

Understanding of *Kansei* through cultural inclination in the process of thought I

The inference process on the essence of a product

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Abstract: In the development of consumer products, contemporary designers are considering sensibility in addition to function and form. This study focuses on the cultural variables involved in the process of understanding object's properties, in order to understand their *Kansei*(Sensibility). Among scholars of studying human thought, there are those who focus on the characteristics of human perception. Additionally, scholars in the humanities and social sciences claim that members of different cultures differ in their "metaphysic thought," or fundamental beliefs about the nature of the world. Based on these opinions, people from different cultural backgrounds should have diverse cultural inclinations towards understanding object's properties. This study was focused on the understanding of *Kansei* (Sensibility) through cultural inclinations in the inference process for the essence of a product. It was examined through the understanding of the relationship between human and object. There was a difference in cultural inclinations among Japanese, Korean, Dutch and British test participants. Europeans had a stronger tendency of logical inference (reasoning). On the other hand, Asians tended to have more experiential inference (similar joint). It was found that the difference of *Kansei*(Sensibility) occur through cultural inclination in the process of inference.

Key words: *Cultural Inclination, Inference process, Design, Kansei (Sensibility)*

1. Introduction

Contemporary designers are now factoring sensibility to meet their goals in the development of consumer products. The study of *Kansei* (sensibility) has been driven by the evaluation of impressions of products and the reactions of human senses towards specific stimuli. This study focused on the thought processes in understanding and feeling an object's properties in order to understand their sensibility. In general, consumers have a workable understanding of what a product is for, how it is used, and how to operate it. For some people, it is after this understanding that they will have feelings or attraction towards a product. We studied the thought process initiated when a product's property were felt and understood. Scholars in the humanities and social sciences claim that members of different cultures differ in their "metaphysic thought," or fundamental beliefs about the nature of the world (Richard E. Nisbett, 2003). Based on these opinions, people from different countries could have diverse thought processes towards understanding and feeling the properties of a product. Therefore, the differences in these thought processes of people from different countries were examined.

2. Inference Processes on Essence of a Product

This research focused on the thought processes being created when a product is recognized and a feeling is developed. Table 1 is the view on the thought process that is formed in the process of understanding and feeling the properties of the product. As core thoughts' processes, inference, association, recognition, impression and preference process were considered. The present study focused on the user's *inference process on the essence of a product*.

Table 1. Thought process in understanding and feeling the properties of the product

Understanding and Feeling the Properties of a new Product	Thought Process
<p><i>What kind of product is this? (essence)</i> A user will define the nature of the product through recognizing the relationships between himself and the product in accordance with his knowledge and experience.</p>	Inference on the nature of the product
<p>How is it used? (usability) A user will examine the shape and the characteristics of structure of the product. Then, he will imagine the operation in his mind.</p>	Association of the operation
<p>How to operate it? (operability) A user will recognize the operating system through observing the parts that is operative.</p>	Recognition of the operating system
<p>How does it feel? (feeling) A user will feel mood or feelings of the product through senses.</p>	Impression of mood or feelings through senses
<p>Attraction, preference? (functionality, beauty etc.) A user will have his interests on the product through individual taste.</p>	Preference of the product through attraction

3. Goal and Methods

In the development of human products, the knowledge of cultural inclination in human perception should be utilized effectively in considering a user's way of thinking. In this study, the investigation on the user's tendency of the inference process within understanding the essence of the object was performed. The understanding for the relationship between human and object within understanding the essence of the object becomes a significant factor. As a result, the scope of our study focused on understanding a diverse tendency among different countries in inferring the relationship between human and object. As the method of research, an experimental task was developed to study the difference between the nationalities within the inference processes. Then the inference tendencies according to the characteristics of the subjects were examined. Finally the factors that influence inference tendencies were discussed.

4. Hypothesis

4.1 Inference Process Experiment

An investigation was performed in order to understand the user's thought patterns about the product's essence. Products which have not been commercialized were presented as stimulants to a user who was then questioned about the essence of the product. Figure 1 shows the answers to the question. The names of preexisting products (bench, digital camera, MP3 player) were used in defining the objects for products (a), (b) and (c) that have great outward similarities with preexisting products. Meanwhile, for the instance of product (d) that had less outward similarities with preexisting products, it was defined in a descriptive manner (a product used to collect used soap). From these answers, it was found that the user had the different thought patterns in inferring the product's essence in accordance to product's characteristics. The factor to occur the difference of inference process was understood in the following ways. The user recognizes the relationship among her and the product through knowledge and experiences to define the essence of the product. Therefore, there exists product (a), (b) and (c) that can be easily defined by comparing similarities with preexisting products. And there also exists product (d) that can be defined by connecting the essence with experiences.

