacturing company with an impressive growth rate. His company harnessed the power of technology to create a futuristic manufacturing facility that has enjoyed continuous expansion based around a ‘*total control*’ philosophy (see table 2). Whilst the owner does not claim any strong linkage between science fiction and product innovation, his management approach and flexible structuring of company processes have in part been influenced by such visions, in particular the 2007 American science fiction movie, *Transformers*, which featured a toy-line of reconfigurable robots (transformer robots).

The connection between the widely disseminated ‘*transformer robot*’ movie and similar flexibilities the owner adopted for his company business processes might be argued to be an example of Schwarz’s Socio-Cultural Fiction Prototyping (Schwarz and Liebl, 2013) which can manifest itself as implicit influences. Such cultural infusions are an inevitable aspect of our modern world where cultural fictions and lifestyles are closely intertwined. In interviews with the owner, we also discovered his dissatisfaction with his employee’s capabilities and skills influenced his strategy to focus on investing in high-tech production machinery to counter the low skills of his staff. Furthermore, the shortage of rural labour in urban cities and increasing labour cost became facilitating factors for his shifting focus from a labour-intensive manufacturing model to a high-tech automated production system. Again, there are striking resonances between the system he is implementing and numerous Sci-Fi novels such as Orwell’s (1949) “1984”, Philip K. Dick’s (1960) *Vulcan’s Hammer* or Kurt Vonnegut’s (1952) *Player Piano* which while being somewhat dystopian, have been influential in permeating ideas relating to large scale surveillance and automation into our everyday consciousness. Whilst such linkage would undoubtedly be difficult to trace, the mirroring effect of cultural ‘fiction and fact’ is increasingly evident in our world and it’s difficult to not feel the Cashmere Company’s visions are in some way, indirectly influenced by these intertwined socio fact-fiction relationships.

Photos 8 & 9 show the Case 4’s business premises which to give a glimpse into how surveillance technology provides an efficient means to manage the company’s global operations.



Photo 8 & 9: Case 4's owner with his high-tech environment

Table 6. DiT Measurement of Case 4

DiT Criteria	Case 4.Cashmere Product Manufacturer		
Perception of SF	Strong	Weak	X
DiT-inspired ideas	Direct	Indirect	X
DiG-linked new products	Explicit (Diegetic gap small – metric position 0)	Implicit (Diegetic gap big – metric position 2)	X
DiT-linked employee creativity & learning	Deliberate	Emergent	X
DiT-linked future vision	Customer-oriented	Technology-oriented	X
Outcome of DiT	Product Innovation: Brand added value & speedy introduction of new products	Process and Paradigm Innovation: Technology advancement strategy, change of market position & reduced management cost	X

#### 5.4.2 Summary of key interview data of Case 4 based on DiT criteria in Table 6

##### Perception of SF – weak

“... Science fiction films and stories provide interesting philosophies from different perspectives. I enjoy reading SF stories. Transformer robot movie was one of my favourite films in my childhood. ...However, my strategy for new product development is based on the reality as I attempt to predict what will emerge or happen (in the market) rather than pure imagination without links to the real world.” (Owner, Case 4)

“Science fiction doesn't provide direct links to our businesses daily operation and product development.” (Marketing Manager, Case 4)

##### DiT inspired ideas - indirect

“...Science fiction films may inspire you to think differently. For example, I like the ‘Transformer’ films and have since taken my company as flexible and transformable like a ‘transformer robot’... for example, we need to become a tank when the market needs this or be a car when customer asked for it. Flexibility is what I learned from this film. ... I recognise the consequences of technological advances, as this does change the way we live and how we operate businesses.” (Owner, Case 4)

*“...Product ideas from science fiction is a different form of imitation – it is to copy what is in the fantasy world rather than what is in your competitor’s organisation.” (Marketing Manager, Case 4)*

#### **DiG-linked new product – implicit (diegetic gap big – metric position 2)**

*“... To invest and improve production methods with high-technology is an important means to transform small businesses to face more competitive market players. My newly opened manufacturing facilities are highly equipped with up-to-date computer automated production technology” (Owner, Case 4)*

