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## **Uncertainty and Innovation in Fashion Design**

**Abstract:** Generally speaking, psychologists have suggested three traditional views of how people cope with uncertainty. They are the certainty maximiser, the intuitive statistician-economist and the knowledge seeker (Smithson, 2008). In times of uncertainty, such as the recent global financial crisis, these coping methods often result in innovation in industry. Richards (2003) identifies innovation as different from creativity in that innovation aims to transform and implement rather than simply explore and invent. An examination of the work of iconic fashion designers, through case study and situational analysis, reveals that coping with uncertainty manifests itself in ways that have resulted in innovations in design, marketing methods, production and consumption. In relation to contemporary fashion, where many garments look the same in style, colour, cut and fit (Finn, 2008), the concept of innovation is an important one. This paper explores the role of uncertainty as a driver of innovation in fashion design.

A key aspect of seeking knowledge, as a mechanism to cope with this uncertainty, is a return to basics. This is a problem for contemporary fashion designers who are no longer necessarily makers and therefore do not engage with the basic materials and methods of garment construction. In many cases design in fashion has become digital, communicated to an unseen, unknown production team via scanned image and specification alone. The disconnection between the design and the making of garments, as a result of decades of off-shore manufacturing, has limited the opportunity for this return to basics. The authors argue that the role of the fashion designer has become about the final product and as a result there is a lack of innovation in the process of making: in the form, fit and function of fashion garments. They propose that 'knowledge seeking' as a result of uncertainty in the fashion industry, in particular through re-examination of the methods of making, could hold the key to a new era of innovation in fashion design.

**Key Words:** Uncertainty, Fashion, Psychology, Innovation, Creativity, Back to Basics, Social change

## Introduction

The recent global economic crisis has resulted in a state of ongoing and wide spread uncertainty, a state where ‘business as usual’ may no longer be enough to sustain productivity and growth. Psychological research into decision making processes may provide an insight into how the probability of negative outcomes stimulates innovation. This is important for the fashion industry as ‘business as usual’ is already innovative on many levels. However, severe economic uncertainty is a time when all businesses tend to review their core values and production schemas in order to reassess their current market share (Ulin, 2009). The aim of this paper is to compare decision making and problem solving processes that lead to innovation with the practices of iconic fashion designers in order to develop a deeper understanding of innovation in the fashion industry. The outcomes suggest practices that could enable the more “effective innovation” necessary to sustain the industry growth in the future.

## Background

This discussion began with an observation that much of fashion design in contemporary terms looks the same in colour, cut and fit of garments and the golden ages of fashion as innovative, exciting and highly desirable appear to be a thing of the past (Finn, 2008). The basis of this examination began with the question “what do iconic fashion innovators have in common and can a theory be developed that could explain a set of circumstances that may lead to innovation in fashion?” Case histories were chosen based on their subjects’ acknowledgment as great innovators in the fashion industry. Their careers span a period from before World War I to the present.

## Methodology

To explore this question, firstly an assessment measure was developed to evaluate the level of innovation present in the case histories to be examined (Appendix 1). Secondly, cognitive and emotional characteristics that contribute to innovation were tabled (Appendix 2). The problem solving, knowledge seeking and emotional coping styles of these designers were

then investigated. The designers' ability to return to basics (their connectedness and understanding of how to make garments) and their intuitive tendency to choose risky probabilities over negative certainties emerged as a common factor. The significance of this finding is that gaining a better understanding of factors that lead to innovation in fashion may allow for the development of a design methodology that encourages focused innovation as a result of knowledge seeking through a return to core values.

### The Fashion Industry

The over production and consumption of fashion has been a topic for much discussion, particularly in respect of research that focuses on fashion textiles sustainability from social, economic and environmental perspectives. A problem for the industry, a result of the 'pile it high sell it cheap' mentality that has prevailed in recent decades, is that many fashion garments have started to look the same (Finn, 2008). This has resulted in widespread consumer boredom and apathy about what consumers purchase and wear with stores like Uniqlo, H&M and Top Shop dominating the mainstream fashion market. The excitement of the past, for fashion that is different and new, appears to have been lost. Furthermore, current theory suggests that the market will become polarized, with a high end individual style at one end and the mainstream fashion churn at the other (Farrer & Fraser, 2008). Innovation and value-adding have become important considerations for the future success of fashion in the high end market. As designers attempt to maintain and grow their market share, or as new designers attempt to find a place in the market, how they address the problems and decisions that they are faced with may provide the momentum for this innovation.

### Judgment and Decision Making

Generally speaking, uncertainty is perceived as an unpleasant state that people find physiologically, emotionally and mentally uncomfortable (Izard, 1991; Mandler, 1984). Most people, therefore, wish to alleviate uncertainty and employ different problem solving methods depending on the type and conditions of their uncertainty as well as their personalities and cognitive styles. Psychological research has identified three traditional views of how humans respond to uncertainty (Smithson, 2008). They distinguish between people as 'knowledge seekers', 'intuitive-statistician-economists' and 'certainty maximizers'.

This section will provide an overview of these approaches and suggest that it is probable that, in times of widespread, indefinite uncertainty, individuals intuitively consider a ‘back to basics’ heuristic as an ‘incubation’ opportunity and a method of anchoring knowledge seeking on sound foundations that have proved themselves practical and useful through their endurance.

Information processing models of judgment and decision making describe the ‘intuitive statistician-economist’ response to uncertainty as a method where good decision makers weigh up the pros and cons of every situation and choose the combination which produces the most useful outcome for them. In its early history, this approach relied on logic and mathematical calculations of probabilities to represent rationality and neglected the role of intuition in decision making. However, extensive research into how choices are framed (Kahneman, 1979; Kahneman & Tversky, 1981; 1982) found that people do not always make rationally accurate decisions when uncertainty is involved. They are intuitively biased against some decisions and they employ heuristics or ‘rules of thumb’ to make intuitively rational rather than purely rational decisions.

Kahneman & Tversky (1981) found that people are risk averse when presented with a choice between a positive certainty and a negative probability but risk prone when choosing between a negative certainty and a positive probability. Experiment participants were presented with two different decisions and were asked to choose between alternative A and alternative B in the first and alternative C and alternative D in the second. The parameters of the decisions are included in Table 1.

<b><u>Decision 1</u></b>	
Alternative A:	A sure gain of \$240
Alternative B:	A 25% chance to gain \$1000, and a 75% chance to gain nothing
<b><u>Decision 2</u></b>	
Alternative C:	A sure loss of \$750
Alternative D:	A 75% chance to lose \$1000, and a 25% chance to lose nothing

Table 1: Kahneman & Tversky (1981) Experiment

The findings demonstrated that 84% of participants chose alternative A over B in decision 1 and 87% chose alternative D over C in decision 2. Although this choice is erroneous from a rational viewpoint, because people who chose A in decision 1 should have logically chosen B in decision 2, it is sensible from an intuitive or commonsense viewpoint. In simple terms, when faced with a choice between an outcome that involves a certain gain, individuals most commonly chose not to consider the riskier alternatives. However, when the choice is between outcomes that involve certain loss, individuals considered the riskier option as a worthwhile alternative. Individuals want to maximize certainty when it is good - but are willing to forgo bad certainty and take a risk for the outcome that may or may not be good. This research revealed that, in their quest to seek pleasure and avoid pain, humans only maximize certainty when it promises a positive outcome.

