



CREATIVE SCIENCE FOUNDATION

Creativity, Ideas & Innovation Workshop

Aside 1 - Foresight & Non-Technical SFPs

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Creative Science Foundation

The role of SFP in product innovation

- ▶ **Science-based product innovation**
 - Engineering
 - Computing
 - New technologies related
- ▶ **Non-science industries**
 - Fashion & textile industry
 - Corporate future visions
 - Marketing concepts
 - Customer services

Innovation Capabilities

The skills and knowledge needed to effectively absorb, master, and improve existing knowledge and technologies, and to create new ones.

(Lall, 1992; Romijn and Albaladejo, 2002)

Radical innovation: a high degree of new knowledge and technologies, produce fundamental changes in the activities of an organization and represent clear departures from existing practices.

Incremental innovation: a lower degree of new knowledge, simple adjustments in current technology, and result in little departure from existing practices.

(Ettlie, 1983; Dewar and Dutton, 1986; Damanpour, 1991; McDermott & O' Connor, 2002)

Factors impact on innovation capabilities

▶ Internal factors:

Individual knowledge and skills (obtained through previous experiences, education and on-the-job training); the level of technically qualified personnel; the investments in formal and informal R&D practices; creative organisational culture & environment.

▶ External factors:

The interactions and networking with suppliers, customers, public/government agencies, industry associations, foundations and other agents which can provide missing external inputs (i.e., knowledge, technology as well as funding) into the innovation process which the firm itself cannot (easily) produce internally (Lundvall, 1988; von Hippel, 1988; Freeman, 1991).

Innovation capability thus becomes a strategic asset for a firm critical to achieving competitive advantages (Conner, 1991; Porter, 1990).

The need for creativity

- ▶ Individual/employee creative ideas are crucial to new product design (entrepreneurs and intrepeneurs)
- ▶ Identifying emerging trends, opportunity searching and problem solving approaches for instance
- ▶ Creativity can be engendered by use of appropriate tools and methodologies (Johnson 2010), e.g. SFP

Foresight and innovation – latest literature and studies

- ▶ Relationship between **business visions** and **creative fictional prototypes**
- ▶ Scenarios vs. prototypes (scenarios are mechanisms that test strategic direction while prototypes offer the analysis of business vision) (Greenhill, 2013)
- ▶ Johnson's SFP can be enriched by **socio-cultural fictions**
- ▶ **Scenario planning** can underpin all elements of a **marketing strategy** and action (Pattinson et al, 2010), positively relate to **firm performance** in identifying future risks, trends, and implications of strategic decision-making (Visser & Chermack, 2009)
- ▶ **Scenario analysis** can be used to increase the quality and effectiveness of **new product development** (Postma et al, 2012)
- ▶ Future Window aimed at encouraging people to innovate futures and stimulating future thinking (Heinonen and Hiltunen, 2011)

Diegetic Innovation Gap (DiG) & Diegetic Innovation Template (DiT)

- ▶ **DiG:** the gap between the commercially usable output of the fictions to business/product innovation. DiG can be either *big* or *small*; the larger gap the less useful to real world product innovation; the smaller gap closer to real product innovation. (Kirby, 2010)
- ▶ **DiT:** to extract novel templates for designs and products from fictional world that are already well-established in social realm. The explicit application of these templates is used as the currency of innovation. The use of established fiction provides a deep connection to social consciousness and popular cultural fabrication, and taps into the creative abilities of great authors and film makers, all of which bring significant business Advantages and act as facilitators to organisational creativity and innovation. (Zheng and Callaghan, 2015)

Science Fiction as a business innovation tool

Case study evidence from China:

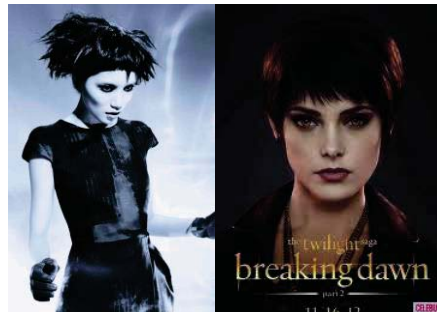
- ▶ **Case 1. Sunfed Fashion Company** (founded in 1997, 270 employees, turnover US\$9 million)
- ▶ **Case 2. Dali Cashmere Manufactory** (founded in 1996, 180 employees, turnover US\$4 million)
- ▶ **Case 3. Marketing PR company** (founded in 2005, 200 employees, turnover US\$2million)
- ▶ **Case 4. Creative design and PR company** (founded in 2006, 70 employees, turnover US\$1 million)

Case 1. Sunfed SF inspired fashion design

The President of Sunfed Fashion said:

*“Fashion is about constantly catching the **popular trends** at both national and international levels. What influence 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 works 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 SFP works but you need to **know what customers expect and what can be used to transform these ‘fictional imaginations’ into a tangible product.**”*