*“This organisation functions like a transformer robot and I am the brain of this robot. All the parts must be in order and listen to the brain’s instructions otherwise the whole robotic system will breakdown. An enterprise should act as flexible as a transformer. When needed, it should be transmutable.” (Owner, Case 4)*

*“Science fiction can be useful to predict future technology development, but it is difficult to find its application in our products as it is just not real ...” (Marketing Manager, Case 4)*

#### **DiT-linked employee creativity & learning – emergent**

*“... Employee learning is based on rules of thumb and observations of successful companies in the marketplace. Field visits to other high performance companies are one important way of learning.” (Owner, Case 4)*

*“No formal training is provided but much influence comes from the owner’s ideas and vision.” (Marketing Manager, Case 4)*

#### **DiT-linked future vision – technology oriented**

*“It is possible that future production will become 100% automated, computer-brain managed, with no workers needed but only few maintenance engineers. I can use one digital screen at home to manage and monitor multiple business premises and factories not only in China but in Japan, Korea and America. The manufacturing sector will no longer be a labour intensive industry but be a ‘labour free’ automated industry instead.” (Owner, Case 4)*

*“Future products and lives may be in holographic forms as seen in those American films.” (Marketing Manager, Case 4)*

#### **Outcome of DiT – process and paradigm innovation**

*“...Technology advancement may influence the way product is being manufactured and produced. I have focused on improving my production methods with computer-controlled systems to produce better quality and more efficient production, thus I invested heavily (multiple million dollars) on new technology, as you can see that my production lines, machinery and control systems are the world leading technology purchased from Germany and Japan .... My new high-tech equipped factory has created fresh markets and met new customer demand which becomes my competitive edge.” (Owner, Case 4)*

*“...With advanced computer monitoring and digital surveillance, I now can manage and supervise my multiple production sites through a control pad, video conferencing and ICT. Now I run my business on my own with a labour force reduced from 200 to 75.... It is useful to look into this aspect of science fiction which may help to predict what the future technology might be.” (Owner, Case 4)*

### **6. Key Findings: A Holistic Process Model for Diegetic Innovation**

#### **6.1 The DiT Criteria**

Science fiction and fantasy combine elements of business, technology, politics, economics, sociology and culture to provide an inventive future vision explored through alternative imaginative scenarios that differ from our realities. However, it does not completely depart from our reality, rather *“it is the simultaneity and extension of events and possibilities which make up reality”* (De Cock, 2009: 445)

plus, of course, part of the designer's role is to ground such fictional inspirations in reality. Badiou, 2006 argues that the very creation of possible futures, can only be generated with the resources which are generally not admitted into the realm of the possible. Moreover, it has been argued that the realist novel functioned within a conservative social ideology to prevent change; in contrast to works of fantasy and science fiction which denaturalize the present and open the future to the possibility of radical change (De Cock 2009).

Science fiction itself does not turn a creative idea into a valuable product, as it requires transformation, e.g. building a real prototype. In this process fiction acts as an inspirational trigger and muse for product innovation. Little empirical evidence is available to demonstrate the organisational process of the transformation; especially as there is meagre understanding of fiction and fantasy based innovation techniques in non-science firms as their products are often in a social, cultural, intangible or low-tech form. Our study therefore introduces a process model to illustrate how fiction based *Diegetic Innovation Templating* (DiT) can be adopted in the organisational process to facilitate the development of a more dynamic innovation capability. Our key findings are analysed in line with the following DiT criteria which are reflected in Figure 7:

- (1) Perception of SF/Fantasy (strong/weak)
- (2) DiT-inspired ideas (direct/indirect)
- (3) DiG-linked new product concept (explicit/diegetic gap – small/metric 0 vs implicit/diegetic gap – big/metric 1 or 2)
- (4) DiT-linked employee creativity & learning (Deliberate/Emergent)
- (5) DiT-linked future vision (customer-oriented/technology-oriented)
- (6) Outcome of DiT (product innovation/process and paradigm innovation)

