A Perspective Study of the Theological Aesthetics considered in Convergency Engineering Technology

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Abstract   In this paper, we investigates the basis of the theological aesthetics and the Bible as the standard of human value standards on the basis of this theological aesthetics. In another approach, unique designs of plants and animals were described in terms of aesthetics. These descriptions were then employed to design and create things, recognised for their beauty as well as practicable applications. From this point of view, we can deduce the relevance of God, the created world, and theological aesthetics. We review the implications of human engineering and the art of convergence and engineering theology. We discussed why the need for a tool of theological aesthetics in convergence engineering is important. We will need more discussion in terms of technological progress in which theological aesthetics is embodied in order to develop more healthy, moral and ethical convergent engineering skills in our society and to provide a better and healthier life for mankind.

• Key Words : Theology, Aesthetics, Convergence education, ICT, Engineering technology

요 약   본 논문에서는 신학적미학이 무엇인지 그리고 이 신학적 미학의 기준으로 인간의 가치 기준의 표준이 되는 성경으로부터 근거를 조사한다. 다른 관점에서 동물과 식물의 유일한 설계가 미학이라는 견지에서 살펴보았다. 우리가 고안하고 창조할 수 있는 또다른 다양한 아름다움을 가지는 적용에 대해서도 살펴보았다. 그런데 이러한 설명은 사물을 설계하고 만들기 위해 적용되고 실용가능한 적용 뿐 아니라 아름다움을 위해서도 인지된다. 이런 관점으로부터 우리는 신과 창조세계 그리고 신학적 미학의 관련성을 유추할 수 있다. 우리는 인간이 만든 그리고 만들 융합공학기술과 신학적 미학이라는 함의에 대해 살펴보았다. 왜 융합공학기술에 신학적 미학이라는 도구가 필요한지 그리고 중요한지 라는 문제를 논의하였다. 우리는 이 사회에 보다 건강하고 도덕적이며 윤리적인 융합공학기술을 개발하여, 인류에게 보다 가치있고 건강한 미래의 삶을 제공하기 위해, 신학적 미학이 함의된 기술 진보라는 측면에서 더 많은 논의가 필요할 것으로 사료된다.

• 주제어 : 신학, 미학, 융합교육, 정보통신기술, 공학기술

1. Introduction

Beauty is noble. Understanding the beauty of God is more noble and helps us to know where the starting line of human personality and character is, because God is the Creator of man. Therefore, the creatures created by God are human and the created world is beautiful and noble. What about the work created by man, God's creation? Indeed, the work and technology created by humans is beautiful. Human technology can be beneficial to man or can be destructive. How will various developments such as nanotechnology, biotechnology, and biomimetic technology, which are currently being developed, bring benefits to human beings? What can we expect from a human being whose morality, ethics, sociality, and values are not formed properly? Are the many software and algorithms that we have developed so far that really benefit our lives or cause destruction to them? In conclusion, we need to deal with moral character, values and social relations such as morality and ethics, which form the basis of human beings rather than creativity, before we deal with the subject of human technology. The starting point of fusion education for human is moral character education such as human values, world view, and ethics that should be prioritized[1-6]. From this point of view, this paper emphasizes that education and technology development for convergence engineering technology must be based on the 'frame' of the theological aesthetics, that is, the basic worldview[7-9]. Developers who develop hardware, software, and algorithms will be able to create the right software and algorithms based on the right personality and worldview. In this paper, we present various researches and perspectives on the aesthetics that have been made so far, and what kinds of software and algorithms developed by computer engineers and developers should be developed based on necessity, and importance, We will discuss them on the basis of the Bible in discussing what moral and ethical consequences this technology will bring to our society. Obviously, this discussion should be done more than it

is now. So far, if the main argument of engineers, economists, and managers is to prioritize the pursuit of economic profit, convenience of life or protection of the environment, then how can these technologies fundamentally improve the quality of life for us? The composition of this paper first discusses the view of the theological aesthetics and the creation of the world in Chapter 2. The main discussion of theological aesthetics at this time will be based on the Bible as the standard of human personality and value system. In Chapter 4, we will look at convergent engineering techniques that embody theological aesthetics. In Chapter 5 several conclusions are drawn.