Product Examples



Case 1. Sunfed SF inspired fashion design

The chief designer of Sunfed Fashion explains:

*"We understand the need and expectations of the customer. Our design targets are young professionals and middle class income women, who live in 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**. Thus we use science fiction and fantasy to create an alternative reality that is constructed by different fictional and cultural dimensions for fantasies and luxuries. For example, the Twilight movies became very popular in China and worldwide, which become my inspiration. 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 films in terms of models' make-up, music, lights, sound, forest background (the fighting scene), smoky and scary atmosphere..."*

<http://www.bfi.org.uk/news-opinion/news-bfi/features/what-we-ll-wearing-future-classic-sci-fi-films> (Blade Runner inspired 2014 collection by designer Alexander McQueen)

Case 2. Dali Cashmere SP inspired visions

The owner entrepreneur's management approach is influenced by SF-inspired visions, in particular the 2007 American SF movie, *Transformers* (transformer robots), as he commented:

▶ *"My organisation functions like a transformer robot and I am the control brain of this robot. All the parts must be in order and listen to the brain's instructions otherwise the whole robotic system would breakdown. An enterprise should act as flexible as a transformer. When needed, it should be transmutable, for example it can change into different things, such as an auto car or a gun, or a tank according to the need and circumstances. This requires that the people in the enterprise should act like the assembly parts of a robot, in which they can fit in different roles at demand. The enterprise should be able to change into different shapes through combining and reforming these parts, in order to meet the changing demands of the market. Sometimes I feel like a 'hemiplegia'; my brain has many ideas but the body cannot move or run as fast as what the brain wants. That is because of the incapability of those parts. How to obtain highly skilled employees becomes my challenge as my company grows."*

Case 2. Dali Cashmere SF inspired visions

The owner explained:

“My future vision is based on understanding reality and using this as the basis to predict what will emerge or happen, rather than employing pure imagination without links to the real world. However, I recognise the observation on technological change, as this does change the way we live and how we operate businesses. With the advanced computer monitoring and digital surveillance, I now manage and supervise my multiple production sites through a control pad, video conferencing and communication technology that has enabled me to not only run my business on my own but to be capable of expanding to a larger scale and multiple sites. It is useful to look into this aspect of science fiction and may help to predict what the future technology might be.”

Case 2. Dali Cashmere SF inspired visions

The owner further commented on the future of his organisation in 20 years are:

“I have always focused on improving my production methods using computer-controlled systems, so it is possible that future production will become 100% automated, artificial intelligence managed, with no workers needed but only a 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 ‘no labour’ automated industry instead. This is the consequence of continuous labour cost rises and the shortage of highly skilled workforce.”

(Photos of example are displayed in a separate document)

Examples:



Case 3. Marketing SF inspired design

The chief designer comments:

"It is a popular fashion with a futurist mind in design, you can always find the interesting connections or embodiment from science fiction or fantasy."

"... 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 it fits in the product idea, but if our customers can't understand it or doesn't like it, we have to abandon it... The question is what customers want, the design is not totally determined by us."

Example



Case 4. Marketing SF inspired design

A creative designer comments:

"... 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 the imaginative ability to embrace future visions such as science fiction and fantasy."

Example:



SFPs transformation to a business plan

1. Selecting the science/fantasy and writing the **concept scenario**
2. Identifying the SF inspired **opportunity proposition** in the marketplace
3. Analyzing market size, target customer, product specification, organizational and financial **feasibility**
4. Understanding **resources** needed for converting the SF product concept into a market application
5. **Implementing** the product idea/prototype in reality (a practical business plan) OR
6. **Developing** the product concept into future vision to guide the strategic direction of NPD and R&D decisions

Conclusions

- ▶ SFPT used as an instrumental tool for NPD in non-science SMEs
- ▶ SFPT utilised as an effective strategy against competitor imitation
- ▶ SF transformation is a hybrid and multi-dimensional process – the key is to link to customer's needs and create an alternative reality
- ▶ The outcome of SFPT application can be either explicit/deliberate or implicit/emergent.
- ▶ Enabling conditions are identified for the use of SFPT in SMEs – SF focused training, SFPT planning, SFP implementing mechanism: present vs future; science fiction vs. science fact

Futurist visions – future is closer than you think ...

<http://www.youtube.com/watch?v=VUncbfJaf8Q>

(Top five futurist technologies that exist today)

<http://www.youtube.com/watch?v=gplbpAljMq8>

(GLASS technology concept)

http://www.youtube.com/watch?v=d78BNm_49J0

(A day in 2025)

<http://www.theguardian.com/fashion/costume-and-culture/2013/aug/09/how-sci-fi-fashion-changed>

(future cloth: fabrican)