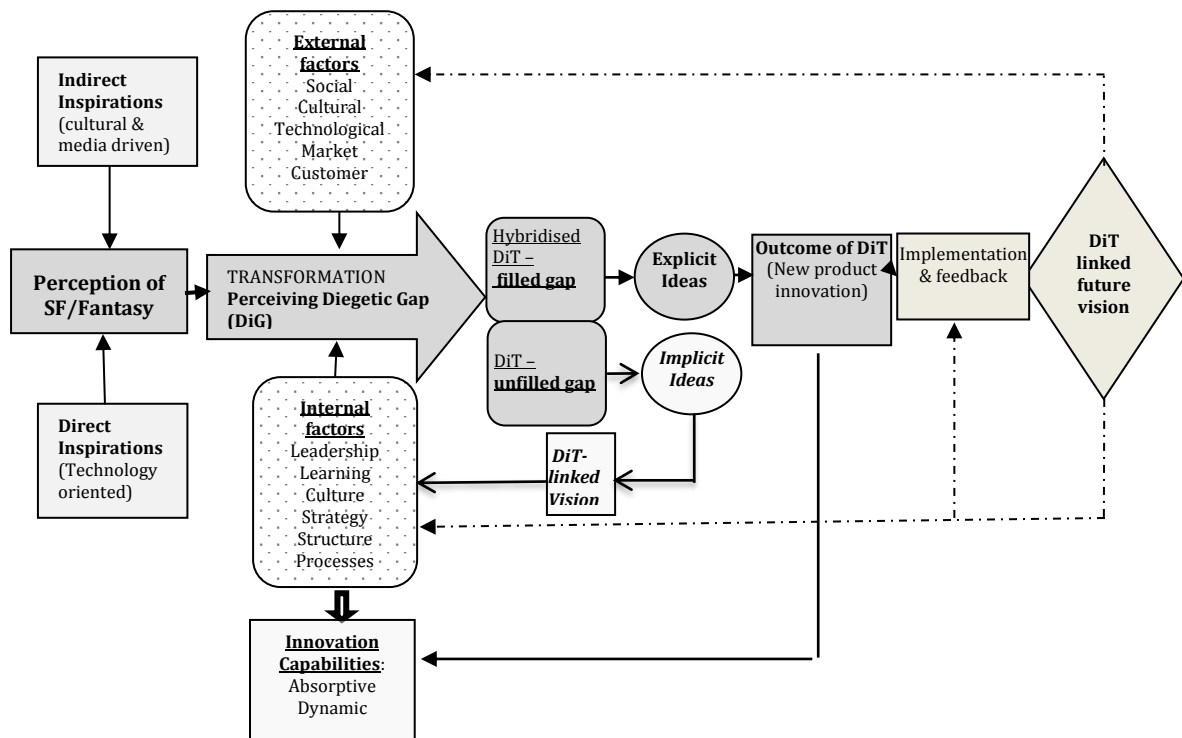


Figure 7. A Holistic Process Model of Diegetic Innovation



## 6.2. Diegetic Innovation Gap

The diegetic innovation gap can be visualised using two dimensions, one depicts conceptual factors whilst the other portrays technological factors. The conceptual gap refers to a company's own understanding of the use of fictions as well as market or customer's acceptance. The technological gap refers to whether the particular technologies in fictional narratives are available for access or viable for adoption as, for example, cost may make a particular technology non-viable. In figure 8 we illustrate the mapping of distance between the fiction and market reality.

