

Research on the Theory of Artistic Works Innovation System and the Realizable Mode

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Abstract—This paper puts forward the concept of art innovation system and the system model of art creation process. On this basis, it analyzes the basic characteristics of art innovation system by using the principle of finite optimization, and establishes the operation mechanism of art innovation system based on the characteristics of uncertain attributes. At the same time, it is pointed out that the essence of artistic design innovation is to increase the optimum attributes of the work and reduce the non-optimum attributes of the work, and the operation process of this innovation system is also a learning process. Research shows that artistic innovation is the realizability of new ideas and new models, which depends on the target demand for artistic works and the realization degree of the new demand for works. Moreover, the artistic innovation system has the functions of self-organization, self-learning and self-realization, and the practical wisdom of artistic works creation is the key to the establishment of the innovation system.

1 INTRODUCTION

Artistic innovation comes from life and imagination. Innovation is one of the characteristics of art and the driving force of its development. The development process of art is actually a process of continuous innovation and accumulation. The purpose of artistic innovation is to better meet people's subjective spiritual comfort and emotional needs, reflecting the spiritual aspirations of human beings. As is known to all, beneficial innovation is the life of art, and adverse innovation will bring risks to art works. Therefore, the field of art design should be more rigorous, rational and practical to discuss how to design and implement innovation. In recent years, innovation activities led by technology and product innovation have become a hot spot in the society. It is noteworthy that China regards independent innovation as a crucial strategic task for national economic growth and international competitiveness improvement.

In fact, for a long time innovation has been accompanied by economic, management, technology, education and other aspects of the research. For example, innovation is the source of economic growth, but how to reasonably evaluate the relationship between artistic innovation and development has become an issue that must be studied in the field of artistic design. From the perspective of systematic research, innovation is to reconstruct the rule system of design, and to determine people's artistic pursuit through constant adjustment and selection of the understanding of optimum and non-optimum of artistic works [1]. Therefore, innovation is to reduce non-superior, innovation is to adapt to change,

innovation is conducive to development. It can reflect that art innovation is purposeful, process, dynamic and realizability, which are necessary characteristics for art design. It shows that art innovation is systematic. The innovation process is realized in the system constituted by it, that is to say, the establishment of a perfect art innovation system is one of the important contents of art innovation design theory research.

Although Schumpeter established the theory of innovation from the perspective of economics, he did not make an in-depth study on the essence of artistic innovation and how to carry out innovation. This paper discussed the feasibility of artistic innovation from the perspective of system.

2 ARTISTIC INNOVATION AND ARTISTIC INNOVATION SYSTEM

2.1 A re-understanding of the concept of artistic innovation

The concept of Innovation is generally recognized in the academic circles as coming from Schumpeter's Innovation theory, which is different from "Creation" and "Invention". The so-called artistic innovation is the realizability of the new mode of art, namely [2]

Artistic innovation = new mode of art + realizability.

It can be seen from the concept of innovation that innovation is determined by both the new model and the realizability, which alone cannot represent innovation. At the same time, under the condition of the new model, the degree of realization indicates the level of innovation. The

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so-called innovation process is a dynamic and uncertain process from the beginning to the full realization of the new pattern based on requirements. Therefore, innovation in this sense has a broader significance.

2.2 Artistic innovation system and its characteristics

The following is the rational definition of artistic innovation system from the perspective of system theory. Several elements of art learn from each other, cooperate with each other, and recombine to realize the new mode of art design, which is called the art innovation system as a whole.

No matter what kind of innovation system it is, its purpose is to achieve the required innovation objective function through the learning and cooperation of elements in the system under the condition of new mode. Moreover, an innovation system must have certain functions in order to achieve the desired innovation goals. According to the definition of artistic innovation system, it can be summarized as follows:

1) *Purpose*. Purposefulness comes from the need for actual innovation. It shows why innovation is needed. New models can bring new knowledge, new behaviors and new ways of doing things. Moreover, the purpose is limited, while the objective function of the innovation system determined by the purpose satisfies the dynamic constraint conditions. [3]

2) *Synergy*. It is very important for an innovation system to realize the goal of innovation. That is to say, it is necessary to have a full understanding of the relationship between various elements in the innovation system, and be able to grasp the behavior characteristics of each element under different cooperative conditions.

3) *Learning*. In studying innovation, the international community has always linked learning and innovation inseparably. When talking about innovation, we must talk about learning, and when talking about learning, we must talk about innovation. The core of innovation is knowledge innovation, which runs through the whole process of innovation and is the ultimate result of innovation. Knowledge innovation is essentially to acquire and create new knowledge, and the innovation process is essentially the learning process, so the learning function runs through the whole process of the innovation system.

4) *Extensibility*. The extensibility of innovation system includes divergence, correlation, implication and expansibility. From the perspective of the system, divergence is the possibility of external development, correlation is the possibility of parallel development, implication is the possibility of development to different levels, and extensibility is the possibility of combination and decomposition [4].