■Question : What kind of product is this (inference)?

■participant : A Graduate School Student(Korean, female) majoring in Design with experiences in practical affairs



■Object Position		■Answer
(a)	(b)	(a) Bench(Chair)

(c)	(d)	(b) Digital Camera (c) MP3 Player (d) A product used to collect used soap
Reference : Product (c) is a portable scanner for the visually disabled (voice output)		

Figure. 1 Case of Inference Processes for the Essence Recognition of Products
(Product source: Works of the International Design Competition)

An Interesting experiment about Inference process was conducted by Norenzayan , A., Smith, E. ,Kim, B. J., & Nisbett, R. E(2002). They performed an experiment of reading the following two sentences and answering the question.

Question; *consider the following two deductive arguments. Is one more convincing than the other?*

1. *All birds have ulna arteries. Therefore, all eagles have ulna arteries.*
2. *All birds have ulna arteries. Therefore, all penguins have ulna arteries.*

The results of the experiment displayed that, in comparison to Americans, the Koreans concluded for the argument (1st) on the typical subject (eagle) to be more convincing. They interpreted that the Koreans had stronger tendency towards experiential knowledge rather than formal logic [1]. Present research focused on logical and experiential thought in inference processes. In other words, it was judged that investigating the inference processes according to the logical or experiential thought within inferring the relationship among product and humans would be possible. In the instance of logical inference, it was predicted for the relationship to be inferred focused around the essence of the indicated object and human. For the experiential inference, it was predicted for various relationships among product and humans based on the experiences to be inferred. Hence, the experiment contents enable to infer the relationship of the product and human through the logical or experiential thought was formulated. Figure 2 shows the 3kinds of stimuli for experiment. For the comparison of the inference tendencies, 3 different stimulants were selected. The first stimulus is composed of a uniform, soccer ball and an individual. The second stimulus is composed of a gun, hunting attire, a dead bird and an individual. The third stimulus is composed of business attire and an individual. Stimuli that were inclusive of expressions and movement were used to enable the inference of emotions. The cases of inference by logical thought were predicted as shown in Figure 2. In the case of the soccer player, it was predicted that inference would come from the relation towards the essence of the object pictured (Uniform and Soccer Ball) and human form (Gesture) through the logical thought.

Stimulus (Scene)	Stimulation Factor		<i>Contents inferred by Logical Thought</i>	
	object	Gesture, Expression	<i>Character</i>	<i>Situation</i>

01 	Uniform, Soccer Ball	Gesture	<i>Soccer Player</i>	<i>Soccer Player kicking a ball</i>
02 	Gun , Hunting Attire, Dead Bird	Gesture, Satisfied Expression	<i>Hunter</i>	<i>Satisfied hunter after catching a bird</i>
03 	Business Attire	Gesture, Lacking Expression	<i>Office Worker</i>	<i>Office worker feeling bad after becoming broke</i>

Figure 2. Prediction Case of the Inference Processes by Logical Thought

4.2 The Premise of Study: Cultural origin of human cognition

Richard E. Nisbett studied the cultural origins of human cognition. He surmised that the differences in human cognition between Asians and Europeans were due to the different ecological environments in ancient China and Greece. He presented 6 cultural factors that formed the human cognition of ancient China and Greece. Table 2 is the summary of his theory.

Table 2. The formation of human cognition between Asians and Europeans through cultural factors

Cultural factors	Formation of cognition processes in ancient China	Formation of cognition processes in ancient Greece
Ecology ↓	Low-level mountains and rivers (Suitable for agricultural development) ↓	Mountains that connect to the coastline (Suitable for hunting, shooting, stock-farming and trading) ↓
Economy ↓	Agriculture oriented – cooperative work (collaboration and harmony is important, interdependence and unity) ↓	Hunting, shooting, stock-farming and trade oriented – individual work (individualism and separatism) ↓

