Positivity creation and its effect on idea patentability: a case of a new faucet invention

Chi-Hua Wu^{1,*}, and Ding-Bang Luh¹

¹Dpt. Industrial Design, National Cheng Kung University, Tainan, Taiwan

Abstract. Among criteria of patentability, concern of novelty is taking priority in comparing to non-obviousness and industrial applicability. However, novelty is difficult to be demonstrated before conducting a thorough research of the prior art after a proposal is been designed, which is time-consuming. Under such circumstance, 1) Positive creativity is applied in this research to enhance idea patentability by positively building it during a design process. 2) Start with elaborating idea of positive creativity, its conceptual tool is applied in this research to design a new faucet, and do actual patent application. 3) The result of patents obtained in several countries, including invention (Taiwan) and design patents (Taiwan, U.S., China), indicates that positive creativity is capable of producing patentable ideas. 4) Faucet manufacturing is a traditional industry within which theoretically more difficult to get invention patents. This further indicates that positive creativity (through positivity creation) should have similar effect in providing patentable ideas in highly-innovative industries.

1 Introduction

According to patent examining procedure announced in Taiwan and U.S., patentability consist of novelty, non-obviousness, and industrial applicability [1,2]. Novelty is taking priority in comparing to non-obviousness and industrial applicability, but it is difficult to be demonstrated before idea is developed into more feasible design proposal and conducted thorough research of prior art; the whole process requires a lot of efforts and could be time-consuming.

On the other hand, current creativity methods emphasis the role of divergent thinking and its effect on generating original business ideas which is the first step of the opportunity identification process [3], yet provide little guidance in developing non-obviousness and industrial applicability of an idea, not to mention making it patentable.

Considering the fundamental role of patent for companies, this article first revisits creativity researches; subsequently, positive creativity and its conceptual tool is introduced and articulated as new way of generating patentable ideas via actions of Positivity Creation. Case of a new faucet design that is actually applied for and patented is provided as demonstration.

2 Positive creativity and positivity creation

Most current researches illustrated innovation spaces via types of creative outcome by which they believe creativity processes can be largely represented. However,

as creativity are referred to as ‘(ethically) positive’ in literatures, they tend to ignore the dynamic essence of creativity as a kind of adaptability [4]. A second issue regarding current creativity typology is that they tend to presume creativity as ‘positive’; although efforts were made in describing ‘creativity with negative intentions’ [5], it is not pragmatic in most situations where innovations are expected.

According to a parsimonious view of creativity, creativity and problem-solving should not be equated, while ‘a person probably generates an idea and then react to it based on value. If the idea has some potential relative to the values, the person may explore that line of thought further. The person will not invest effort to do so unless it appears to be a valuable line of thought [6].’ More specifically, creativity requires intent to achieve some goal; it is the intent and goal that were judged as positive or negative. The dynamic essence of creativity resides not in the creative outcome but in variation of outcomes, whereas properties of variation are yet to be determined.

2.1 Positive creativity

Positive creativity, as a philosophical thought of design, laid its foundation on innovation space illustrated by Creativity Mathematics [7]; as shown in Figure 1, innovation outcomes are divided into ‘neutral solution (0)’, ‘negative solution (-X)’ and ‘positive solution (X)’ that focuses on ‘creating wishes and generating needs’. An imaginative mirror has been introduced as conceptual tool for visualization of positive creativity; philosophical

* Corresponding author: wu33000@gmail.com

thinking of Tai Chi in Taoism is introduced to makes the imaginative mirror function [8].

Fig. 1. Innovation spaces in positive creativity [8]. The mirroring function leads to wishful ideas that are not likely to be achieved by negative creativity. Feasibility is then built after ideas are assessed and selected.

Variation could only be observed through comparison; as motivation for comparing often stems from discontents toward current situation. Positive creativity and its mirroring function provides a way of generating alternative situations which take form of attribute sets. Comparisons are then made possible between original and new attribute sets before developing or testing idea feasibility as it is time-consuming.