2. Related Research

Shin Jungwon deals with the convergence of arts[8], what is the new aesthetic experience that is witnessed in the creation and appreciation of new media art. Yoon Youngdoo and Choi Eunyoung have studied the aesthetic acceptance of digital images[9]. This study emphasizes that digital images such as movies, advertisements, and games render the realistic reproducibility of images within frame units, so that the aesthetic characteristics of film images on a narrative should be approached and differentiated. In other words, the aesthetic point of view of representation in painting is required rather than realism in narrative. On the other hand, it is pointed out that the side effects of focusing on the stimulus, shock, and surprise created by the new image manipulation techniques are weakening the narrative elements and lessons of the original scenarios. Cheon Heahyun investigates the integrated reaction of audience members who experience animation images and images using technology equipment from a media aesthetic perspective[10]. This approach is changing from an appreciation or an interpretation level of animation to a participation level by sensual awareness. This understanding is ultimately derived from the interaction between the image and the audience. The main point is

to focus on the viewpoint of media aesthetics when an integrated approach is made between technical digital media such as image and numerical rendering, modularity, variability, and automation. Jeong Heon has been focusing on the characteristics of digital cinema aesthetics against a postmodern background[11]. In this study, digital cinema aesthetics goes beyond the limits of postmodernism. It also says that the aesthetics of subject intervention and interactivity in digital composite images are distinct from postmodern's histories and hyperrealism. Furthermore, the aesthetics of emerging digital technology originate from the restructuring of the interactive relationship between motion picture films and digital virtuality, physical reality and images, writers and readers, texts and participants. Although the nature of digital virtual space takes place in the virtual space of a computer, it reflects realistic indicators and imaginative illusions combined, but still reflects the value system of reality. Digital cinema is said to enhance participants' visual realism, immersive aesthetics, realistic indicators and image symbolism. And digital cinema is an embodied simulation at the same time in which physical and mental, object and subject, reality and imagination occur simultaneously. From Jeong Heon 's work, we were able to understand the characteristics of digital virtual space, virtuality, and the aesthetics of digital technology. Oh Junho's work is interesting[12]. We are interested in what aesthetic characteristics live coding of algorithms, which are digital codes, have. Live coding has aesthetic, algebraic, and geometric properties. Here, the algebraic characteristic is applied to the sequential concept of time, which focuses on probability, linear function, periodic function, feedback, and set theory, and geometric characteristic is a visual structure applied to the concept. However, this mathematical characteristic also has the property of aesthetics that emphasizes contingency such as improvisation which is non-deterministic and unintelligent in music. However, geometric characteristics are concerned with the spatial arrangement of visual elements and focus on intuitive understanding. Jeong Heon[13] argues that algorithms are a combination of logic and control that are linked to behavior beyond pure logic concepts and have realism. We looked at some aspects of the study of aesthetics[14-15]. Based on this understanding, I would like to present another viewpoint of theological aesthetics in engineering science and technology. I think the discussion of theological aesthetics in this convergence engineering technique is more important than anything else. This is because all software and algorithms developed by humans are developed in a way that reflects the moral personality, values, and worldview of the person who developed it.

3. Theological Aesthetics & Created World

3.1 God and Theological Aesthetics

We first define theological aesthetics and concept of aesthetic theology. The theological aesthetic is to gain insight into the theological possibilities God reveals from aesthetic dimensions such as emotion, imagination, beauty, and art. Aesthetic theology, on the other hand, is a study of how a theme such as God, religion, and theology can use aesthetic elements or styles. Therefore, this study focused on the theological aesthetics. Richard Villa Desser says that theological aesthetics include both narrative and metaphorical approaches and metaphysical approaches to define theological aesthetics. This includes both interpreting theology itself and approaching God, faith, and art, both religious and theological, that are the objects of sensuous perception or theology. This paper focuses on theological aesthetics. It refers to God's attributes. God in Christianity is God of truth, good, and beauty. The beauty here is connected with the glory of God(In that day the LORD of hosts will become a beautiful crown and a glorious diadem to the remnant of His people. Isaiah28:5). The glory of God in the Old Testament is

Kabo(כבוד). However, this glory refers to a majesty(ה
דר), radiance(הוד, God comes from Teman, And the Holy One from Mount Paran. Selah. His splendor covers the heavens, And the earth is full of His praise. Habakkuk3:3), and beauty(צבי, on that day I swore to them, to bring them out from the land of Egypt into a land that I had selected for them, flowing with milk and honey, which is the glory of all lands. Ezekiel 20:6).

3.2 Created world and Beauty

When we first hope that our mind will discover beauty, we will be able to discover and contemplate beauty from the surroundings with this mind. Furthermore, when we look at the beauty of the world as a creation by God, we pay attention to the creator's mind who made it. In other words, we can discover the beauty of God exposed to the world of creation. Therefore, this created world expresses God's presence(The heavens are telling of the glory of God; And their expanse is declaring the work of His hands. Psalms19:1). In the New Testament, beauty can be found in Jesus Christ. Jesus Christ is the image of God (And He is the image of the invisible God, the first-born of all creation. Colossians1:15), the glory of God's glory and the image of the body(And He is the radiance of His glory and the exact representation of His nature, and upholds all things by the word of His power. When He had made purification of sins, He sat down at the right hand of the Majesty on high. Hebrews1:3). And the honor of the Father's Only Begotten.(And the Word became flesh, and dwelt among us, and we beheld His glory, glory as of the only begotten from the Father, full of grace and truth. John1:14). But this beauty is beauty that harmoniously integrates truth and good together. It also summarizes the command.