Social Structure ↓	Controlled by men in power (Social restriction) ↓	Autonomous lifestyles ↓
Attention ↓	Tendency of paying attention to the social situations ↓	Tendency towards individual thought and free debate ↓
Metaphysics ↓	Consider an object in the relationship and coherence as a whole ↓	Focus on an object itself and consider the common rules between the objects ↓
Epistemology ↓	Recognizing that grasping the relationship between a whole and a part is a very important method of learning knowledge ↓	Recognizing that separating a part from a whole is a very important method of learning knowledge ↓
<i>Cognitive Processes</i>	<i>Attention, perception and inference process developed through focusing on the relationship between objects</i>	<i>Development of categorizing objects and using applicable rules</i>

The humanities and social science scholars share Richard E. Nisbett’s view on the nature of thought. They were making extremely important claims about the nature of the world. First, that members of different cultures differ in their “metaphysic thought,” or fundamental beliefs about the nature of the world. Second, that the characteristic thought processes of different groups differ greatly. Third, that the thought processes are of a piece with beliefs about the nature of the world [2]. Table 3 is the summary of their opinions regarding the difference in cognition between the Asian and European.

Table 3. Differences in thought between Asian and European

View point	Asian	European
Social characteristics	Characteristics of interdependency and collective tendency	Characteristics of individualism and independency
Attention	1. See the world as a whole and vast 2. View any incident as matters that are related with many factors in a complicated manner	1. Separate an object from the whole and analyze it 2. Belief in the ability to control an object’s behavior by identifying common factors in objects.
<i>Thought</i>	1. <i>Holistic thought</i> 2. <i>Experiential thought</i> 3. <i>Relationship-oriented thought</i>	1. <i>Analytic thought</i> 2. <i>Logical thought</i> 3. <i>Attribute-oriented thought</i>

4.3 Hypothesis about Inference Process

This study focused on understanding a diverse tendency among different countries in inferring the relationship between humans and objects. Hypothesis of this study is based on the premise that Asians and Europeans have a different way of thought. Hence, it was predicted that Asians tend towards experiential thought and Europeans tend towards logical thought.

5. Experiment

5.1 Participants

Region, language and educational major were considered in the selection of the participants. British and Dutch participants were selected for Europeans. Both are situated in Western Europe and use the same Germanic

language. As for Asians, Japanese and Korean were selected. Both languages are related to the Altaic language and both countries are located in the same area of Eastern Asia. Among these subjects, design majors who are familiar with the relationship among products and human were selected (table 4).

Table 4. Characteristics of Participants

Cultural Area	Asian		European	
Region	East Asia		West Europe	
Language	Altaic Language Family		Germanic Language	
Nationality	Japanese	Korean	Dutch	British
University	TSUKUBA	KOOKMIN	TU-D, TU-E	RCA
Major	ID	ID	ID	IDE
No. of Persons	39	45	33	12
	21Female, 18Male	20Female, 25Male	15Female, 18Male	3Female, 9Male
	129			

5.2 Question

The following is the purpose, consideration viewpoint and question of the experiment. The Purpose is investigating inference tendency for relationships among objects and human. The consideration viewpoint is tendencies of logical thought and experiential thought in inferring relationship. The question is setup as follow; what does this scene bring to mind? Figure 3 shows a scene from the experiment. The project was presented on 1024-768 resolution screens.

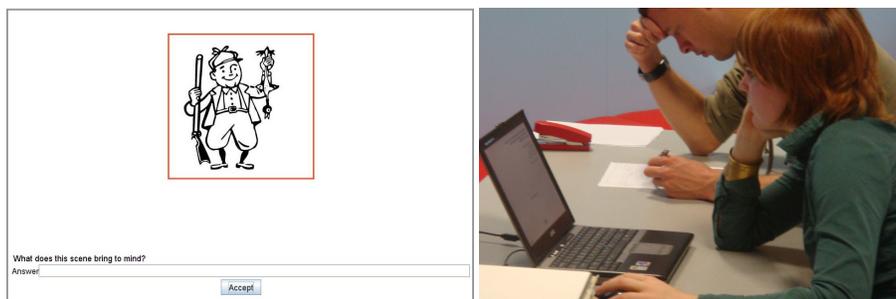


Figure.3 Experiment screen and scene

6. Verification

6.1 Experiment Results according to scenes

Scene 1

In comparison to scene 2 and 3, the differences of the inference tendency among Asians and Europeans were trifling. This scene is very familiar to subjects because that their countries encourage the sport of soccer. The majority of the subjects inferred on the Character and situations that could be objectively understood. For instance, soccer, soccer player and dribble were inferred for scene 1. For the instance of experiential inference, the majority of the inference was made on the experiential situations related to soccer such as the name of a famous soccer athlete or the famous soccer competition such as the World Cup.