In later research Thorngate (1980), showed that heuristics provide a quick and mentally efficient method of coming to sufficiently accurate decisions and Gigerenzer, Todd and the ABC Research Group (2001), found that heuristics performed as well or better than more rational methods because they used real environmental features to their advantage. It is likely that people choose ‘back to basics’ as a heuristic when deciding how to manage uncertainty, because they intuitively recognize returning to a base-line as a desirable starting point for change.

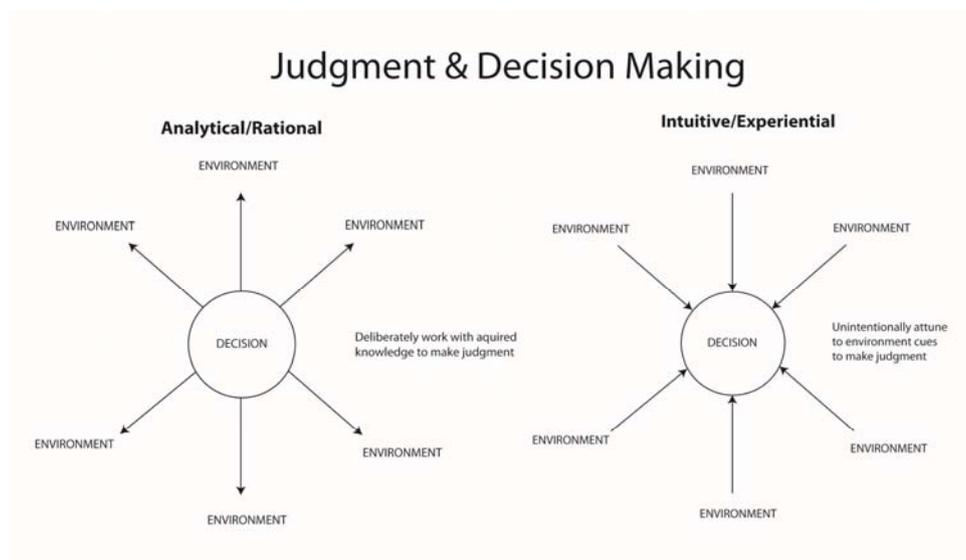


Figure 1: Analytical/Rational and Intuitive/Experiential Judgment & Decision Making (Epstein, Pacini, Denes-Raj, & Heier, 1996)

According to Epstein's Cognitive Exponential Theory (Epstein, et al., 1996), individuals use two systems to process information (Figure 1). Firstly, the experiential system is intuitive and related to associations from direct experience. It requires less cognitive effort, is global in approach and uses highly detailed mental representations. The second rational system, requires more mental effort, takes a more linear approach and relies on logical rules. Novak and Hoffman (2009) further demonstrated that the cognitive system tends to be activated when people perform tasks that require the use of generic principles, manipulation of symbols, or thinking about words. In contrast, the experiential system tends to be used when people engage in tasks that require creativity or subjective evaluations. Epstein (1991) proposed that these decision making styles should be represented by a normally distributed continuum (Appendix 3) with rational/analytical at one end and experiential/intuitive at the other.

## Thinking

After making a decision individuals tend to think about how to implement solutions to a given problem. Hudson, (1967) studied two different thinking styles when he found that conventional measures of intelligence did not accurately represent people's abilities.

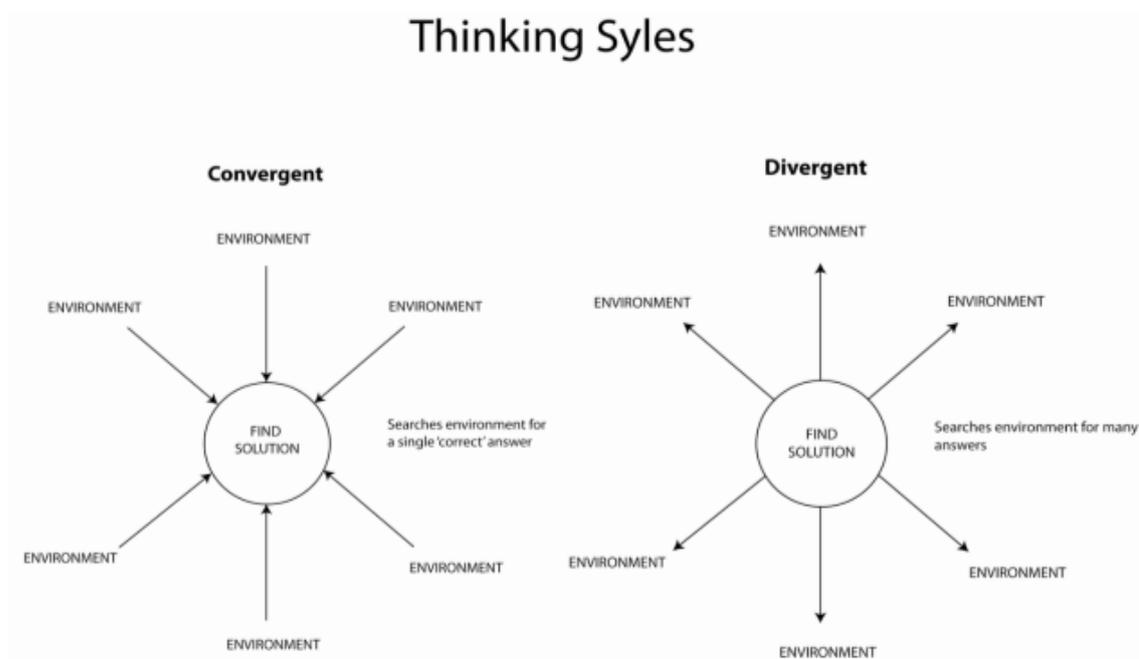


Figure 2: Convergent and Divergent Thinking Styles (Hudson, 1967).

Standard tests only measured the ability to find the ‘right’ answer but did not account for creativity in problem solving. He suggested that convergent thinkers are good at bringing material from a variety of sources to find a single correct answer while divergent thinkers are good at creating many different answers prompted by a single stimulus (Figure 2).

### Coping Behaviour

In addition to individual thinking styles more recent research has considered the role of emotional behaviour in coping with uncertainty. Greenglass, Schwarzer, Jakubiec, Fiksenbaum, & Taubert (1999), describe proactive coping styles as future focussed on plans and goals, positively motivated through seeing problem situations as challenges and more focused on comparing risks in relation to their set goals. Reactive coping tends to focus on the past, on previous outcomes. It is negatively motivated and views problems as dangers so that people are primarily concerned with decreasing risk (Figure 3).