5) *Conjugation*. The conjugation of innovation system reflects the characteristics of innovation structure. System theory makes a detailed study of the components of a system object and the relationship between the components. Innovation system of conjugate analysis from the perspective of systemic innovation of soft and

hard things, from the Angle of material analysis of the imaginary part and real part of things, from the Angle of the dynamic analysis of latent department and the department, from the opposite sex Angle analysis of the negative and positive things, therefore, the innovation system of conjugacy things from different angles research the possibility of internal innovation.

6) *Effectiveness*. The effectiveness of innovation system has two meanings: one is the effectiveness of time and space, the other is the problem of practice and utility, which are also topics to be studied.

An innovation system operates under certain time-space conditions, and the innovation system established for different innovation problems has different time-space requirements. In addition, innovation comes from actual needs and needs are limited, which raises the problem of limited innovation. It reflects the control characteristics of the innovation system and is of great research value in art creation. At the same time, the artistic innovation system should reflect the utility. If an artistic innovation system fails to achieve the expected utility in the actual operation, then the innovation system will not achieve the purpose of innovation. Each function of the artistic innovation system is a problem worth studying, and corresponding research can be done according to different innovation problems. [5]

3 ACHIEVABLE ART INNOVATION SYSTEM

In fact, the art innovation system is a general system, which is composed of three subsystems, namely, the innovation demand system, the innovation process system and the innovation realization system. As shown in Figure 1:

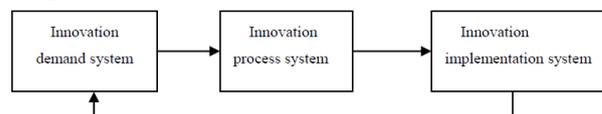


Figure 1 the structure of the innovation system

3.1 Limited artistic innovation based on non-optimum category

The non-optimum theory of the system shows that almost all problem fields are in the non-optimal category, and the so-called optimal category only exists under certain time and space conditions [6]. The starting point for people to deal with problems is to jump out of the category of non-excellence and enter the category of excellence, because only in the category of excellence can optimization be realized. When the problem cannot enter the category of excellence from the category of non-excellence, there will be the demand for innovation of the problem, that is, innovation can form a new category of excellence.

The system from which the innovation problem lies is called the innovation demand system, denoted as $S_D(I)$. $S_D(I)$ is a system composed of the attributes, conditions and objectives of innovation, that is

$S_D(I) = \{I_A, I_C, I_P\}$, where $I_P = f(I_A, I_C)$, I_A represents the attribute of innovation (innovative content).

The choice of innovation attribute determines whether the original attribute is from non-excellent to excellent. At the same time, the innovation target established by innovation attribute under different innovation conditions (or innovation factors) is different, and the innovation factor index reflects the basic innovation ability.

Since the innovation condition and goal of the problem are determined by the innovation demand system $S_R(I)$, people often have limited understanding of the system behavior, function and environment of the problem $S_R(I)$. Therefore, the innovation determined by $S_R(I)$ is limited innovation.

If $S_D(I) = \{I_A, I_C, I_P\}$, there is an innovative element set $I_C = \{c_1, c_2, \dots, c_k\}$, $c_i (i = 1, \dots, k) \in C$, (element set). For any I_A , there are different element combinations I_C^* (I_C^* is subset of I_C), which satisfies $I_O : (I_A, I_C^*) \rightarrow f(I_A, I_C^*)$. Then I_O is called limited innovation on $S_D(I)$, (I_A, I_C^*) is any new mode, and $f(I_A, I_C^*)$ is the objective function of innovation demand.

3.2 The process of artistic innovation based on uncertainty

The premise of an artistic innovation system is that innovation is a new choice and the establishment of innovation function, but the core is the effective control of the innovation process. Artistic innovation process system is a system with uncertainty and complexity, so the innovation process system is an uncertain system. And uncertainty will cause the risk of innovation process, so, the uncertainty analysis of innovation process is a valuable research topic. Moreover, the ability to recognize and apply uncertainty is the embodiment of the ability of innovation process, which can be represented by an uncertainty index.

How to evaluate this uncertainty, the research method is to determine an evaluation scale. If the process from uncertainty to certainty is repeated in the established framework of innovative behavior, the positioning of uncertain problems can be obtained. In other words, what conditions and functions can be added to achieve a completely determined state, under which the uncertain problem can be solved by comparing with the composition of the current determined state in order to realize the assumed innovation goal in the future. If any system has such a function, it can develop in stability, and this thought method is called the principle of inversion positioning [7].

Inverse positioning means, in the experience of the innovation process, innovation of time efficiency and market space position, should have two timing ability, it is on a certain amount of time sequence, based on

uncertainty found ability under the condition of uncertainty, the second is on a certain amount of time sequence, based on uncertainty under the condition of uncertainty using ability.

Therefore, the unascertained uncertainty analysis method can be used. Notable is, the unascertained uncertainty research methods in the analysis of the innovation process system plays an important role, because the process of innovation result is unknown, sometimes need selection and evaluation in the process of innovation is subjective, and have certain confidence level, so the need that the innovation of blind number required, this is a question of unascertained number theory research [8].