Scene 2

The tendencies of the experiential inferences of Asians and Europeans differed. In comparison to the Europeans, the Asians had a more in-depth process of inference. Europeans inferred the experiential situations related to hunting such as films related to hunting, hunting experiences of their father and fairy tales related to hunting. The Dutch especially inferred a great amount of experiential stories like these. For Asians, the majority of the inferences were made on the moral and experienced situations similar and related to hunting such as fishing, old stories, nobility, environmental disruption and poachers. Koreans especially inferred a great amount of experiential stories like these.

Scene 3

The cultural inclination of the inference process appeared to be the most apparent. For the logical inference, the majority of the inference was made on the logical situations related money such as being broke and bankrupt. Europeans inferred the greater amount of logical situations. For the instances of experiential thinking, the majority of inferences were about the similar experiential situations related to the stimulus (scene), such as the suspect, party, loan advertisement, the weak and the dealer. Asians especially inferred a great amount of experiential situations like these.

6.2 Interpretation of the Experiential Inference

As a result of the experiment, the majority of the subjects inferred the character and situations that could be objectively understood. For instance, soccer, soccer player and dribble were inferred for scene 1, hunting and hunter were inferred for scene 2 and bankruptcy and penniless person are inferred for scene 3. Meanwhile, a considerable number of subjects inferred the character and situations which were difficult to be objectively understood. For instance, inferences with strong subjective tendency such as cruelty, farmer of the countryside, fishing and environmental disruption were inferred for scene 2. We evaluated such contents of inferences that were difficult to objectively explain as inferences made accordingly to the experiences and the values of the subjects. Figure 4 shows the evaluated results inferred accordingly to experiences or one’s values. The inferences corresponding to cruelty and environmental disruption within scene 2 were especially evaluated as instances of inference by the experiential values of the subjects.

Stimulus (Scene)	Stimulation Factor		<i>Contents inferred by experiences or one’s values</i>	
	Object	Gesture, Expression	<i>Characters</i>	<i>Situation</i>
01 	Uniform, Soccer Ball	Gesture	<i>Takahara, Ji-sung Park</i>	<i>Goal, when playing the goalkeeper</i>

<p>02</p> 	<p>Gun, Hunting Attire, Dead Bird</p>	<p>Gesture, Satisfied Expression</p>	<p><i>Countryside Farmer</i></p>	<p><i>Cruelty, Fishing, Environmental Disruption</i></p>
<p>03</p> 	<p>Business Attire, Trousers Pocket</p>	<p>Body Movement, Expression Lacking of</p>	<p><i>Needy Office Worker, Mr. Bean</i></p>	<p><i>Loan Advertisement, Japanese-English Dictionary</i></p>

Figure 4. Interpretation of the Inference Processes by experiential thought

6.3 Interpretation of the Inference Process

The experiment results for the 3 types of stimuli were analyzed. The analysis utilized the interpretation method of Figure 2 and Figure 4. Table 5 is a case of analysis on the logical inference and experiential inference. The inferred 6 facts about scene 2 (hunting, satisfaction, cruelty, farmer, fishing, environmental disruption) were used as samples of the analysis.

For (1) hunting, the subject takes notice of the action [catching] through the visible stimulation factors [gun and dead bird] from a logical thought viewpoint. For (2) satisfaction, the subject takes notice of the emotion [happiness] due to the catching of the bird through the visible stimulation factors [gun, dead bird and smile] from a logical thought viewpoint. The inference processes of both (1) and (2) were analyzed as inferring the actions and emotions that correspond logically based on the visible objects and expressions. In other words, these were logical inferences focused on the visible stimulation factors and therefore defined as the *logical inferences of visible stimulus*.

For (3) cruelty, the subject takes notice of the [piteous] emotions for the dead bird caused by the visible stimulation factors, [gun and dead bird]. For (4) countryside farmer, the subject takes notice of the experiential fact of [witnessing in the countryside] through the visible stimulation factors, [gun, dead bird and character].