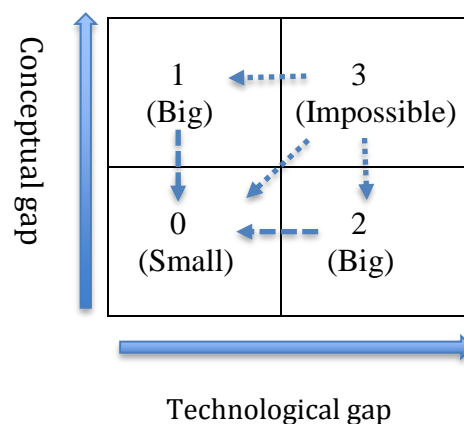


Figure 8. Diegetic Innovation Gap Metric

Companies can find it difficult to use fiction to innovate. As Figure 8 illustrates, there are two types of gap which exist between fiction and product innovation. The metric helps to identify the kind of gap a company may encounter in applying a particular type of fiction to their product innovation. The ideal position is metric 0, a small gap, where there is both a small conceptual gap in staff understanding and customer acceptance for the application of fictional stories to product design and no significant technological challenge concerning availability or viability of technologies required for product design. Metric position 1, however, represents a big gap in either conceptual comprehension of the use of fiction or perhaps a challenge in customer acceptance. For example, the two designers in Case 2 & 3 emphasized that they had designs for other new products that were inspired by Sci-fi ideas but were never commercialised due to their client's objection. Also, in Case 1, both the designer and owner reported they had invested heavily in marketing to influence customers into accepting new concepts or different life styles. Within the company, they also adopted a supportive training strategy whereby they showed their employees popular sci-fi stories, fantasy films and fictional literature to open their mind to unconventional sources of new ideas. The case studies show that with deliberate efforts and awareness of DiT, it is possible to close the conceptual gap, moving from metric 1 to 0.

The technological gap, on the other hand, might be more difficult to close if the technology is not yet invented or on the market. As Case 4 illustrates, there is a large technological gap (metric 2) as robotics is not yet at the level the owner envisions but a small conceptual gap as he can comprehend the transformer's concept and has implicitly applied it to the way he manages his business operation. Metric 3 is an (essentially) impossible position since both conceptual and technological gaps are big, which mean that there is no understanding of how Sci-fi or fantasy may stimulate the innovation or no awareness of the required technology on the market, or knowledge

of how to create it. Of course, if a company is positioned in metric 3, depending on their resources they may be able to invest the effort needed to close the conceptual or technological gaps, and move closer to metric 0, but that requires time and money.

### 6.3 Discussion of Key Findings

Figure 7 illustrates the influence on shaping either explicit product idea or implicit organisational outcome is from multiple sources and various levels of influence. The cultural products in general can create weak signals and trends (Schwarz, 2015), entrepreneurs or organisations pick up these signals and transform them into their own organisational process for different needs with their own interpretation. In our case study investigation, we discovered that there is not a single source for the creation of explicit product idea, instead direct inspirations as well as indirect influences are combined and interacted to shape up idea generation process. The adoption of particular idea can be also affected by the external and internal factors; for instance, the external market/customer poor receptiveness could result in killing the fiction-based product prototype as Case 2 & 3 revealed. Furthermore, the internal organisational processes, such as culture, training, skills or strategy can either prohibit the use of fiction inspirations or promote the adoption of cultural products in their new product design. The contrasting Case 1 Fashion Design Co. & 4 Cashmere Manufacturer demonstrated this. All four case studies have revealed that the influences are multiple dimensional which forms the hybridised DiT process.

#### 6.2.1 Perception of SF/Fantasy (strong/weak)

The transformation between fiction and new product development requires a dynamic process that involves external and internal factors and procedural mechanisms. The perception of science or fantasy fiction, and the possibility for using the *Diegetic Innovation Template* to diagnose the gap and further develop it into prototypes, is influenced by individual and organisational conditions (see Table 2). For instance, in case study 1, 2 and 3 owners/designers all have strong perception of science fiction or fantasy that contributed to the creation of explicit idea and its transformation to new product outcome. The entrepreneur's vision and knowledge will affect not only his or her acceptance of *Diegetic Innovation Templating (DiT)*, but also the access to relevant fictional ideas and information. The staff, skills and management style are also likely factors to either inhibit or encourage the application of fiction in employee creativity, which would positively or negatively reinforce the effect of its adoption. An organisation with an open structure, a high value product strategy, a supportive culture and an effective learning mode is predisposed to probe into the diegetic gap and foreseeably adopt *DiT* as source of creativity.