No matter what kind of uncertainty problem it is, it can be used to study and analyze the risk problem of innovation process. We know that the innovation process of the risk of the innovation process is a key link to accomplish risk identification and control, although in the study of risk identification, a further study has been made the achievements, but, really has been applied in practice, and give play to the role of big innovation risk identification and control, could not be solved.

3.3 Evaluation of artistic innovation of realizability

We know that the essence of artistic innovation lies in the realization of new models. If an artistic creation is not realized, then it cannot be called innovation. Whether it is a national innovation system or an enterprise innovation system, the goal of innovation is to promote social development and economic growth. Peking University founder composing system of Chinese characters, for example, has formed the industrialization of Chinese characters in the field of typography, whether it is a typesetting system of technological innovation in economic growth, or in the electronic typesetting system replace traditional type layout of economic growth, all embody the realizability completely, and therefore, the technology innovation achieved completely realizability.

The process of artistic innovation realization is completed in its own innovation realization system. The operation mechanism of the innovation realization system determines the degree of innovation realization. The so-called degree of innovation realization is the degree of innovation goal realization under a certain time condition.

The degree of innovation realizability (hereinafter referred to as the degree of innovation) is the actual goal of innovation realization system. The actual innovation goal here is under the condition of certain time and innovation realization field. Because, the innovation realization system is built on the limited time, the domain and the innovation degree three-dimensional space. That is, $S_R(I) = \{t, f_R, L_I\}$, as shown in Figure 2. Where $S_R(I)$ is the innovation system that can be realized; t is the time when the innovation can be realized; f_R is the implementable domain; L_I is the degree of innovation.

As shown in Figure 2, the degree of innovation grows with the growth of realizable time and domain, and is synchronized with f_R .

In addition, degree of innovation and degree of contribution to innovation are two different concepts. The degree of innovation contribution is the degree of innovation input. That is:

Innovation contribution = innovation/innovation input.

From the contribution of innovation, we can see the impact of innovation on economic growth. Therefore, innovation system is a process from innovation demand through innovation process to innovation realization.

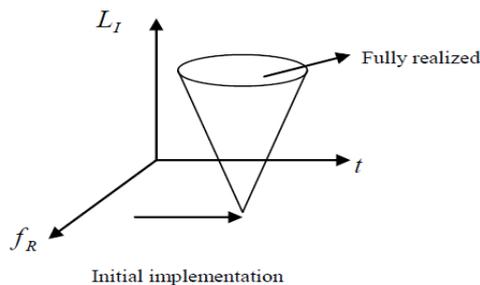


Figure 2 the running space on Realize-ability Innovation System

4 THE PRACTICAL SIGNIFICANCE OF ART INNOVATION SYSTEM

The basic framework of the theoretical research on the art innovation system is given, which is of great practical significance in the research on the art innovation system. The research aim of artistic innovation system is to follow the scientific and objective artistic innovation ability. Innovation system theory establishes the system thought of innovation practice, and considers innovation as system engineering. Therefore, the research and operation of the innovation system should not remain on the basis of statistics and evaluation, and previous studies in this field are basically focused on the establishment of the index system of innovation ability and the study of evaluation methods, without paying attention to the operation mechanism of the innovation system. [9] Based on the actual situation of current innovation system research and considering the development requirements of innovation theory and practice in the future, it can be realized that innovation theory can solve the following problems in artistic creation practice.

4.1 Innovative development strategy

The innovation development strategy should be based on the innovation demand system analysis and the realization innovation system analysis. According to the analysis of innovation demand, the innovation function can be established, which reflects the input-output relationship between innovation factors and goals. Therefore, it has a direct impact on innovation planning. In the actual process of establishing the innovation function, the similarity of innovation realization can be determined by

using the realizability innovation analysis of the relevant innovation system. In this way, the coefficient of the established innovation function has certain realizability.

4.2 Innovation risk analysis and control

Strengthening innovation risk analysis can further improve the degree of realization of innovation goals, reduce innovation risks caused by uncertainty, and realize innovation's impact on national development and economic growth. For example, in the previous innovation process, due to the lack of reasonable evaluation of innovation risks, innovation did not achieve the real purpose, resulting in certain economic losses and social impact. Therefore, innovation risk analysis can avoid blind innovation to a certain extent. [10]

4.3 The formation of limited competition in innovation

Innovation is formed, changed and developed in a cycle of constant demand and realization. Therefore, different innovations will compete with each other due to their own and environmental influences. We know that only competition can develop, and there will be different innovation life cycles in the innovation competition. For example, in product innovation, competition in the market will produce innovation competition, which will constantly form a new starting point for product innovation.

5 CONCLUSIONS

Realizability of artistic innovation system theory research can provide the following conclusion: for innovation theory and practice of innovation is on the premise of demand for the realization of the new model, to research and explore innovative uncertainty problem, which can effectively determine the degree of innovation and innovative contribution rate, national innovation system is the innovation of the formation and development of super cycle, therefore, only in a limited innovation competition, in order to promote the development of art design.

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