

# *Influence and Trend of Scientific and Technological Progress on Artistic Design Creation*

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**Abstract:** The development and progress of art design is a reflection of the cultural soft power of a country or a nation. China is a powerful world power with strong influence. It not only has a strong international reputation, but also has a great impact on China's economic and social development. Therefore, from this point of view, scientific and technological innovation has a profound significance for the creativity and future development of art design. The article discusses how the development of science and technology has brought about the improvement of people's spiritual life. Art design, as a comprehensive science of both theoretical and practical significance, should consider a variety of factors in the process of art design. Based on the actual situation of science and technology progress, the influence and function of science and technology progress are analyzed. Firstly, the author uses the method of literature to understand the concept and expression of artistic creation. Secondly, through the content of related books and magazines on the Internet, this paper analyzes the significance of artistic design innovation to people's aesthetic consciousness, as well as its relationship with social development, and gives corresponding suggestions based on the actual situation. In the evaluation of the impact of material progress and tool progress on artistry, the score of the impact of material progress on artistry in work 1 is 8 points, and the score of the impact of tool progress on artistry is 7 points. With the progress of the times, this paper's study is conducive to the wide application of technological innovation in the field of art design, and constantly deepen the consciousness of art design creation.

## 1. Introduction

If art design is bound by a fixed, single dimension, then it would be difficult to further develop. Therefore, it is necessary to add some new elements, add some multi-dimensional concepts, so that the art design can develop better and faster. The expression language is a very important part of the

design, with strong appeal and expression. Therefore, art design should make use of its multi-dimensional means to create more space for art design. This enables a shift from a two-dimensional, static, to a multidimensional, dynamic mode of interaction. In addition, this paper also looked for many excellent cases, and carried on the comparison, discussion and analysis. It summarizes the different characteristics and ways of expression between modern and contemporary art design and traditional art design. The core idea is that through the extension of various means and the carrier of various media, one can have a new understanding of the multi-dimensional field of art design, and have a new understanding of the design form and new concept of art design. Finally, this paper has strong academic value and social value. Multi-dimensional design would provide the audience with a new perceptual experience, broaden the audience's perspective of knowing and understanding the world, and enrich the audience's spiritual world. This not only enhances the feelings of the trusters, but also increases their mutual feelings, providing more possibilities and directions for promoting the development of art and design.

Since mankind consciously produced the first tools of labor, in the past thousands of years, the act of artistic design has been running through all stages of human development history. With the passage of time and the progress of culture, more and more artistic expressions and art works are used to create art works that are more suitable for the development needs of human society. Jiang Xuanying's combination of natural elements and artistic works is the most fundamental expression of the idea of "the unity of nature and man" in artistic creation. In traditional Chinese art, landscape painting is a very important part, and it is also the source of inspiration for many creators. In recent years, with the continuous innovation of the concept of ceramic art creation, it has also undergone great changes, but landscape painting has always occupied a pivotal position in ceramic art design, and it is also the favorite expression object of many creators [1]. Yang Yaru believes that with the continuous development of information technology, human beings have officially entered the information age. Information technology has been widely used in people's production, life and study. The mode of artistic design creation is also deeply affected by information technology, from the traditional hand-drawn design, gradually developed into digital design. At present, artists and designers use a wide variety of painting design software, from graphic design to three-dimensional modeling, and even thinking space design, which can be realized by digital technology [2]. From the angle of art education, Su Wenting analyzes the positive role of art education in art education. He made a comprehensive elaboration from the three aspects of function, aesthetics and use, and emphasized that the creation of painting is very important in the process of transforming from artistic design to design thinking [3]. However, their research lacks the exploration of technological progress when exploring art design.

This paper takes "one dimension" and "multi-dimension" as the starting point, and explores the two aspects of "one dimension" and "multi-dimension" from the level of scientific and technological progress and artistic design creation. In the process of single-dimensional space and multi-dimensional space touching each other, the new development trend appears, that is, the trend of integration and cross-border compatibility and mutual cooperation. In a sense, it's an art. In addition, theoretical knowledge as the pillar to play a greater role in information transmission and artistic tension. In this way, the expression language of art and design can become more colorful, and at the same time, art and design can be better integrated with disciplines in other fields, and design can be perfectly combined with factors such as people, science and technology, and media.