#### 6.2.2 DiT-inspired ideas (direct/indirect)

An opportunity-driven entrepreneurial firm is highly interactive with the external environment, as the identification of an idea requires an understanding of social, cultural, technological and competitive forces that will impact upon a product development (Tidd and Bessant, 2009; Barringer and Ireland, 2008). The formation of *Diegetic Innovation Templates* will reflect these elements, for instance, the available technology and resources to pursue the idea, its market positioning, social and cultural trends in changing the demographic characteristics of customer segmentation will all determine the design of *DiT*.



### 6.2.3 DiG-linked new product concept (explicit/diegetic gap - small vs implicit/diegetic gap – big, see Figure 8)

In the non-science industry context, the prototyping templates are likely to be a *hybridised* form involving social, cultural, marketing and customer-interactive elements rather than a simple engineering or computing product. The outcome of a *hybrid DiT*, as the contrasting case companies between Case 1,2,3 and 4 demonstrate, is likely to be two types – an ‘*explicit and viable product idea with small diegetic gap*’ such as Case 1’s Harry Potter inspired product, Case 2’s Transformer Robot car design and Case 3’s Matrix’ architectural design. In contrast, Case 4 with ‘*implicit and potential ideas with a big diegetic gap*’ which only indirectly produces a vision for the firm’s investment and production strategy instead of a tangible product output due to the big technological gap in the market. The latter has a tacit impact on the entrepreneur’s future vision and organisation strategy. It functions by means of a Sci-Fi ‘unconscious mind’ (e.g. instinct or rules of thumb) for its acceptance of tacit conceptual influence from the technological, social and cultural environments in which it operates.

Furthermore, the radicalness of introducing new products requires a firm to have strong innovation capabilities that depend on factors such as learning, culture, leadership, innovation strategy, and new knowledge acquisition (Kambil et al, 2006; Keupp et al, 2010). As Figure 7 shows, a *DiT* based new product development process is not a linear process. For example, there are multiple concurrent and sequential processes operating such as identification of the size of gap conceptually and technically between the fiction and reality, developing an understanding of social, cultural and technological changes, obtaining feedback about proposed product-ideas and the market’s perception & receptiveness when it enters into the market and interacts with end users. In addition, it is important the cycle includes the ongoing gathering ‘lessons learnt’ which are used to iteratively and continuously improve the product to better fit in the customer needs. It is suggested that the more dynamic the capabilities that are constituted, the more complicated and difficult it will be for competitors to imitate (Cohen and Levinthal, 1990; Grant, 1991; Teece et al, 1997). For instance, Case 1 (Fashion Design Co.) demonstrates this notion of dynamic capabilities; however, what is new from this evidence is that the firm also displays the ‘*speed*’ and ‘*Sci-Fi ambiguity and hybridization*’ advantages. The term ‘*speed*’ refers to the shortness of a new product cycle, a property which enables a firm to outperform its competitors. Fantasy and Sci-Fi media markets provide a large source of imaginative ideas which augments the ‘*speed*’ of introducing new products thereby providing a means to keep ahead of copycat competitors since it is difficult for them to keep up with the sci-fi inspirations and copy the transformation process of *Diegetic Innovation Templating*, because it involves ambiguity and complexity of transformation concerning how far the innovation gap can be filled and the degree of influence from hybridization of social, cultural, technological and organisational factors. ‘*Sci-Fi ambiguity and hybridization*’ also refers to the innovation being derived from a process that is accumulated over time, involving different cultural products influence (Schwarz, 2015) that assume tacit and explicit forms, which are unlikely to be separated or fully explained. For example, Case 1 (Fashion Design Co) shows their innovations not only reflect a mix of different science fiction and fantasy sources but also the tailoring and customization of different sci-fi, fantasy and cultural elements. The successful implementation of such a *DiT* derived product is, in part, due to combined efforts such as marketing, promotion, sales, strategy, leadership and learning culture. Such ambiguity and complexity has the commercial advantage of

making it difficult to identify a particular, or a single casual factor, which in turn, means it is almost impossible for competitors to imitate (Dierickx and Cool, 1989).