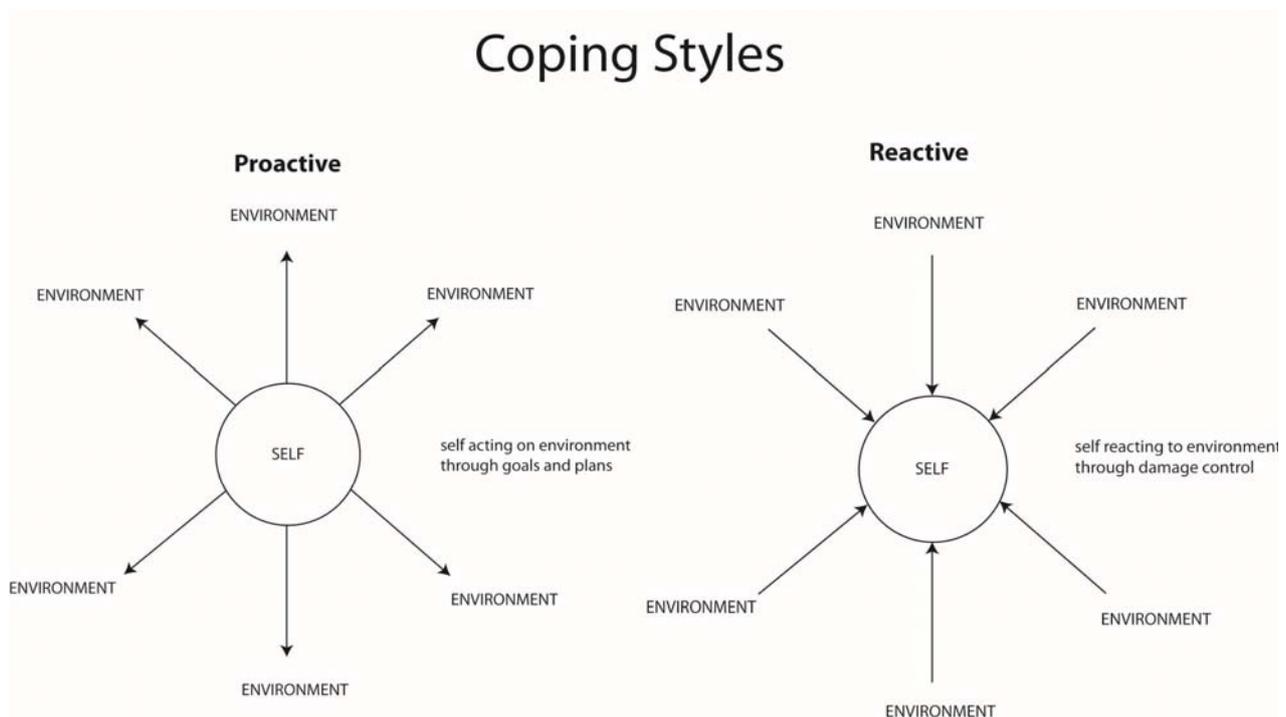


Figure 3: Coping Styles (Greenglass, et al., 1999)

## Innovation

There is a common element of these theories that is important in the discussion of innovation. In order for innovation to occur a designer or inventor is faced with a series of problems that necessitate various individual cognitive and emotional judgment and decision making processes to commence. Although these theories explore these processes in different ways they all propose knowledge seeking as the longest standing and most common precursor for solving problems in times of uncertainty. Knowledge seeking reduces uncertainty by providing more information and provides the opportunity to reduce it further through finding solutions to the causes of uncertainty. However, people seek knowledge in different ways according to individual differences in how they interact with uncertainty.

Innovation is often treated as if it is synonymous with creativity because both concepts are involved with achieving novel results. Marxt & Hacklin (2005) observed that design communities should be aware that the distinction between these terms, whilst once quite definitive, is becoming narrow to a point where they will mean the same thing. Although innovation cannot occur without creativity, there is a need to distinguish between the two because creativity can occur without innovation but it cannot be effective without innovation. Richards (2003), describes innovation as an active process that produces something that is useful and desirable while creativity is the mental process of exploring beyond current reality to realize something new (Figure 4).

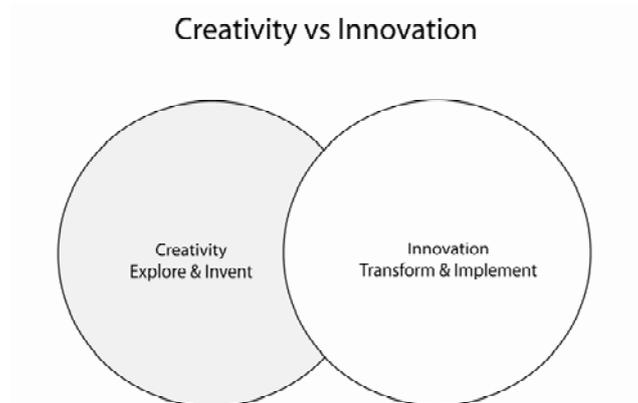


Figure 4: Creativity vs. Innovation (Richards, 2003).

Kirton (2003) conducted research to determine how individuals solve problems and proposed a bell curved continuum with more adaptive thinkers on one end and more innovative thinkers on the other. Adaptive thinkers prefer to tackle uncertainty and problem solving from a more consensually agreed, tighter structure, while innovators prefer a more flexible structure and place less importance on consensus (Figure 5).

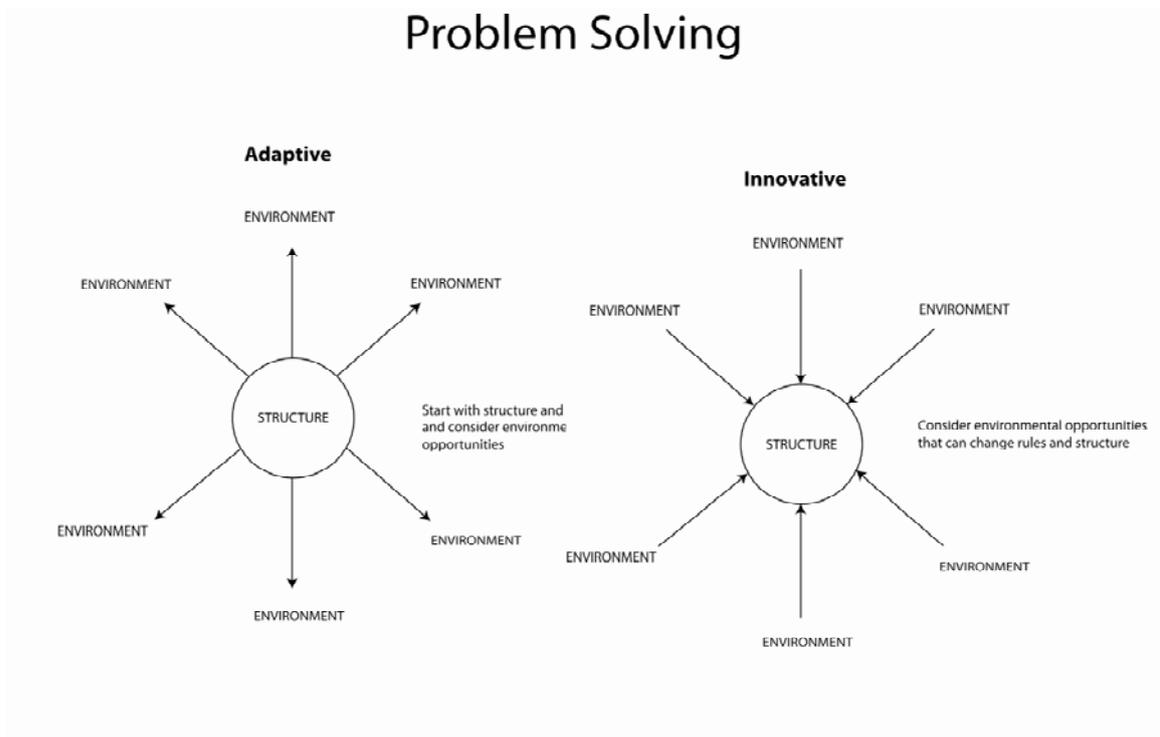


Figure 5: Problem Solving (Kirton, 2003)

However, he emphasises that all people are problem solvers and all people are creative. In dealing with uncertainty in real world situations, it is necessary for creative thinkers to anchor their exploratory ideas to the practical processes and core values of their organization if they wish to be effectively innovative. It is also necessary for adaptors to expand their exploratory ideas beyond the original structure if they are to be effectively innovative. Both adaptors and innovators need to either expand or collapse their ideas to bring about the useful outcome that this study describes as effective innovation.