1) The glory of God and the light in the created world (And God saw that the light was good; and God separated the light from the darkness. Genesis1:4; and let them be for lights in the expanse of the heavens to give light on the earth "; and it was so. Genesis1:16). And this light (sun and moon) was good to God. It is recorded as beautiful(and to govern the day and the night, and to separate the light from the darkness; and God saw that it was good. Genesis1:18).

2) Design: The beauty of the form that animals and plants have. The human form expresses God's presence(And Micaiah said, "Therefore, hear the word of the LORD. I saw the LORD sitting on His throne, and all the host of heaven standing by Him on His right and on His left. 1Kings22:19). Human character comes from God's character.(Then God said, "Let Us make man in Our image, according to Our likeness; and let them rule over the fish of the sea and over the birds of the sky and over the cattle and over all the earth, and over every creeping thing that creeps on the earth. Genesis1:26). The Bible expresses the beauty of vegetables and plants.(And the earth brought forth vegetation, plants yielding seed after their kind, and trees bearing fruit, with seed in them, after their kind; and God saw that it was good. Genesis1:12).

3) Function: Beauty of specific functions of plants and animals. According to the Biblical texts, plants and animals are created at God's command, with the inherent function in the gene of the plant itself (Then God said, "Let the earth sprout vegetation, plants yielding seed, [and] fruit trees bearing fruit after their kind, with seed in them, on the earth"; and it was so. And the earth brought forth vegetation, plants yielding seed after their kind, and trees bearing fruit, with seed in them, after their kind; and God saw that it was good. Genesis1:11,12). Therefore, if a plant or an animal is created and activated with its inherent function inherent in genetic information, it is itself beautiful. It is a beautiful thing to follow this cycle that is seeded and fruited with the shape made by the Creator. However, as Wladyslaw Tatarkiewicz [13] says, fitness is to allow objects (animals, plants) to act according to their own functions inherent in genetic information, which must be maintained between the Creator and the Creation world. But because of human corruption, this

mutual conformity between the Creator and the Created world is broken. This sometimes leads to the problem that an object can act as a function that deviates or destroys its own function by itself. Therefore, sometimes design and/or function distortion may occur in the design of an object, so it must be corrected or corrected. Therefore, designers need to calibrate the design process to reflect this theological aesthetic perspective when designing objects. It is also necessary for the designer to be able to contemplate the inherent beauty that God originally granted to His creation and creatures. So now we want to discuss software technology that considers theological aesthetics. When creatures faithfully carry out their inherent functions conferred upon them by the Creator, we can discover the inherent beauty of the created world. The created world offers many ideas that can be applied to a wide variety of fields. The following table provides examples of useful applications of the unique functions of creatures (animals, plants). The foot of the mussel has a structure in which the soft part and the stiff part are combined at an exquisite ratio. In table 1, cuttlefish disguised themselves by changing their body color. Cuttlefish sends a signal from the brain to shrink the muscles, and as the pouch surrounded by the muscles grows, the color of the inside spreads widely. The color and pattern of the cuttlefish quickly changes. Cuttlefish provides ideas for clothes that change quickly in fashion.

〈Table 1〉 Comparison of biological function and application case

Biology	Biological function	application case
Mussel	foot of mussel	surgical tissue adhesive
Cuttlefish	tissue	artificial tissue
Ant	neck	robot
Clamshell	shell	display
Toothy plants	hooks	hooks
Bat	tiny muscle	flight
Bee	collision avoidance	automatic steering system

The neck of the ant is heavily loaded with a very fine combination of hard and soft tissue. This structure

provides a good idea for robot design. The silver ants (Cataglyphis bombycina) can survive high temperatures, with silver antler structures having a structure that reflects solar radiation and a structure that emits internal radiation heat. We can use this idea to research special coatings that lower the temperature. When we shine a light on a clam shell, a blue line appears and disappears as it darkens. We can apply this observation and the underlying materials to make a bright display without illumination by using the brightness principle of the clam shell. Toothy plants attach seeds with hooks to animals and move them. However, researchers have come up with ideas using these hooks for transport purpose. Bats fine-tune using muscles well. The bat uses a network of thin muscles to control the hardness and shape of the wing's skin. This provides new insights into the aerodynamic fine tuning of natural and artificial wings.