#### 6.2.4 DiT-linked employee creativity & learning (Deliberate/Emergent)

Figure 7 illustrates how the transformation process provides several levels of feedback that act as an organisational learning mechanism to develop renewal capabilities that are specific to the company's focus and difficult for competitors to acquire as they are tacit and embedded on the company structure. This model also reinforces the importance of acquiring new skills and methodologies to stay ahead of the competition. Evidence from Case 1 (Fashion Design Co.) demonstrates the ongoing deliberate efforts in training employee's creative thinking in using science/fantasy fiction could promote effective organisational learning and enhance the outcome of DiT innovation. Similar training efforts are also observed in Case 2 & 3 where the companies give recognition to Sci-fi inspirational sources resulted in employee creativity. In contrast, Case 4 (Cashmere Product Manufacturer.) that did not invest in formal training and only rely on the owner's experience and ability to innovate seems to have weak perception of the use of Sci-fi in new product concept. The learning in Case 4 is designed as ad hoc and emergent according to the market change, which affects its new product development strategy and the overall innovation capability of the employee as a whole. The Case 4 relies solely on the owner's ability and vision rather than the team effort.

The influence of sci-fi learning is directly linked to the outcome of DiT. Especially when feedback is received from implementation in the market, the firm not only can develop a DiT linked future vision that will offer the future direction of the company in a long run, but also it can help to modify the new product development process to react to fast changing external trends, and benefit from new opportunities that may emerge over time. The cyclic nature of *DiT*, further reinforces the complexity of learning and knowledge utilization that is likely to develop firm's absorptive capabilities (Dibella et al, 2000; Lichtenthaler, 2011). Lane et al (2006) argue that absorptive capability is not only relevant to an R&D context but, more importantly, it is a function of the organisational processes as well as an influence from the firm's regulatory and competitive environments. In this way, it helps firms to develop an effective learning mode and accumulative knowledge resources; ultimately it forms the firm's unique and sustainable competitive edge in a rapidly changing environment.

#### 6.2.5 DiT-linked future vision (customer-oriented/technology-oriented)

It is critical for businesses to develop a foresight innovation strategy with a future vision that will guide and navigate ongoing investment in key strategic resources. The orientation differs in the future vision. It is interesting to note that technology is recognised as a core factor in innovation process while the soft elements, cultural and social factors are often marginalised. In our case studies, most successful adoption of DiT linked innovation is driven by the customer not the technology. The new product concept deprived from sci-fi and fantasy reflects its embedment in social and cultural context of lifestyles of customers. It is a two ways of interactive process as it is not simply demanded by customers but more importantly it creates the demand for customers. For example, Case 1 (Fashion Design Co.) displays such product strategy focusing on educating customers and creating a cult culture for customers to worship their brand experience in an imaginative and fantasy world. It is easy to follow a demand but it is more difficult to create a demand in the market. Diegetic Innovation

based on the use of Sci-fi and fantasy seems to help create such demand and connect customers in a new dimension. Particularly, our case evidence suggests that in the non-science industry context, the use of DiT can make such product innovation more accessible and be more effective with a focus on customer orientation (see case 1, 2, 3).

#### 6.2.6 Outcome of DiT (product innovation/process and paradigm innovation)

We suggest that the role of sci-fi and fantasy is not merely to entertain society, it can be used as a means to create a plausible diegetic constructs that would stimulate innovation and develop prototypes. The use of sci-fi and fantasy is not simply a direct adaptation of the fictional concept; de facto it involves a complex transformation process in which multiple factors are likely to influence the innovation outcome. The proposed Diegetic Innovation Templates (DiT) offers an explanation for the underlining processes and relevant factors in the transformation. As was evident in the DiT criteria we presented previously in 6.2.3, the final outcome of diegetic innovation can be either explicit new product ideas or implicit influences upon the strategic visions and innovation capabilities of firms. One of the intriguing findings is in Case 4 whose perception of SF is weak and has no direct link to Sci-fi inspired product innovation, but the owner's experience and memory of sci-fi film (Transformer) has unspeakable influence on his view of how a company should be operated (with extreme flexibility). Despite no direct adoption of sci-fi concept in new product development, the future vision of Case 4 seems to show the implicit embodiment of sci-fi vision. The diegetic gap in this case is big which cannot be filled with explicit product ideas or benefits for real world adoption. However, the implicit influence becomes stimulating input into the idea of how the company should be run. More importantly, it affects its investment strategy in technology, as Case 4 has heavily invested in advanced technology with a belief that it is the future trends. It becomes a distinctive case that differs from most Chinese SMEs which tend to rely on cheap labour and a low cost product strategy. The interviews with the owner suggest that a DiT based future vision played an important role in its technology-oriented process innovation. Perhaps, more conclusive evidence is still needed to fully explain the implicit effect of DiT use on more complex and ambiguous links in practice. Our study introduces this possibility and presents a case scenario which opens a new research avenue which invites the acquisition of more empirical evidence.