## **2. Scientific and Technological Progress and Artistic Design Creation**

### **2.1 Integration of Art and Design in the Era of Scientific and Technological Progress**

The times are advancing, science and technology are changing, and the continuous development

of science and technology to some extent promotes the development and change of art design in the digital age [4-5]. At present, the thinking mode and concept of the network era have penetrated into people's lives, and the development of digital technology has also brought changes to the mode of communication and media form. The influence of the new media represented by the Internet and mobile technology is increasingly significant. The traditional text-based form of expression is being replaced by a visually based form of expression. This would be an "image age", in which the development of technological forms would not only satisfy the spiritual needs of human beings, but also enable human beings to live a better life. At the same time, the development of media and technology also makes the traditional mass media develop in the direction of digitization. In the current situation, there is a new trend of convergence between the media that did not seem to have any connection before, and the mutual integration of various media has become an inevitable trend in the development of information dissemination. Science and technology integration is a trend in the development of science and technology. For example, in the context of science and technology integration, art and design creators can realize the preview of their works through network digital technology, and provide more viewing ways for the audience [6]. Moreover, there are many trends that are hard to predict, just like ten years ago, it was impossible to predict that today's Internet technology would become so popular. Media integration means that, driven by the development of the times and the progress of human civilization, various media have skillfully integrated through technological innovation. In this integration, art design media can express new ideas, present new forms, and produce new creative ideas [7-8].

The influence and trend of scientific and technological progress on artistic design creation [9]:

$$T_p = a * J_s + b * Y_s(1)$$

$T_p$  represents the impact of scientific and technological progress on artistic design creation, and  $J_s$  represents the impact of technology.

$$T_A = P_1 * D_1 + P_2 * D_2 + \dots + P_n * D_n(2)$$

$T_A$  represents the development trend of scientific and technological progress on artistic design creation, and  $P_1, P_2, \dots, P_n$  are the weight coefficients of each design.

"Digitalization" and "art design" both have interesting meanings. As a result, it inevitably sounds a little edgy and obscure, and seems far away. In fact, digital art design has entered life at an eye-popping speed and spread at an eye-popping speed [10-11] before it is even realized. From the digital effects widely used in Hollywood commercial movies, to the computer interfaces seen in daily life, to the fascinating video games, and the colorful web pages on the Internet, all are masterpieces of digital art. This kind of art design using computer technology is called computer art design [12]. Because of its technological characteristics, art design is vividly called digital art design [13]. Although technological art design has been widely used in people's daily life, and has gradually become an indispensable part of art design [14].

In today's age, there is more focus on individual personality, uniqueness and a meaningful self. China is a country with more than 5,000 years of history and cultural heritage, and has a very rich and long history. With the progress of the times and the acceleration of human civilization, such a way of life has emerged, that is, modern mechanized production, industrial technology and information and communication technology and other advanced science and technology combined to produce a new technological product - art design. It should be pointed out that although in the field of art and design, technological art and design has gradually become an increasingly important and widely concerned topic. Most of these discussions are limited to the technical level, and more of them only stay at the level of appreciation and evaluation, without in-depth analysis, induction, collation and summary of the basic principles and concepts of scientific and technological art design,

let alone the formation of a complete and creative scientific and technological art design theory [15].

## **2.2 Form of Art Design is Driven by the New Media under the Development of Science and Technology**

With the development of science and technology, art design has also undergone earth-shaking changes. The development of science and technology has provided people with new thinking directions, more options and more creative inspiration [16]. From traditional art design to diversified art design, it is the result of human beings challenging traditional art design, searching for new thinking and exploring new ways under the condition of scientific and technological progress [17]. The revolution of information dissemination makes design break the limitations of time and space and traditional communication methods, and expand the perspective and thinking from two dimensions to three dimensions. It changes from static to dynamic, from linear to radiation diffusion, and achieves the harmonious symbiosis between the design content and the external space. It is the most far-reaching and far-reaching change. It should be said that science is the foundation of all multidimensional art design, and technology is the most appropriate way for designers to explore the possibility of information dissemination. Its scientific nature is the prerequisite for the success of multi-dimensional art design [18]. With the development of technology, new media is also constantly developing and evolving. With the development and popularization of new media, traditional media has gradually completed the process of transforming into new media, and with the development of media, art design has also made unprecedented progress. From the beginning of paper printing, it has developed into the use of a variety of high-tech means to guide the audience to feel a new sensory experience [19]. Under modern technology, with the help of new media platforms and more communication methods, art design can be better displayed. Therefore, the change of new media makes the integration of design and technology broaden people's vision and make the society more harmonious [20].