## Fashion Innovators - Case Histories, Analysis and Results

This section provides an overview to four case histories that were chosen based on their subjects' acknowledgment as great innovators in the fashion industry. Their careers span a period from before World War I to the present.

### Coco Gabrielle Chanel (1883-1971)

Gabrielle 'Coco' Chanel is commonly considered one of the great fashion innovators of the 20<sup>th</sup> century. Davis (2007) highlights a key factor that contributed to the development of Chanel's design aesthetic as being a result of foundations "laid early and in dire circumstances". Perhaps the most well known example of Chanel as an innovator is her development of what has become known as 'the little black dress'. The simplistic design was innovative in its shape and cut compared to the existing post Edwardian fashion of the times. Importantly, the fabric that Chanel used for this design was wool jersey; a fabric that was considered to be for the working class and was traditionally used to make men's underwear. What were the circumstances that led to the use of this fabric for high fashion garments?

At the time of this innovation, France was involved in the Great War (WWI) against Germany and as a result the fabrics that had been used for high fashion, namely silk chiffon and wool crepe, became difficult to obtain. Chanel was faced with a decision: either to close her business (it is impossible to make fashion garments without fabric) or to risk using a fabric that she could obtain that may or may not be accepted in the market. In line with the results of Kahneman & Tversky's framing research (1981), when faced with a certainty of failure, Chanel decided on the riskier option of possible failure rather than certain failure.

The decision to adopt this fabric for an unintended purpose resulted in a number of innovations that are contributed to the designer. The fabric was not suited to the fashions of the times such as structured blouses and pleated skirts as it was stretchy and did not hold darts well. Wool jersey is a knitted fabric, it did not behave as a woven fabric when it was sewn and did not drape in the same manner as a woven fabric. These factors combined to necessitate new methods of pattern cutting and garment construction and resulted in a new silhouette [shape and fit]. The way the fabric behaved did not support surface decoration in

the forms of beading or embroidery which limited the amount and type of embellishment that could form part of the design. The movement in the fabric (due to its knitted structure) also meant that the garments were far more comfortable to wear and allowed the wearer more ease of movement which was highly suited to the changing lifestyle of women at the time.

After Chanel had intuitively chosen a risky alternative over a certain loss, she appears to have returned to basics and made a rational analysis of the pros and cons of construction methods in order to combine an adaptive approach with an innovative approach to problem solving. Her knowledge seeking style suggests that she used a Gestalt/open minded technique through considering new ideas in both finding materials outside the field of high fashion and changing manufacturing methods from within the production structure. She used convergent thinking to seek information from many sources to find a correct answer to her problem of shortage of fabric supply. Her coping style suggests that she was proactive because she was focused on the future, had plans and goals and considered her problem as a challenge rather than a danger. According to the innovation levels displayed in appendix 1, Chanel would be classed as very innovative because she transformed existing materials and methods of construction to implement new aesthetics and function.

### Issey Miyake (b.1939)

Japanese designer Issey Miyake, acknowledged as the “founding father of the [Japanese] avant-garde” (Kawamura, 2004) was born in Hiroshima in 1939. In an interview for the Times he comments, for the first time, on his memories of his childhood relating to the detonation of the first atomic bomb on August 6<sup>th</sup>, 1945.

*“...On Aug. 6, 1945, the first atomic bomb was dropped on my hometown, Hiroshima. I was there, and only 7 years old... I have tried, albeit unsuccessfully, to put them behind me, preferring to think of things that can be created, not destroyed, and that bring beauty and joy. I gravitated toward the field of clothing design, partly because it is a creative format that is modern and optimistic” (Miyake, 2009).*

Miyake was part of a generation of Japanese who grew up in post WWII Japan, a Japan where western concepts were encouraged as ‘good’ and Japanese ideology was discouraged. Miyake

explains “We are the generation who lived in limbo and the first really raised with western culture, the first who must look in a different direction for to search for a new identity” (Kawamura, 2004). He began his career studying dressmaking at the l’Ecole de la Chambre Syndicale de la Couture and found work in Paris, firstly for Guy Laroche and then for Hubert de Givenchy before launching his own collections in 1973. As a designer, Miyake was faced with the uncertainty of how to gain international recognition for his own designs in the French fashion system. In response to this question, despite being trained in the making of French couture and having worked for French designers, Miyake decided to develop his own aesthetic that challenged the accepted standards of fashion at the time.

This decision stemmed from a ‘return to basics’ heuristic in which he looked to traditional Japanese peasant clothing for inspiration. It was from this return to core values that the designer was able to generate new ideas, or become innovative through transforming an existing aesthetic for a new purpose. His most commercially successful collection, “Pleats Please” (still in production), can be connected to the traditional craft of Japanese Shibori, a method of resist dyeing in which the fabric is ‘pleated’ and then ‘un-pleated’ in the creation of a distinctive pattern. However, the innovation by Miyake was to develop a new process of achieving the look of the pleated fabric that would remain permanent.

The new pleated fabric would have posed problems for the designer and manufacturing teams. Once a fabric is permanently pleated it behaves differently in the way it is seamed and hemmed: the pleats have a mind of their own and cannot be tamed to travel in the opposite direction to give the appearance of a smooth, flat seam. Hemming involves stretching out the pleats and stitching over them; following this process the fabric will not return to its original state so hems become fluted. Miyake’s innovation was to cut the garments 3 times larger than required and have them sewn together prior to the pleating process. Without his knowledge of how to make garments the distinctive look of these designs and the innovative methods of cutting and construction that resulted would not have been possible. His later innovations, including A-POC [a piece of cloth], demonstrate a similar method of generating ideas through experimentation with how garments and fabrics are made.

Issey Miyake also returned to the rational approach of problem solving through a back to basics analysis of both Japanese and French manufacturing and design before he was able to

problem solve through adapting Japanese styles to appeal to the high fashion market and through introducing novel Japanese aesthetics into the French fashion industry. He displayed a divergent thinking style because he started with the stimulus of Japanese clothes and found many answers of how to produce them innovatively. Miyake's childhood memories clearly demonstrate a proactive coping style because they display a forward focused and positive view of recovery from the severe uncertainty of Hiroshima. He is also classed as very innovating according to Appendix 1 because he transformed existing materials and methods of construction to implement new aesthetics and function.