2.2 Positivity creation as variations through positive creativity

Positive creativity can be viewed as an oriental conception of creativity that focuses more on the authenticity of the discovery process than the output of innovative products [9], and, like ancient Taoist and Confucian philosophers, ordinary modern Asians believe that things are constantly changing [10]. In this vein, ‘state of existence (or presenting)’ of individual attribute in attribute sets is brought into focus, as variations made by main actions of ‘bring (attribute) into existence’ in design process can be seen as Positivity Creation, in contrast to elimination, replacement or maintained as shown in Figure 2.

Original Attribute Set	Actions	New Attribute Set
	Positivity Creation	Attribute 0
Attribute 1	Elimination	
Attribute 2(a)	Replacement	Attribute 2(c)
Attribute 2(b)	Maintained	Attribute 2(b)
Attribute 3	-	Attribute 3
Attribute 4	-	Attribute 4
Attribute 5	-	Attribute 5

Fig. 2. Actions of positivity creation, elimination, replacement and maintained in design processes.

Consequently, there is a potential effect on enhancement on patentability with ideas generated through positive creativity and actions of positivity creation, as mirroring function has provided means in pursuing ideas that is non-obvious, selected idea would be develop into feasible proposal and made industrial applicable, and it is intuitively that new attributes lead to novelty.

3 Case of a new faucet invention

In this research, a new faucet design has been adopted as a case of positivity creation; it is designed and won Red dot concept award in 2011 [11]. Although constructions of positive creativity theory were in progress, its core ideas and mirroring function had already been developed and put to trial as early as 2010, while evolving constantly; on that account, newer formats in positive creativity process are used in this article to retrospectively describe the design itself and addressed design issues. The process can be simply divided into two stages as followed.

3.1. Mirroring customer journey (ordinary to ideal), building idea novelty.

An ordinary customer journey was retrieved from current faucets (both manual and automatic). Main problem and question in each step are then identified. Note that the main problem varies with different operators while it reflects underlying individual perspective towards value. Problem-free steps are then possible while some could be considered as rigid or mandatory steps for given activity.

Through mirroring function, main problems and questions lead to better situations in each customer journey steps, which aggregated into an ideal customer journey as shown in Table 1.

Table 1. Customer journey using traditional faucet, then turn into ideal customer journey with mirroring.

Ordinary Customer Journey	Ideal Customer Journey
Turn on the Faucet (Difficult to find the trigger)	Turn on the Faucet (Easy/No need to find the trigger)
Washing hands	Washing hands
Washing the handle (Wasting water and effort)	Do not wash the handle (Do not waste water and effort)
Turn off the faucet	Turn off the faucet

3.2 Looking for means in realizing ideal customer journey, building idea feasibility.

The ideal customer journey could be realized using different technologies and mechanical design, which can be translated into multiple ideas that correspond with different attribute sets. Theoretically speaking, every attribute set is more ideal than original one.

An idea (one attribute set) was then selected while its underlying actions were also identified in Table 2. Additional methods for idea selection can also be introduced while competition strategy of a company should be taken into account in more business settings.

Table 2. Attributes that users faced during original and new customer journeys.

Original Attribute Set	New Attribute Set	Actions
Trigger (Input) Water outlet (Output)	Trigger as Water outlet	Positivity Creation
Water outlet	Water outlet	Maintained
Trigger (Input) Water outlet (Output)	-	Elimination
Trigger (Input) Water outlet (Output)	Trigger as Water outlet	Positivity Creation

The selected idea was then turned into a design proposal with detailed design presentation, as shown in figure 3, and submitted for Red dot design competition.

Fig. 3. Design presentation for selected idea

After the idea been awarded, a series of patents application were send with help from intellectual property departments; as a result, four patents were obtained internationally, including invention (Taiwan) and design patents (Taiwan, U.S., China) [12, 13, 14, 15].

4 Discussion and conclusions

On theory level, positive creativity is in line with a service centric thought which consider physical products as embodiments of service processes that promised and facilitates users in achieving certain goals, more specifically for goals that enhance users' subjective well-being. As subjective well-beings may never be truly understood as from Taoism perspective, research into and elaborates on situations and phenomena that constitute customer journey become a reasonable way of design, as it is done in positive creativity.