4. Convergence Engineering Technology with Theological Aesthetics

4.1 Convergence engineering technology design

The most beautiful software for convergence services in the world is software that does its part to fulfill its purpose, without deviating from its purpose. Furthermore, the convergence technology software becomes the most beautiful software when it comes to enriching and benefiting the creative world including humans, and thus adapting to develop and act with its purposeful mission. For example, when applying this principle to aerodynamics, as we do semi-one-off tuning with the help of muscles for flying bats, And the degree to which it conforms to its original purpose will also vary. Sometimes we get an idea of aerodynamics from a bat in the created world, but it is up to us to account for what purpose, what goal, and what intention we will apply this idea. Depending on the intention or degree to which the designer does apply,

the results and impacts can vary greatly. When we design or apply the ideas we want, it may cost more than we thought. Sometimes it takes a lot of time, passion, and effort. However, most product developers and manufacturers may compromise on the temptation to invest modestly, for a reasonable period of time, or at reasonable costs, with the intention of reducing developing and manufacturing costs or seeking higher profit. Product design and development is not only concerned with technology task, but also with the realities of human nature. By doing so, we create software or algorithms that are not beautiful. In the end, this product will have some defective results and needless to say, the Creator will be abandoned by both the market and the customer. At the manufacturing site, some say we compromise to reduce costs, not to the extent allowed by progress in technology. In response to this reality, we think of public good and responsibility. We must actively apply the theological aesthetic value concept that God has given us to software, algorithms, and environments that we design. That is the way to make ourselves, our society, our neighbors, and our country beautiful, and leave a beautiful future for our descendants. Designing of beautiful software code causes its own philosophy and value. The beautiful design has an architecture and contains definitions and concepts of the trade-offs and rules required when building a project. A good design for the designer and for the user is simplicity. This helps to generate software algorithms of lasting usefulness. The application of symmetry found in nature can be used by ways of imitative redesign. A good general design is not limited to the pursuit of profit. If so, what is the beautiful design of the theological aesthetic value system? It seeks utility and safety beyond profit-seeking. Especially in the aspect of engineering recently ethics, optimum design and aesthetic design are important. In addition, factors that should be considered important in software design should be designed to be interoperable (interoperability) and understandable without exaggerated effort

(understandability), easy to modify (modifiability) and flexible (flexibility), and maintainability, reusability and test performance (testability), reliability, correctability and efficiency. Ultimately, good design should reflect the providence of God, which is to make the world of creation widespread. It is necessary to transfigure human consciousness into transformed consciousness with the conversion of recognition beyond God. If the concept of theological aesthetics on a Christian background is reflected in the software design, it will be the most optimal and most helpful software for mankind. Furthermore, the mind and vision to contemplate the beauty of the world in which we live are very important. This is because designers will be able to make beautiful designs when they have a vision and a mind to contemplate this beauty. Now we take the concept of theological aesthetics in convergence technology and focus on the elements of design and function.

The element of light from the created world is the basis for product design. Light is another channel in which man can see the glory of God. Since light is a metaphor that reflects the glory of God, it is important to design the use of light appropriately considering the angle of light, color change and the different ways of its reflection in convergence engineering. Humans contemplate the universe and the natural world through the element of light and feel the beauty of God in five senses.

How to design lines, faces, and shapes – Observe and apply models found in animals and plants. For example, Stanford University uses an adhesive surface derived from gecko feet to enable a robotic lizard to move a vertically along a wall. The ideas from the created world are applied to robot development. Another example is the transformation of energy by wind turbines whose design is based on the shape of whale fins.

In convergence engineering the function of animals and plants are recreated. The most fundamental characteristic of convergence engineering is creativity.

In addition, aesthetic elements, usability, functionality, emotion, inspiration, and cognitive abilities are required. The creativity that human beings need to design a product is endowed with God's wisdom(Oh, the depth of the riches both of the wisdom and knowledge of God! How unsearchable are His judgments and unfathomable His ways! Romans11:33; The heavens are telling of the glory of God; And their expanse is declaring the work of His hands. Psalms19:1).