### Pierre Cardin (b. 1922)

Pierre Cardin began his career in 1945, in post WWII Paris, training with couturier Elsa Schiaparelli as an apprentice cutter and tailor before taking a position as head of tailoring for Christian Dior in 1947 (at the time of the development of Dior's 'New Look'). He opened his own couture house in 1950. In 1959, Cardin was expelled from the *Chambre Syndicale de la Couture* for launching a 'ready to wear' collection and for showing at *Au Printemps* department store in Paris, rather than at his own salon (V&A Museum, 2007). Although he was later re-instated, the uncertainty caused by becoming an outcast of the French fashion system may have contributed to a key innovation attributed to the designer; the innovative business model of licensing his manufacturing and developing a global market for his designs.

There is no doubt the Cardin was innovative as a fashion designer. His most notable innovations include 'the bubble dress' in 1954 and the development of his own fabric which he patented as 'Cardine™' in 1968. This was a synthetic fabric re-purposed to allow it to be sculptured into three dimensional shapes to create the futuristic, space age aesthetic for which the designer became well known. He is also credited with adopting unusual materials for his collection such as crocodile skin for handbags (rather than traditional leathers) and fur, the surface of which had been cut into to form geometric patterns (Okonkwo, 2007). These innovations are similar to those of Miyake and Chanel in that they involved a 'return to basics' through examination of make that resulted in new methods of cutting and construction and re-purposed existing methods and materials that resulted in a new aesthetic. For the purposes of this discussion however, it is important to show an example of how a return to

core values can occur outside of these methods. In this case, a re-examination of the existing business model allowed Cardin to innovate a new model to solve a problem of how to expand his business beyond his salon in Paris and make his products available to an international market.

In addition to having been the first couturier to show a 'ready to wear' collection, Pierre Cardin was the first designer to recognise the potential for the business of fashion to become more international, opening up markets in Japan (1958), China (1970s) and Russia (1991). The success of these experiments in market expansion caused a problem for Cardin in respect of being able to supply the increased demand which would have necessitated an enormous increase in production capabilities. In response to this problem, Cardin was innovative in his solution to develop a system of licensing whereby a manufacturing company paid a royalty for the right to produce his products for their local market. This was different to the existing model where a designer would out source production while maintaining ownership of the business. The model allowed Cardin to focus on design, in fact expanding well beyond the scope of fashion design to include many products from cars to furniture, rather than be overtaken by the necessity to manage a global conglomerate.

Pierre Cardin displayed the same tendency to return to basics in order to make rational judgments after his initial intuitive selection of risky options. He investigated the pros and cons of business decisions before adapting those methods to the fashion industry and innovating the fashion industry beyond its restrictive business model and into ready-to-wear markets. He showed a gestalt/open minded knowledge seeking approach because he was more progressive, receptive to new ideas and information and he rejected the authoritarian stance of the *Chambre Syndicale de la Couture*. He displayed a divergent thinking style because he started with the stimulus of business expansion and found many answers through the eventual production of multiple products. He also showed a proactive coping style when expelled by the *Chambre Syndicale de la Couture*. He was forward focused and planned well towards clear future goals. His level of innovation would be classified as very innovative because he transformed an existing market and methods of retailing to implement new ready-to-wear aesthetics.

## Hussein Chalayan (b. 1970)

A more recent example of a designer who has become well known as an innovator is Hussein Chalayan. As an individual, Hussein faced the task of avoiding being stereotyped by the fashion world, including being described as a Muslim designer (despite that fact that his background was non-religious) because of his Turkish/Cypriote ancestry (Menkes, 2005). However, this cultural uncertainty has played a role in his development as a designer. When asked about how his background of growing up in Turkey has influenced his work Chalayan explained,

*“The more isolated you are from the rest of the world, the more curious you are, the more you want to discover. I have always been an innately curious person fueling[sic] this even further. The lack of resources in Cyprus meant that I was always building and making things, creating my own world”*(Chalayan, 2009)

The controversial *Burka* Collection (1996), that drew ideas of shape and construction from traditional dress and challenged the ideas of exposing certain parts of the body, was undoubtedly influenced by this background.

The idea of refugees also played an important part as the inspiration behind one of his most innovative collections – *After Words* (Fall, 2000) – inspired by the history of his own family fleeing Cyprus before its partitioning in 1974 (Dyckhoff, 2009). This collection included some of his most well known designs such as ‘the coffee table dress’ and a set of chairs that turned into suitcases, their covers becoming shift dresses (Style.com, 2000). Amongst his other well known designs are those of the 2007 Spring Summer collection “*One Hundred and Eleven*” which brought acclaim to the designer as an innovator because of his dramatic use of technology to produce unusual garments. In his *Airborne* collection (2008) his use of LED lighting and pulley systems, that transformed a garment before the eyes of the audience, guaranteed the success of his shows.

There is a common misconception that Chalayan is more interested in fashion on the conceptual level and with the marketing and promotion of his fashion; his catwalk shows are often referred to as performance. However, Chalayan was trained at Central Saint Martins

and has a solid grounding in how garments are cut and made and is “...renowned for his innovative use of materials, meticulous pattern cutting and progressive attitudes to new technology” (Chalayan, 2009). Chalayan explains that part of this perception is related to the fact that the styles that are talked about are the ones that are highly innovative, in some cases described as ‘wearable art’ (Alexander, 2001), and not the rest of the collection that shows highly wearable garments.

*“...there has been a misconception of my work, in the sense that people think of all that we do as “conceptual” and therefore un-wearable. I feel that this is due to the monumental pieces getting more exposure and the actual wearable clothes getting overlooked. We take a long time trying to achieve cut and precision”*  
(Chalayan, 2009).

This has caused problems for the designer in respect of his commercial/business success. In 2001, while having been named “British Designer of the Year” for the second time, Hussein’s company went into voluntary liquidation with debts estimated at £250,000 (Alexander, 2001). As an acknowledged innovator in design, and with a deep understanding of garment making process, why has the commercial success eluded the designer? It could be suggested that his approach to problem solving and decision making led him to continue to expand his ideas rather than return to his core values to find a basis from which to innovate. It is interesting that his experience of knowledge of garment cutting and making are utilised to perfect a product but not to generate new methods as is the case with the other designers discussed here.

Chalayan has formed various partnerships in his career to date, none of which have so far proved successful. This may be a method that the designer is utilising in an attempt to overcome the problem of his lack of commercial success. In 2009, he entered into another partnership with well known sporting goods company Puma.

*“I have recently taken up the Creative Directorship of Puma and will divide my time between designing for my own collection and working on ideas for Puma with a separate team. Puma is a lifestyle house, it is not a fashion house; interest in technology and ideas not readily associated with fashion will sit comfortably with Puma”* (Chalayan, 2009).