In the development process of digital art design, this approach has played a great role in promoting its creation [21]. However, as a kind of art design with its own unique characteristics and charm, technological art design. All along, it has lacked a complete and powerful theory. If people can't establish the ideas and thoughts that are compatible with the characteristics and development of scientific and technological art design, they can't integrate these ideas and thoughts into the creation and appreciation of scientific and technological art design. Therefore, the technological art design can not break the traditional art design mode, can not fully show the advantages and charm of digital. Therefore, it would inevitably fall into the awkward situation of imitation and plagiarism, and can not move forward or develop in a deeper direction. This would not only affect the technological art design itself, but also affect the development of the overall art design. Since visual art works are contained in all visual art works, they must abide by certain aesthetic rules.

The connotation and value of aesthetics is that it provides human beings with a way to understand the meaning of life and show the existence of life, that is, the space and heaven of life activities. The research of scientific and technological art design should not only recognize and encourage the diversification of art forms and techniques, but also explore the connotation of scientific and technological art design, and find a common way and principle of creation. It constructs a set of sound and powerful theoretical system of scientific and technological art design, so as to inherit the essence of traditional art design, explore and give play to its own characteristics and advantages, and guide the development direction of scientific and technological art design. On the other hand, in the art theory, it would also introduce the theory of scientific and technological art design. The new artistic requirements, new artistic expression methods and new artistic expression

techniques produced by scientific and technological artistic design would have a huge impact on the category and proposition of art theory. The art design concepts and principles that have made breakthroughs in digital art design, as well as the categories and ranges that have emerged after conceptual innovation, would be absorbed by art theory. It can be used as a new nutrient and blood of art theory, so as to promote the renewal and development of art theory and art design discipline.

The new scientific art design theory should be based on art science and design science, and focus on the digital trend and digital process of art design development, and the breakthrough and expansion brought by the penetration of digital technology in the art design field. For digital art design, it can be studied from different angles. There is no fixed pattern in the research methods of digital art design. The comprehensive use of various research methods and analysis of digital art design from different angles may help to better understand digital art design.

### 3. Influence Experiment and Result of Artistic Design Creation

Experimental method:

This paper selects a range of works involving painting, sculpture, architecture and design.

For each piece of work, it has to do a detailed background research, including its creation background, author, age and so on. Through the analysis of the elements in the creative process, the elements related to the development of technology can be extracted, such as the use of new materials, new technologies, new tools, etc.

Through the evaluation of each work, it is possible to analyze the impact of technological development on its artistic expression and give a quantitative score.

Through the collection of art works data in the past ten years, it can use statistical analysis method to study the relationship between technological progress and art creation.

The artwork information is shown in Table 1. This paper selects 5 works of art. "Landscape Painting" belongs to the type of painting, "Night Patrol" belongs to the type of oil painting.

*Table 1. Art works information table*

Serial number	Title of work	Year of creation	Type	Material
1	Landscape Painting	1948	Painting	Xuan paper, brush, ink
2	Liberty Leading the People	1830	Painting	Oil painting on canvas
3	The Night Watch	1888	Oil painting	Oil painting on canvas
4	The Old Man and the Sea	1952	Oil painting	Oil painting on canvas
5	Along the River during the Qingming Festival	During the Northern Song Dynasty	Picture scroll	Silk coloring

The score of the contribution of new materials or technologies to artistry is shown in Figure 1. In sequence number 1, the contribution of new technology to artistry is scored 8 points, and the

contribution of new material to artistry is scored 10 points.