4.2 Importance of reflecting theological aesthetics

Therefore, the designer should be a person with a mind and a vision that can and does contemplate beauty. To implement the concept of theological aesthetics in software design does open a new dimension in the generation of software algorithms. The Bible, which has been established as a standard of living for human beings, expresses beauty to human beings. If we have a better understanding of the content of the Bible, we will accept that the application of the concept of theological aesthetics to a product is a necessity, not an option. Designers must recognize and express beauty when developing software or designing products, since society and individuals benefit only from goods that are based on truth and goodness. Only when the attributes of God, which realize beauty, turth and goodness to eh fullest, are implemented in the product design, the designer will be willing and capable to design products that can benefit humans without harming them. The most important characteristic of design in accordance with convergence engineering is creativity. This study did show that is particularly important to express light well. Since God's glory is strongly connected with light(In Him was life, and the life was the light of men. And the light shines in the darkness, and the darkness did not comprehend it. John1:4-5). It is important to reflect the attributes of God in the attributes of the product. It is important to reflect the values of theological aesthetic, from product design motives to processes, outcomes,

and follow-up care. Providing a more ethical and more reliable system is of paramount importance. Elements of such designers and their products are, usability, functionality, emotions and inspiration, and cognitive abilities are required together. The creativity that human beings need to design a convergence product is endowed with God's wisdom.

4.3 Effect of reflecting theological aesthetics

In summary, taking into account concepts derived from theological aesthetic for software design will provide most beneficial results to the created world including man. Therefore, we will actively introduce the concept of theological aesthetics to design optimal and beautifully software algorithms and their employment for optimal results. The foundation of these efforts is to reflect God's character (love, holiness, righteousness, wisdom, faithfulness, creation and resurrection, eternity, beauty) as the basis of emotional engineering. This is way beautiful human elements formed in individual humans are enable to lead to the creation of beautiful and sensible products. Metaphors discovered from God's creation are the most creative, natural, and beautiful to man.

5. Conclusion

In this paper, we have presented and discussed various studies and perspectives on aesthetics. Also we have considered the concept of the theology aesthetics in the convergence technology and focused on the point of design and function. We also discussed the various requirements of software and algorithms developed by computer engineers and developers, applying the criteria of the necessity, importance, and effectiveness. Above all, we want to emphasize the need to discuss whether the discussion of world as creation in terms of theological aesthetics is capable to act as a means towards functioning, just and sharing society. Obviously, this discussion should be done more than now. Individual lifestyles and structures of societies are

presenting the pursuit of maximal economic profit or the convenience of life, we should now think about how these technologies will improve our fundamental quality of life and bring benefits to future human lives.

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REFERENCES

[1] Richard Viladesau, "Theological Aesthetics : God in Imagination, Beauty, and Art." Gebundene Ausgabe, 1999.

[2] Sim Kyung-Sub, "Art Theology." Seoul: Dahan Kidokkeyseohei, 2010.

[3] https://news.brown.edu/articles/2014/05/batwing

[4] http://blog.naver.com/mbongnam/220624399933

[5] Heung-Su Kim, "A Study on the convergence entrepreneurship curriculum development," Journal of digital convergence, Vol. 13, No. 5, pp. 77-88, 2015.

[6] Gab-Sang ryu, "Development of education model for ICT-based convergence expert," Journal of the Korea convergence society, Vol. 6, No. 6, pp. 75-80, 2015.

[7] So Tae-Young, "Beauty of Convergence : The Aesthetic education for the next generation," Christian Education & Information Technology, Vol. 40, pp. 115-149, 2014.

[8] Hur Man-Ook, "A study on the Media Aesthetics and Narrative transformation of fantasy film in the age of digital convergence," The studies of Korean literature, Vol. 39, pp. 341-371, 2013.

[9] Lyou Cjul-Gyun, Kwon Boh-Youn, "Findings of the politics of aesthetics in digital games," Humanities Contents, Vol. 37, pp. 91-114, 2015.

[10] Shin Jung-Won, "Towards of Aesthetics of New Media Arts," Korea Humanities Cont Society, Humanities Contents Vol. 20, pp. 35-59, 2011.

[11] Yoon Young-Doo, Choi Eun-Young , "Aesthetic Approach of Digital Images - Focus on Realism," Journal of the Korea contents association, Vol. 10, No. 2, pp. 146-154, 2010.

[12] Cheon Hea-Hyun, "Embodiment in digital animation in relation to media aesthetics," Catoon & Animation Studies, No. 41, pp. 533-552, 2015.

[13] Jeong Heon, "A Study on Digital Cinema Aesthetics beyond Postmodernism," Studies in Huanties, Vol. 48, pp. 383 - 411, 2016.

[14] Oh Jun-Ho, "Aesthetic Implications of the Algorithm applied to new media art works: A focus on live coding," Journal of the Korea contents association, Vol. 13, No. 3, pp. 119-130, 2013.

[15] Wladyslaw Tatarkiewicz, A History of Six Ideas : An Essay in Aesthetics, pp. 155-187, 1999.

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