The inference processes of both (3) and (4) were analyzed as inferring the emotions and facts that correspond to the individual experiences or one's values based on the visible objects. In other words, as instances of inferring the experiential facts through visible stimuli, it was defined as the *experiential inference of visible stimulus*.

For (5) fishing, the subject takes notice of the analogical experiential fact of [catching fish] through the analogized stimulus [Fishing Behavior]. For (6) environmental disruption, the subject takes notice of the analogical experiential fact of [extermination] through the analogized stimulus [catching behaviors]. The inference processes of both (5) and (6) were analyzed as inferring the experiential facts that correspond to the stimulants analogized by the visible objects. In other words, as an instance of inferring the experiential facts

through analogized stimuli, it was defined as the *experiential inference of Analogized stimulus*.

Table 5. 3kinds of Inference styles in the Inference Process

Inference Process			Inferred contents
Way of thought	Recognition of the stimulation factor	<i>Inference style</i>	
Logical thought	Visible stimulation factor	<i>Logical inference of visible stimulus</i>	Logical fact
	Gun, Dead bird	Behavior inference focused on visible stimulus	(1) Hunting (catching the bird with gun)
	Gun, Dead bird Smile	emotional inference focused on the visible stimulus	(2) Satisfaction (happy for catching bird)
Experiential thought I	Visible stimulation factor	<i>Experiential inference of visible stimulus</i>	Experiential Fact
	Gun, Dead bird	Inference focused on emotional experiences	(3) Cruelty (sympathy for the dead bird)
	Gun, Dead bird, Character	Inference focused on experiences	(4) Countryside Farmer (witnessing in the countryside)
Experiential thought II	Analogized stimulation factor	<i>Experiential inference of analogized stimulus</i>	Analogical experiential fact
	Fishing behavior	Inference focused on analogized Behavior	(5) Fishing (catching fish)
	Catching behavior	Inference focused on emotional experiences of Analogized Behavior	(6) Environmental disruption (extermination)

6.4 Analysis of Inference Tendency

For the verification of the hypothesis, the tendency of the inference processes according to region and nationalities were analyzed. The statistical method of *Analysis of Variance* was utilized for the comparison between regions and for the comparison among nationalities, the statistical method of *Student Test* were utilized. Table 6 shows the results of analyzing the tendencies for the inference style (logical thought, experiential thought I, experiential thought II). As a result of the comparison for the average of the number of answers by each thought, there were differences among the regions and also nationalities. In the case of scene 2, Dutch paid attention to experiential thought I more so than Japanese, while Koreans took notice of experiential thought II than the British. For scene 3, Europeans took notice of logical thought and Asians took notice of the experiential thought II. Table 7 is the explanation of Table 6.

Table 6. Inference tendency by the logical and experiential thought

Stimulus (Scene)	Tendency of the Inference Processes	
	Logical thought	Experiential thought
01 	A < E P = 0.33	I A > E P = 0.62
		II A > E P = 0.67
02 	A < E P = 0.24	I ① A < E P = 0.0041 ② JP < NLD P = 0.0492 KR < NLD P = 0.0611 JP < UK P = 0.0577 KR < UK P = 0.0691
		II A > E P < 0.0725 ③ KR > UK P = 0.0169 KR > NLD P = 0.0962
03 	④ A < E P = 0.004 ⑤ KR < NLD P = 0.035 ⑥ JP < NLD P = 0.007	I A > E P < 0.70
		II ⑦ A > E P = 0.0109 ⑧ KR > NLD P = 0.0374 ⑨ JP > NLD P = 0.0522
A=Asians, E= Europeans KR=Korea, JP=Japan, NLD=Nederland, UK=United Kingdoms		

Table 7. Analysis of Inference Tendency

Stimulus (Scene)	thought	Significant Item	Inference Tendency
2	Experiential	①	Europeans had the greater tendency of experiential thought I in comparison to the Asians
		②	The Dutch had greater tendency of experiential thought I in comparison to the Japanese.
		③	Koreans had greater tendency of experiential thought II in comparison to the Dutch.
3	Logical	④	Europeans had greater tendency of logical thought in comparison to the Asians
		⑤	The Dutch had greater tendency of logical thought in comparison to the Koreans.
		⑥	The Dutch had greater tendency of logical thought in comparison to the Japanese.
	Experiential	⑦	Asians had greater tendency of the experiential thought II in comparison to the Europeans
		⑧	Koreans had greater tendency of experiential thought II in comparison to the Dutch.
		⑨	Japanese had greater tendency of experiential thought II in comparison to the Dutch.