#### 6.3 Enabling conditions for adopting DiT method

Our study reveals that *Diegetic Innovation Templating* can be enabled through relevant conditions: **a)** open innovation processes integrating internal and external resources; **b)** well-designed *Diegetic Innovation Template* training programmes on employee creativity & learning; **c)** developing a supportive and encouraging culture for organisational creativity, which moves beyond the conventional innovation framework and guides the employee's imaginative ability into the realm of foresight innovation; **d)** understanding the influence of external environment changes as both new opportunities and movements in the customer's expectations; **e)** integration of a futurist vision that acts to constantly advance the company's knowledge base and maintain structural flexibility.

## 7. Intellectual Property Right (IPR) and Socio-Cultural Fiction Prototyping Issues

Using published fiction as an inspiration for product innovations raises the spectre of IPR. Various regulations cover such issues most notably Copyright, Trademark and Patent law. In our case we are dealing with material which is largely covered by copyright for which the United Nations World Intellectual Property Organisation states “*Copyright protection extends only to expressions, and not to ideas, procedures, methods of operation or mathematical concepts as such*”<sup>2</sup>. Thus, copyright is mostly concerned with infringement relating to other similar media (eg one film being too close to another, merchandising imagery etc) which can be amicably covered by licencing agreements. The IPR law is complex and a potential minefield for the naive, being dependent on factors such as the jurisdiction, nature of the source material, form of the target product and the revenues involved, making the topic a paradise for lawyers. As a consequence, it’s hardly surprising to discover all these organisations have their own legal advisors monitoring their own outputs as well as potential external infringements and, where necessary, negotiating licenses; it is clear that the methods argued for in this paper will not decrease their load. While this is an interesting topic, the issues are so complex as to merit a dedicated paper, which would explore the relationship between the use of cultural products in product innovation and the potential IPR challenges.

## 8. Theoretical Contributions

### 8.1 The Introduction of New Conceptual Framework – DiT & DiG

In this paper we have introduced the principle of using existing popular fantasy and science-fiction as a means of inspiring and developing product innovation in organisations. This research is based on a cross discipline approach as we combine three different disciplinary perspectives, a philosophy in film studies (Diegetisis), an innovation methodology used in engineering (SFP), and SMEs innovation theory and practice, which has given us new insights into what we believe is an under-researched topic – sci-fi inspired creativity in non-science contexts. We have focused on exploring how it is employed in industries beyond science and engineering, where its use is less common. Since we are considering industries producing products that are not scientific, we have included fantasy fiction which we have argued brings significant benefits since its highly imaginative and deeply engrained into our culture. As part of elucidating our rationale, we explained that the aim of these fictional tools was to create real product or stimulate business innovations, proposing a metric, the ‘*Diegetic Gap*’, which described how closely the fiction and actualised product or process are, and how relevant the proposed methods are to a particular industry, organisation or product. For Case 1 (the fashion company), the ‘*Diegetic Gap*’ was particularly small both conceptually and technologically, and so the method was easier to apply for them than, say, Case 4 (Cashmere Product Manufacturer.) where the ‘*Diegetic Gap*’ was larger technologically. We also introduced a concept termed a ‘*Diegetic Innovation Template*’ (DiT) which is an artefact extracted from a fantasy or science-fiction story that describes an innovative concept that can be abstracted into a

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<sup>2</sup> United Nations World Intellectual Property Organisation [http://www.wipo.int/copyright/en/faq\\_copyright.html](http://www.wipo.int/copyright/en/faq_copyright.html) (accessed on 16th October 2017)

product or process design. We illustrated this concept by describing a number of products whose design was directly drawn from diegetic templates.