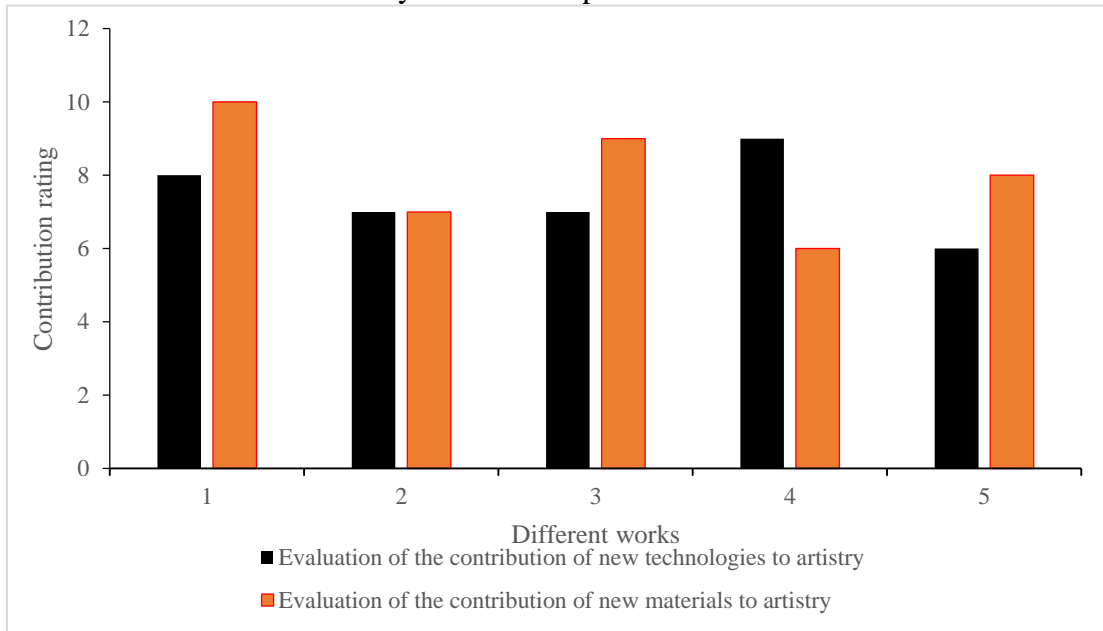


Figure 1. The artistic contribution of new materials or technologies

The degree of impact of material progress and tool progress on artistry is shown in Figure 2. The score for the impact of material progress on artistry is 8 points, and the score for the impact of tool progress on artistry is 7 points. The score of the impact of material progress on the artistry of work 2 is 7 points, and the score of the impact of tool progress on the artistry is 8 points. The score of the impact of material progress on artistry is 6 points, and the score of the impact of tool progress on artistry is 6 points.



Figure 2. The degree of impact of material progress and tool progress on artistry

The degree to which new elements are introduced into the work is shown in Figure 3. The degree of introduction ranges from 1 to 10. The degree of introduction of new elements in Work 1 is 7, and

the degree of introduction of new elements in work 2 is 6. Work 3 has a larger value due to its larger size and the numerous figures and scenes it depicts.

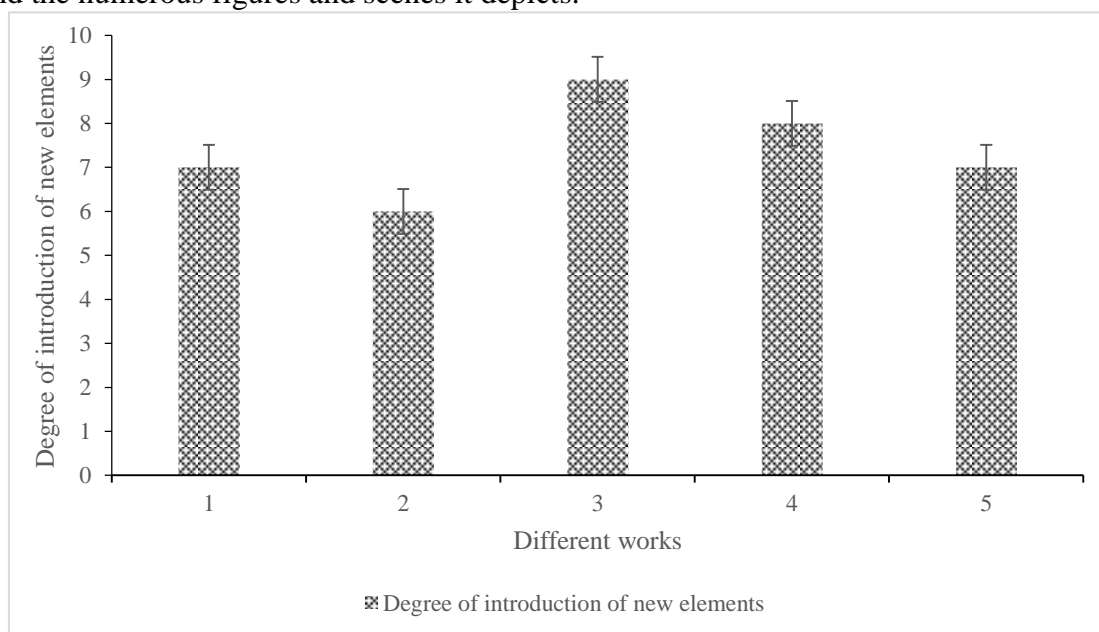


Figure 3. Degree of introduction of new elements in the work

#### 4. Conclusions

This paper mainly discusses the multi-dimensional aspects of art design from the aspects of the development status of art design, the change of design style and the reasons for its formation, the construction of expression techniques, and the heuristic thinking. The way of thinking has undergone fundamental changes, breaking through the traditional mode of thinking, and humanistic ideas have received more attention and application. The language of art design has changed from static to dynamic, from plane to three-dimensional, and even multi-dimensional, and the media of communication has also changed from a single traditional to a comprehensive application of multimedia and emerging media. The multi-dimensional composition method not only enriches the visual effect of the symbol. At the same time, there are more experiences and more choices for those who receive information. The diversification of modern media products makes the carrier and way of information transmission diversified. In the pursuit of art design, it has achieved a leapfrog development. It is not only simply concerned about the function and people's needs, but also began to explore the design of personalization, interaction, timeliness and multi-dimension in the modern social situation. Therefore, to study the multi-dimensional nature of art design, it is necessary to master the colorful expression and expression mode of art design. This can make the audience resonate psychologically, so as to effectively promote the development of art and design, and go further in the future development.