6.5 Verification of Hypothesis

Whether or not the inference tendency among Asians and Europeans has a correspondent relationship with experiential thought versus logical thought was verified. In the case of scene 3, Dutch and British subjects had stronger tendencies towards logical thought than the Japanese and Korean subjects while Asians tended to have more experiential thought. In other words, the inference tendencies of Asians and Europeans appeared as experiential thought vs. logical thought in scene 3.

7. Discussion

7.1 Similar Psychological Phenomenon

Table 8 shows the perspective and the depth of inference in accordance to the way of thinking. The depth of inference was concluded in 3 phases according to the relative importance of logical or experiential thought. By inquiring into the contents inferred according to the way of thought, for the instance of logical thought, as the understanding for the inferred contents to be easily taken and the depth of the inference was considered to be shallow. As for the instance of experiential thought, the understanding of the inferred contents was deemed difficult because of the subjective perspective. Hence, it was concluded for the depth of inference to be deep. Next, the differences of the inference processes in the subjects were investigated through the psychological phenomenon. Table 9 shows the similar psychological phenomenon in corresponding to the inference style according to the phases of inference.

Table 8. Depth of Inference according to Logical Thought and Experiential Thought

Thought	Inferred Contents	perspective	Understanding	Depth of Inference	Phase of Inference
Logical	Hunting, Satisfaction	Objective	Easy	Shallow	1
Experiential	Cruelty, Countryside Farmer	Objective, Subjective	Middle	Middle	2
	Fishing, Environmental Disruption	Subjective	Difficult	Deep	3

Table 9. Similar Psychological Phenomenon per Inference Style

Phases of Inference	a. Inference style b. Application to experiment c. Instances	Similar Psychological Phenomenon
1	a. <i>Logical inference of visible stimulus</i> b. Infer situations or characters that correspond logically or with visible stimulus. c. For the instance of scene 1, this applies to inferring such matters as soccer or soccer competitions.	<i>Reasoning</i> ; Opinions that is thought to be true or probable [3].
2	a. <i>Experiential inference of visible stimulus</i> b. Infer matters related to experiences or one's values through visible stimulus. c. For the instance of scene 3, this applies to inferring such matters as poor office worker or a penniless gambler.	<i>Analogy</i> ; the process of comparing one thing with another thing that has similar features in order to explain it [4].

3	<p>a. <i>Experiential inference of analogized stimulus</i></p> <p>b. Infer the matters related to experiences or one's values through analogized stimulus.</p> <p>c. For the instance of scene 2, this applies to inferring such matters as fishing, environmental disruption and souvenir picture-taking.</p>	<p><i>Similar Joint; Process of awakening the contents of awareness or other awareness with experiences of similarity or experiences [5].</i></p>
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7.2 Comparison with a Precedent Study

Table 15 shows the contents of the comparison between Norenzayan's experiment results and this experiment. In the inference process of the subjects from 4 nations (Japan, Korea, Netherlands and U.K.), we found the similar results as in the case of Koreans and Americans in Norenzayan's experiment.

Table 10. Comparison of the Results with the Precedent Research in relation to Inference

Experimenter	Norenzayan , A.	InChan Park
Field of Study	Cultural Psychology	Design, <i>Kansei</i> Science
Purpose of Experiment	Comparison of Inference style between Korean and American	Comparison of Inference style between Korean Japanese, Dutch and British
Contents of Experiment	Experiment of choosing what is more convincing among two deductive arguments.	Experiment of inferring on the relationship among objects and human
Consideration Viewpoint	Logical thought vs. Experiential thought	Logical thought vs. Experiential thought
Stimulus Medium	Writing	Image
Result	In comparison to Americans, the Koreans concluded for the argument on the typical subject to be more convincing.	Europeans inferred more the character and situations that could be objectively understood, while the Asians inferred more the character and situations that were difficult to objectively explain.
Interpretation	Interpreted for Koreans to have greater tendency of experiential viewpoint in comparison to Americans	Interpreted for Asians to have greater tendency of <i>Experiential inference of analogical stimulus</i> in comparison to Europeans.