We proposed this diegetic innovation framework as a means to rationalise and explain the use of some fiction based creative design methodologies we found being used by firms operating in emerging markets, a sector which traditionally struggles to embrace innovation. We noted that the imaginative nature of fiction provides a creative tool with a currency that is shared across a broad section of society providing firms with a means to engage with their customers, workforce and wider society. In addition, we have explained that, because popular fiction is embedded into socio-cultural contexts, the fruits of the process are often already established in the firm's potential market, providing strong synergy with branding and marketing. However, the most significant contribution, *Diegetic Innovation Templating (DiT)* provides a tool for organisational process innovation, product invention and creative design where it offers an intrinsic framework for "*thinking outside the box*" in a manner that can create new ideas. Moreover, we recognised that the process of *Diegetic Innovation Templating (DiT)* can be either explicit (generating specific innovations) or implicit (generating tacit structures or knowledge). We noted that the different manifestations depend on the industry, the makeup of workforces and the nature of their markets.

This qualitative research provides an inductive conceptual framework to provoke further research. Understanding how the *Diegetic Innovation Templating* approach is applied is meaningful for both practitioners and scholars as it provides a possible means for improving innovation capabilities and a way to inject imaginative creativity so as to develop a competitive edge. It has important implications for the way in which managers can deliberately train and develop their employee's creative abilities and design effective organisational processes to facilitate better innovation capabilities.

## 8.2 Contribution to Innovation Theories

Considering our findings, they contribute to innovation theories by offering an explanation on how firms in an emerging market context can develop their innovation capabilities by using the Diegetic Innovation Template approach. Diegetic Innovation is a much under-researched topic in business study context as this term only existed in film studies. We adopt this perspective in our research to examine the use and effect of sci-fi and fantasy based innovation method in the context of non-science SMEs. Small and medium size firms are more innovative and outperform their competitors when they open up their innovation processes to exploring external sources of knowledge, opportunities and ideas. Organisation knowledge works in complex ways. Developing the foresight innovation ability is important for organisations to capture the signals of change in the marketplace. Building upon other studies in this area (Johnson, 2011; Kirby, 2010; Schwarz, 2015; Schwarz et al, 2013), this research unpacks how explicit and implicit Sci-Fi related factors affect the innovation process and result in either deliberate or emergent changes in different types of SME. The paper throws new light on how organisations can use sci-fi or social-cultural forces to develop new innovation abilities in an unconventional way. Furthermore, this research suggests that the impact of fiction is multi-dimensional. Most prior studies have focused on the direct and explicit links to science fiction, as such our understanding was limited to science based R&D in organisation innovation. Since we are immersed in social, cultural and technological environments, indirect and implicit influences are often being received in an interactive and enacted way. Popular

culture such as Fantasy and Sci-fi films and literature infuses itself into our lives and, when integrated into the innovation processes, can shape our visions of the present and future.

### **9. Limitations**

First, the geographical context and institutional environment may differ from other emerging countries and such variations may, in turn, impact the manner in which organisations innovate. Second, our studies have focused on small and medium sized enterprises so there might be different resource-related and internal process factors idiosyncratic to larger organisations. Furthermore, a longitudinal analysis would enable future research to identify whether organisations can use these methods to continuously develop renewable innovation capabilities over time and, as a consequence, transform their innovation business models. This ability is particularly important because the increasing demand for more sophisticated products is shifting organisation's strategic focus up the value chain (Luo et al., 2011). Third, we have not investigated how IPR law might affect these methods, but hope this paper might inspire researchers from legal perspective to pick up on this thorny area. Finally, it would be interesting to explore a larger sample size, more case studies for further validation and development of the *Diegetic Innovation Templating* model, possibly in other contexts or industries.

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