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If any, should be placed before the references section without numbering.

#### Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this

study.

### Conflict of Interest

The author states that this article has no conflict of interest.

### References

- [1] Jiang Xuanying, Gao Fuqiang. *A brief analysis of the integration of landscape elements in ceramic art design and creation*. *Foshan Ceramics*, 2023, 33(2):144-146.
- [2] Yang Yaru. *The embodiment and application of digital technology in the creation of clothing art design*. *Chemical fiber and textile technology*, 2022, 51(7):172-174.
- [3] Su Wenting. *Analysis on the value of painting art creation to cultivating design ability*. *Journal of Hefei University (Comprehensive Edition)*, 2018, v.35;No.143(01):128-132.
- [4] Wang Nannan. *Based on the exploration of modern art and design in the dimension of folk art in our country*. *Journal of Lvliang Institute of Education*, 2022, 39(2):81-83.
- [5] Wenxin. *Discussion on Art Design based on Marxist Literary Theory*. *Art technology*, 2022, 35(11):148-150.
- [6] Leiyu. *The application of national traditional culture in art and design*. *Commodity and quality*, 2020, 41(6):296-299.
- [7] Zhang Qiman. *Environmental art and design reflect the beliefs and ideals of human society*. *design*, 2022, 35(16):7-10.
- [8] Adham A S , Mahmudah F N . *"Art And Culture" Learning Management For Students' Increased Achievement During The Covid-19 Pandemic*. *Al-Tanzim Jurnal Manajemen Pendidikan Islam*, 2021, 5(1):106-114.
- [9] Aliabadi M. *Perfection in Creation: Process-based Dynamism and Empiricism in Islamic Art, Architecture and Urban Design*. *Journal of Iranian Architecture Studies*, 2022, 4(8): 57-72.
- [10] Ardhiati Y . *Architectonics: Design of the Nu Art Museum in Bandung*. *The International Journal of Architectonic Spatial and Environmental Design*, 2018, 12(3):17-28.
- [11] Bennett T . *Acting on the social : art, culture, and government*. *American Behavioral Scientist*, 2018, 43(9):1412-1428.
- [12] Djenontin I N S, Meadow A M. *The art of co-production of knowledge in environmental sciences and management: lessons from international practice*. *Environmental management*, 2018, 61(6): 885-903.
- [13] Grusiecki T . *Neville, Kristoffer. The Art and Culture of Scandinavian Central Europe, 1550–1720*. *Renaissance and Reformation*, 2020, 43(2):399-401.
- [14] Guo S, Li X. *Computer Aided Art Design and Production Based on Video Stream*. *Computer-Aided Design and Applications*, 2020, 18(S3): 70-81.
- [15] Jin H , Yang J . *Using Computer-Aided Design Software in Teaching Environmental Art Design*. *Computer-Aided Design and Applications*, 2021, 19(S1):173-183.
- [16] Koebner I J, Fishman S M, Paterniti D, et al. *Curating care: the design and feasibility of a partnership between an art museum and an academic pain center*. *Curator: The Museum Journal*, 2018, 61(3): 415-429.
- [17] Liang S . *Research on Innovative Thinking of Ceramic Art Design Based on Artificial Intelligence*. *Arts Studies and Criticism*, 2022, 3(2):203-206.
- [18] Paloma Palau ccellicer, Mena J , Egas O . *Arts -Based Educational Research in Museums: 'Art for Learning Art', an A/r/tographic Mediation*. *International Journal of Art & Design Education*, 2019, 38(3):670-680.



- [19] Parkhomenko Y A , Lugovtsev A Y .*The Role of Object Design in the Creation of Animation Imagery. Art Analysis Experience.Observatory of Culture*, 2019, 16(4):374-385.
- [20] Prasetyo E B , Ekomadyo A S .*The conception of actor network in Jelesong Art and Culture Village of Bandung Regency.ARTEKS Jurnal Teknik Arsitektur*, 2021, 6(1):5-12.
- [21] Rajarajan R K K , Ling L .*Religious Art and Culture in 2019: Thousand Faces of the Buddha.Indian Journal of History of Science*, 2020, 55(2):194-201.