For positive creativity per se, it represents a possibility of harmony between users and artefacts; as indicated above that oriental creativity stressed the authenticity of discovery process, harmony presents more in actions of pursuing, rather than a still status which is difficult to persist in a more dynamic era as we are in now. Results of patents obtained in this case provide evidence for a way of development for companies to grow into future.

Faucet manufacturing, in this case, is a traditional industry within which theoretically more difficult to get invention patents as many works were accomplished and confining creativity simultaneously, which is not uncommon for most companies that were considered to be manufacturing industries or in product domains. This provides opportunity in amplifying impact of positive creativity while further indicates that positive creativity (through positivity creation) should have similar effect in providing patentable ideas in highly-innovative industries that are less confined and in essence more service-centric.

To summarize, positive creativity demonstrate a way of producing patentable ideas by sequentially develop idea novelty, non-obviousness and industrial applicability; it can be applied on product design and increase company competitiveness by potential patents, while its application in service industries are also foreseeable after intellectual property laws on service processes become more sophisticated.

This research is partially supported by Taiwanese Ministry of Science and Technology (project number 104-2221-E-006 -151 -MY2). Authors are also grateful toward Ms. Wang, Li-Hsin for assisted in design presentation and National Cheng Kung University for support in patent applications.

References

1. 國家衛生研究院電子報：如何避免自己的研究成果成為專利申請的前案[How to prevent one's research work from constituting prior art in patent application]. Available online: http://enews.nhri.org.tw/enews_list_new2_more.php?volume_idx=444&showx=showarticle&article_idx=8932 (Accessed August 7 2016).
2. 經濟部智慧財產局：現行專利審查基準彙編，第三章專利要件[Essentials of concurrent pattern laws in Taiwan, Ch3. Patentability]. Available online: <https://www.tipo.gov.tw/ct.asp?xItem=422895&ctNode=6680&mp=1> (Accessed August 7 2016).
3. M. M. Gielnik, M. Frese, J. M. Graf, & A. Kampschulte, Creativity in the opportunity identification process and the moderating effect of diversity of information. *J BUS VENTURING*, **27**(5), 559-576 (2012)
4. M. A. Runco, *Creativity: Theories and Themes: Research, Development, and Practice* (Elsevier Science, 2014)
5. K. James, K. Clark, & R. Cropanzano, Positive and Negative Creativity in Groups, Institutions, and

- Organizations: A Model and Theoretical Extension. CREATIVITY RES J, **12**(3), 211-226 (1999)
6. M.A. Runco, Creativity has no dark side. In D. Cropley, A. Cropley, J. C. Kaufman, & M. A. Runco (Eds.), *The dark side of creativity*, 15-32 (Cambridge University Press, 2010)
 7. 陸定邦, 正創造：鏡子理論[Positive Creativity] Tainan, Taiwan (De wind International, 2014)
 8. D. B. Luh, "Design Management for Positive Creativity", *Innovation, Communication and Engineering* – Meen, Prior & Lam (Eds) © 2014 Taylor & Francis Group, London, pp.651-654 (2014)
 9. T. I. Lubart, & A. Georgsdottir, Creativity: Developmental and Cross-Cultural Issues. In S. Lau, A. N. N. Hui, & G. Y. C. Ng (Eds.), *Creativity: When East meets West*, 23-54 (World Scientific, 2004)
 10. R. Nisbett, *The Geography of Thought*, (Nicholas Brealey Publishing, 2011)
 11. CLEAN V/S GREEN TAP. Available online: <http://www.yankodesign.com/2012/06/13/clean-vs-green-tap/> (Accessed August 11st 2016)
 12. 陸定邦; 吳啟華; 王俐心. 水龍頭[FAUCET]. I 443275 (Taiwan), (1st Jul. 2014)
 13. 陸定邦; 吳啟華; 王俐心. 水龍頭[FAUCET]. ZL 2012 3 0212645.3 (China), (7th Nov. 2012)
 14. D. B. Luh, C. H. Wu, & L. H. Wang, FAUCET. US D683,433 S (United States), (28th May 2013)
 15. 陸定邦; 吳啟華. 水龍頭[FAUCET]. M 522285 (Taiwan), (21st May 2016)