Hussein Chalayan chose the intuitive risk rather than certain financial failure then rationally weighed up the pros and cons of forming a business partnership with a lifestyle house rather than a fashion house. This is likely to be a good decision according to problem solving theory because Puma are likely to contribute the structure and opportunity for adaptation from within the production methods while Chalayan's talent for innovation will bring the opportunity for technological and design advancements that come from outside the sporting goods industry. Chalayan showed a convergent thinking style because he sought information from outside the fashion area to find a correct answer to his problem. He also continued to display a gestalt/open minded knowledge seeking style in his need to know and understand rather than be stifled by prior beliefs about how fashion should be presented. His coping style shows areas of reactive coping which is not unusual because reactive coping is often activated when people have had severe failures in their past. This is likely to be beneficial to him because it has probably contributed to his seeking the safety of the Puma partnership over continuing to pursue his own plans and goals which have failed him in the past.

Dyckhoff (2009) suggestion that Chalayan will have to sell out a little if he wants to sell, is a fitting description of this form of reactive coping style because it highlights that there is a necessity for less focus on personal goals when there is a focus on decreasing risk. This collaboration could prove to be the solution to Chalayan's financial problems because it holds the promise of allowing him to pursue his own goals and plans for creativity within the structure of Puma to produce a product that is useful. Chalayan's level of innovation needs to be analyzed on two levels because he produces two different types of fashion - the highly creative 'wearable art' and the highly wearable garments. The problem here is that Chalayan would be rated as not innovative in his wearable garments because he "explores new aesthetics through existing materials, function and methods of construction" and as innovative in his wearable art because he "transforms existing materials and methods of construction to implement new aesthetics" but fails to make them functional. The partnership with Puma has the potential to remedy this situation and make Chalayan not only an icon for innovative aesthetics but a financially successful creative designer of highly functional sportswear.

Table 2: Results

Designer	Problem	Decision	Solution	Innovation	Thinking, Knowledge Seeking, Problem Solving and Emotional Coping Styles
Gabrielle 'Coco' Chanel	Unable to guarantee fabric supply	a) Certain failure if unable to continue production without availability of fabric supply  b) use new material that may or may not be acceptable to high end consumers	Return to basics then innovate	New methods of construction New design aesthetic New market	Convergent thinking Gestalt/Open Minded knowledge seeking Adaptive and Innovative Problem Solving Proactive Coping
Issey Miyake	How to gain international recognition for Japanese design	a) do not risk presenting designs with a Japanese aesthetic on the international market and sacrifice cultural identity b) present Japanese fashion design that may or may not be acceptable to high end consumers	Return to basics then innovate	New methods of construction New ways of wearing garments New garment forms New fabric developments	Divergent Thinking Gestalt/Open minded Knowledge Seeking Adaptive and Innovative Problem Solving Proactive Coping
Pierre Cardin	How to expand in a global market	a) do nothing and fail to meet production required to satisfy increasing demand b) risk outsourcing production which may or may not result in poor quality goods	Back to business basics then innovate	New approaches to production developed through product licensing	Divergent Thinking Gestalt/Open Minded Knowledge Seeking Adaptive and Innovative Problem Solving Proactive Coping
Hussein Chalayan	How to gain financial security without compromising creative ability	a) continue to present unconventional designs to the fashion market and face financial failure b) form a collaboration with a lifestyle market which may or may not result in financial success.	Back to business basics for security then innovate	Opportunity to combine creative use of technology with functionality outside fashion industry	Convergent Thinking Gestalt/Open Minded Knowledge Seeking Adaptive and Innovative Problem Solving Reactive Coping

## Discussion

Analysis of the four innovative designers selected for this study revealed that they did not all deal with uncertainty in the same manner (Table 2). Their problem solving methods and emotional behaviour differed not only in terms of individual differences but also as a result of the level of uncertainty experienced and the level of ambiguity in the problem to be solved (Smithson, 2008).

Chanel and Chalayan emerge as more convergent thinkers and this may be because it was important for them to acquire an answer to a more specific problem. Miyake and Cardin both wanted to expand their influence into new areas so the opportunity to find several answers to their problem was likely to be more effective under their circumstances. This is not to suggest that these innovators did not use the alternative type of thinking to the one they chose. They certainly would have used both types, as 96% of the general population would (see Appendix 3), but they were able to apply the type of thinking that best suited their uncertain situation.

Only Chalayan showed a preference for reactive emotional coping style and it is likely that this was influenced by the type of uncertainty he was experiencing and the influence of negative past experiences. However, this did not prevent him from finding an innovative solution. He was seeking security from financial failure and was able to make his situation more secure through collaboration rather than try to change his own strongly creative personality. The other three designers used forward thinking, goal setting and planning to their advantage in coping.

As expected, all innovators used both an adaptive and an innovative problem solving approach and this led to effective innovation for them all. It is not surprising that they displayed Gestalt, open minded knowledge seeking behaviour because they were already connected to an industry that operates in an atmosphere of creativity. This also supports Richard's (2003) observation that innovation cannot occur without creativity. However, this does not mean that people always need to be Gestalt type knowledge seekers. There are undoubtedly times when Psychoanalytical knowledge seeking is useful. The names and attributes of these styles are purely lexical and so subjective. Because Rokeach's research

originated from an interest in Nazi right wing authoritarianism (Smithson, 2008), he attributes the negative sounding labels of prejudice, religious dogma, inflexibility and lack of artistic appreciation to characteristics of the psychoanalytical knowledge seeker. He may just as easily have named positive qualities such as dedication to belief in one's own plans and ideas, persistence when goals are threatened by distractions and ability to resist being easily influenced by others. There are times when single-minded resolve is most beneficial, especially in areas that require specialist knowledge, but it does not usually lead to innovation.