7.3 Cultural Factors Influencing the Inference Process

(1) Languages

Japanese and Korean belong to the Altaic language family which has word order with SOV (subject-object-verb) [6] [7]. Meanwhile, Dutch and English belong to the European language family, and Dutch has word order with SVOV (subject-auxiliary verb-object-verb) [8]. English has word order with SVO (subject-verb-object) [9]. According to word order, Japanese and Korean emphasis more on verbs and English emphasize more on nouns, and Dutch emphasize both of them. This linguistic characteristic could be a factor which connects objects with verbs or nouns. When inferring the relationship between objects and human to verbs, many experiential situations related to actions could be associated. Meanwhile, when inferring the relationship between objects and human to nouns, the attributions between objects and human could be associated logically. Therefore, it is presumed that it has influenced on experientially inferring the scenes or influenced on the thought of logically inferring the scenes.

(2) Regions, Economics and Social structure

The regional ecology forms economy and social structure which correspond to the environmental condition. And the characteristics of the society have an effect on creating the peculiar way of thought in the region (table 2). In the comparison of social structure, both Japan and Korea had similar status system (table 11). People in those countries tend to pay more attention to their social situation in order to be harmonized with men in power. And the social circumstance allows them to have more independent thought and experiential thought (table 2, 3). Meanwhile, the trade in Japan, Netherlands and U.K. has been developed. People in Japan, Netherlands and U.K. tend to have more individual and independent characteristics through trade. And the economic circumstance allows them to have more individual and subjective thought and to have logical thought (table 2, 3). With those presumptions, it is possible that Japanese have both experiential thought and logical thought (table 11).

Table 11. Comparison of regions, economics and social structure according to nationality

	Region	Economy	Social structure
Japan	An Island country located in eastern Asia (Temperate climate)	Insufficiency in underground resources, <i>developed trade</i> , agriculture	<i>A strict status system (traditional four classes - nobles, farmers, artisans, and merchants)</i> [10]
Korea	End of the eastern part of the Asia continent (continental climate)	Insufficiency in underground resources, developed agriculture	<i>A strict status system (traditional four classes - nobles, farmers, artisans, and merchants)</i> [11]
Netherlands	Northwest in Europe (oceanic climate)	Insufficiency in underground resources, <i>developed trade</i> and stockbreeding industry	The aristocracy [12]
England	An Island country located in Northwest in Europe (oceanic climate)	Underground resources(coal, iron), <i>developed trade</i> , the mining industry	The aristocracy [13] [14]

7.4 Application of Inference Tendency

The inference tendencies (reasoning, analogy, similar joint) of users would be useful for the process that makes the essence of the product a figure. In other words, designers can estimate the weighting value of *logical images* (the image which follows a function) and *experiential images* (the image which follows experience) by a tendency of the inference. Recently, high technology was applied to a product, so that the essence of the product came to be hidden, and the cognitive stress of users increased. The cognitive stress of users may be reduced by utilizing inference tendency.

8. Conclusions

The purpose of this study is to investigate the *Kasei* (sensibility) of participants from different nationalities through the tendency of inference processes, and then utilize the different tendencies to develop the products. The understanding for the relationship between human and object within understanding the essence of the object becomes a significant factor. As a result, the scope of our study focused on understanding a diverse tendency among different countries in inferring the relationship between humans and objects. Hence, the tendency of the inference processes for the relationship between objects and human were examined. As a result, in comparison to Asians, Europeans had the stronger tendency of logical inference (reasoning) and Asians had strong tendency of experiential inference (similar joint) in comparison to the Europeans. Meanwhile, it was found that a subject used the different thought patterns in inferring the stimulus's essence in accordance to stimulus's characteristic.

In the instance of familiar stimulus (scene), there existed strong tendencies of logical inference for the majority of the subjects with no relation to their nationalities. This tendency also showed in the precedent investigation. In inferring the product's essence, the names of preexisting products were used in defining the objects for products that have great outward similarities with preexisting products. As the next step, for defining of inference processes, similar psychological phenomenon was considered. The results showed for similarities with reasoning in logical inferences. And experiential inferences had similarities with analogies or similar joint. And finally, the similarity of language, area, economy and social structure was discussed as the factors that influence their inference processes. As the main cause, the language, social structure and economic circumstances were considered. In the development of consumer products, the knowledge of cultural inclination in human perception should be utilized effectively in considering a user's way of thinking. The tendency of the inference processes for the relationship among objects and human is especially anticipated for its usage in considering the essence of the product.

9. Acknowledgment

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