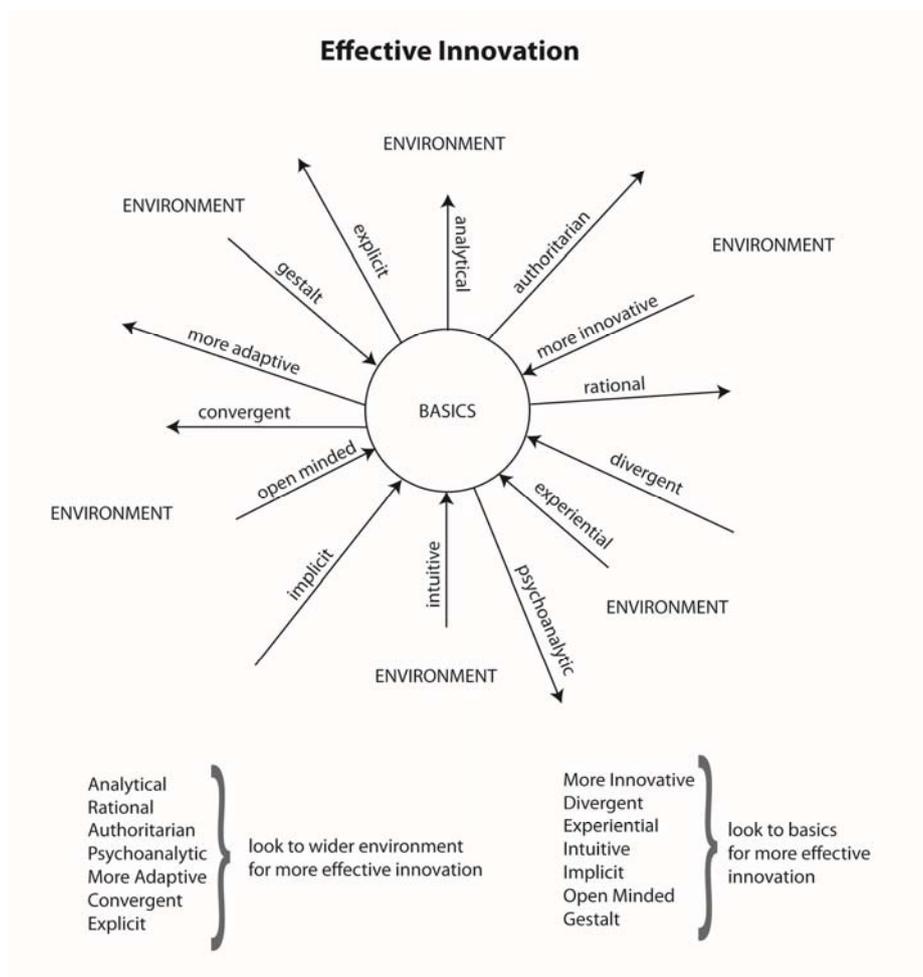


Figure 6: Effective Innovation

## Conclusion

The role of the consumer has not been covered in this discussion but the heuristic to return to basics in times of uncertainty is not confined to fashion designers. Consumers in general are becoming more discerning shoppers who want to buy products that are both longer enduring in quality and more ecologically and ethically sound in their use of materials and labour. This could be achieved through innovative solutions such as value adding through technology. Fashion is an industry that thrives on novelty and creativity but it would be a mistake to underestimate structured, rational, practical thinking ability in these times of uncertainty. Recognising drivers for effective innovation has consequences for sustainability in fashion (Figure 6). Areas for further research and debate include the need for re-connection between design and manufacturing within the fashion industry and the need to find new, effective, sustainable production models that achieve optimum growth without contributing to the presence of the ‘pile it high and sell it cheap’ marketing monster.

## References

- Alexander, H. (2001). Designer of Year forced to close with £.25m debts - Telegraph. *Telegraph.co.uk*. Retrieved from <http://www.telegraph.co.uk/news/uknews/1313214/Designer-of-Year-forced-to-close-with-.25m-debts.html>
- Chalayan, H. (2009). Hussein Chalayan - Design/Designer Information. Retrieved from <http://designmuseum.org/design/hussein-chalayan>
- Davis, M. E. (2007). *Classic chic : music, fashion, and modernism*. Berkeley: University of California Press.
- Dyckhoff, T. (2009). Hussein Chalayan at the Design Museum - Times Online. *Volume*. Retrieved from [http://entertainment.timesonline.co.uk/tol/arts\\_and\\_entertainment/visual\\_arts/architecture\\_and\\_design/article5553675.ece](http://entertainment.timesonline.co.uk/tol/arts_and_entertainment/visual_arts/architecture_and_design/article5553675.ece)
- Epstein, S. (1991). Cognitive-experiential self theory: An integrative theory of personality. In R. C. Curtis (Ed.), *The Relational self : theoretical convergences in psychoanalysis and social psychology*. New York: Guilford Press.
- Epstein, S., Pacini, R., Denes-Raj, V., & Heier, H. (1996). Individual differences in intuitive-experiential and analytical-rational thinking styles. *Journal of personality and social psychology*, 71(2), 390-405.
- Farrer, J., & Fraser, K. (2008). *CONSCIENCE CLOTHING: POLARISATION OF THE FASHION TEXTILE MARKET*. Paper presented at the 86th World Conference of Textiles Institute 2008, Hong Kong.
- Finn, A. (2008). Fashion manufacturing in New Zealand : can design contribute to a sustainable fashion Industry? . Retrieved from <http://eprints.qut.edu.au/31512/>

- Gigerenzer, G., & Todd, P. M. (2001). *Simple heuristics that make us smart*. New York: Oxford University Press.
- Greenglass, E. R., Schwarzer, R., Jakubibc, D., Fiksenbaum, L., & Taubert, S. (1999). *The proactive coping inventory (PCI): A multidimensional research instrument*. Paper presented at the Twentieth Annual Conference of the Stress and Anxiety Research Society.
- Hudson, L. (1967). *Contrary imaginations; a psychological study of the English schoolboy*. [Harmondsworth, Baltimore: Penguin Books.
- Izard, C. E. (1991). *The psychology of emotions*. New York: Plenum Press.
- Kahneman, D. (1979). Prospect Theory: An Analysis of Decision Under Risk. *Econometrica*, 47(2), 263-229.
- Kahneman, D., & Tversky, A. (1981). The framing of decisions and the psychology of choice. *Science*, 211(4481), 453.
- Kahneman, D., & Tversky, A. (1982). On the study of statistical intuitions. *Cognition*, 11(2), 123-141.
- Kawamura, Y. (2004). *The Japanese revolution in Paris fashion*. Oxford [England]: Berg.
- Kirton, M. J. (2003). *Adaption-innovation : in the context of diversity and change*. London; New York: Routledge.
- Mandler, G. (1984). *Mind and body : psychology of emotion and stress*. New York: W.W. Norton.
- Marxt, C., & Hacklin, F. (2005). Design, product development, innovation: all the same in the end? A short discussion on terminology. *Journal of Engineering Design*, 16(4), 413-421.
- Menkes, S. (2005). Hussein Chalayan: Cultural dialogues - The New York Times.
- Miyake, I. (2009). Op-Ed Contributor - A Flash of Memory - NYTimes.com. *The New York Times* Retrieved 3rd October, 2010, from [http://www.nytimes.com/2009/07/14/opinion/14miyake.html?\\_r=1](http://www.nytimes.com/2009/07/14/opinion/14miyake.html?_r=1)
- Novak, T. P., & Hoffman, D. L. (2009). The Fit of Thinking Style and Situation: New Measures of Situation-Specific Experiential and Rational Cognition. *The Journal of consumer research.*, 36(1), 56.
- Okonkwo, U. (2007). *Luxury fashion branding : trends, tactics, techniques*. Basingstoke, Hampshire [USA]: Palgrave Macmillan.
- Richards, B. (2003). Intelligent innovation: Ideas to action. *The Journal for Quality and Participation*, 26(2), 14.
- Smithson, M. (2008). Psychology's Ambivalent View of Uncertainty. In G. Bammer (Ed.), *Uncertainty and risk : multidisciplinary perspectives* (pp. 205-218). London: Earthscan.
- Style.com. (2000). The Top Ten Collections. Retrieved 10th September, 2010, from [http://www.style.com/trendshopping/stylenotes/090710\\_Top\\_Ten\\_Collections/slideshow/?play=false](http://www.style.com/trendshopping/stylenotes/090710_Top_Ten_Collections/slideshow/?play=false)
- Thorngate, W. (1980). Efficient decision heuristics. *Behavioural Science*, 25, 219-225.
- Ulin, J. (2009). Back to Basics. *Journal of Financial Planning*(Journal Article), 26-21.
- V&A Museum. (2007). V&A - The Golden Age of Couture - Exhibition. *Explore Houses and Designers* Retrieved 1st September, 2010, from [http://www.vam.ac.uk/vastatic/microsites/1486\\_couture/explore.php](http://www.vam.ac.uk/vastatic/microsites/1486_couture/explore.php)

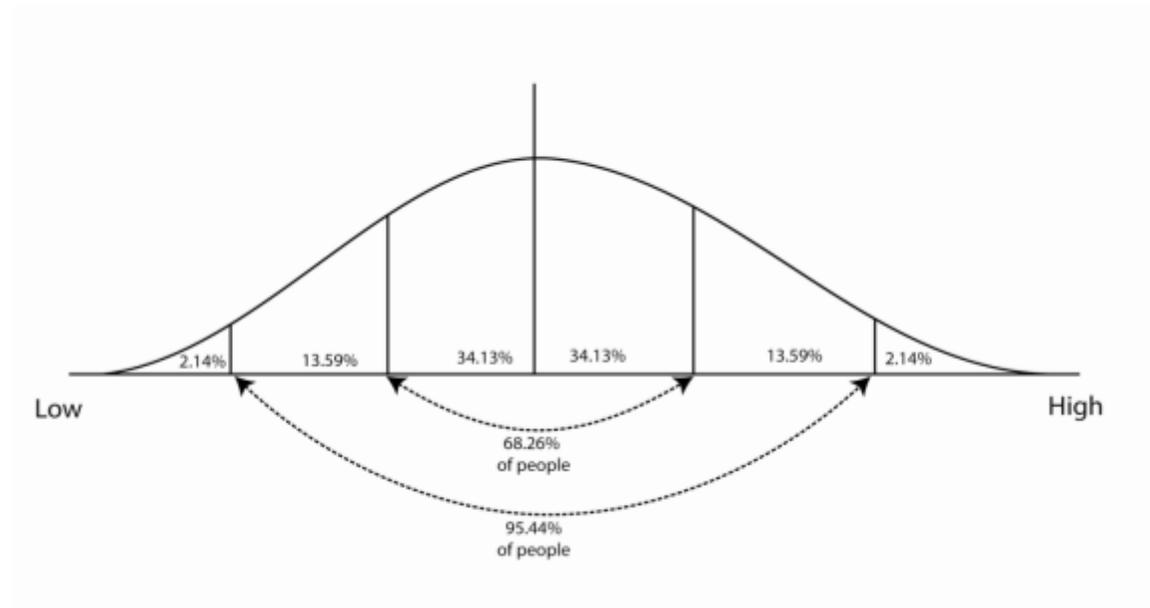
Appendix 1

<b>Characteristic/Feature</b>	<b>Not innovative</b>	<b>Somewhat innovative</b>	<b>Innovative</b>	<b>Very innovative</b>	<b>Extremely innovative</b>
<b>Uncertainty (Historical Context)</b>	None	Individual uncertainty	Uncertainty of supply	Economic uncertainty	Global uncertainty
<b>Materials used</b>	Existing / readily available	Existing used in a different way	New fabric produced from existing fibre	New fabric produced from new fibre used in existing way	Technologically advanced fabric/fibre used in a new way
<b>Technological aspects</b>	None	Existing technology applied to existing materials	Existing technology applied to new Fibre/fabric development	New technology applied to new fabric/fibre developments	Technology and fabric/fibre development is Integrated (ubiquitous computing)
<b>Method of construction/manufacture</b>	Existing	Different methods of garment construction	New methods of manufacturing and construction	New methods of construction with new technology	Construction or manufacture that is a result of technological advancement
<b>Aesthetics vs. Function</b>	Existing function with expected aesthetic	New aesthetic through existing materials or silhouettes	New Aesthetic through New materials or silhouette	New or existing materials/silhouette put to a different use	New or existing materials/silhouette put to a new use (new users) that now exist as a result of new technological advancements
<b>Creativity vs. Innovation</b>	Explore new aesthetics through existing materials, function and methods of construction	Explore new aesthetics and invent new methods of construction for existing materials	Transform existing materials and methods of construction to implement new aesthetics	Transform existing materials and methods of construction to implement new aesthetics and function	Implement new materials and construction methods for new functionality

Appendix 2

Theories of Knowledge Seeking & Belief Systems	Dual Processes -Characteristics	
Prior Beliefs (personality) Rokeach (1960)	<u>Psychoanalytic Types</u> <ul style="list-style-type: none"> <li><input type="checkbox"/> Need to defend already held beliefs</li> <li><input type="checkbox"/> More prejudiced, more authoritarian</li> <li><input type="checkbox"/> More religiously dogmatic</li> <li><input type="checkbox"/> Less politically progressive</li> <li><input type="checkbox"/> Worse problem solvers, less artistically appreciative</li> </ul>	<u>Gestalt Types</u> <ul style="list-style-type: none"> <li><input type="checkbox"/> Need to know and understand</li> <li><input type="checkbox"/> Less prejudiced, less authoritarian</li> <li><input type="checkbox"/> Less religiously dogmatic</li> <li><input type="checkbox"/> More politically progressive</li> <li><input type="checkbox"/> Better problem solvers, more artistically appreciative</li> </ul>
Epstein (1991) (Cognition) Ways of Thinking	<u>Explicit/Analytical/Rational mode</u> <ul style="list-style-type: none"> <li><input type="checkbox"/> Intentional, effortful, logical</li> <li><input type="checkbox"/> more rapidly and easily changed</li> <li><input type="checkbox"/> context general</li> <li><input type="checkbox"/> active and conscious</li> </ul>	<u>Implicit/Intuitive/experiential mode</u> <ul style="list-style-type: none"> <li><input type="checkbox"/> holistic, automotive, effortless</li> <li><input type="checkbox"/> effective, slower</li> <li><input type="checkbox"/> more resistant to change</li> <li><input type="checkbox"/> context specific</li> <li><input type="checkbox"/> passive and pre-conscious</li> </ul>
Hogarth (2005) (Judgment and Decision Making)	<u>Analytical</u> <ul style="list-style-type: none"> <li><input type="checkbox"/> Deliberate processing of less complex inputs</li> </ul>	<u>Intuitive</u> <ul style="list-style-type: none"> <li><input type="checkbox"/> tacit processing of highly complex inputs</li> </ul>
Hudson (1967) Thinking Ability and Learning Styles	<u>Convergent Thinkers</u> <ul style="list-style-type: none"> <li><input type="checkbox"/> Bring material from a wide range of sources to bear on a problem to produce a single, correct answer</li> </ul>	<u>Divergent Thinkers</u> <ul style="list-style-type: none"> <li><input type="checkbox"/> Create a wide range of answers from a single problem stimulus</li> </ul>
Greenglass, Schwarzer, Jakubibc, , Fiksenbaum, & Taubert (1999)	<ul style="list-style-type: none"> <li><input type="checkbox"/> Future Focused, Focused on completing set goals</li> <li><input type="checkbox"/> See challenges and experience as positive emotional states</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Past focused, Focused on decreasing risk</li> <li><input type="checkbox"/> See danger and experience as a negative emotional state</li> </ul>

### Appendix 3: Normal Distribution



A normally distributed continuum suggest that the general population can be expected to be distributed between the highest and lowest level of the attribute being measured, with most frequencies (people's scores) within the first standard deviation from the mean and very few frequencies falling outside the second standard deviation