

Application of Modern Construction Art in Landscape Architecture Planning and Design

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Abstract The continuous progress of urbanization has driven the continuous development and innovation of landscape planning and design. Focused on the important design method of modern construction art, this study analyzed its concepts and characteristics, and made deep exploration to its application in landscape planning and design. The results indicated that modern construction art had a significant impact on landscape spatial planning and layout, spatial design forms, and spatial ornaments. The use of modern construction art concepts could make landscape design more scientific, artistic, and humane, creating higher quality leisure and entertainment venues for audiences.

Keywords Landscape architecture design, Modern construction art, Construction Art

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Driven by globalization and informatization, the diversity, innovation, and experimentation of modern construction art have brought unprecedented inspiration and transformation to various industries. Wherein, modern construction art has greatly influenced the design concept and practice methods of landscape architecture design, which has been a bridge for harmonious coexistence between humans and nature. This study aimed to explore the application of modern construction art in landscape design, so as to provide designers with new perspectives and ideas, and promote innovation and development in the landscape design industry.

Modern construction art, as an art form that transcends traditional boundaries, has made it a core concept to break through existing frameworks and pursue the freedom of form and diversity of expression. In landscape architecture design, this concept is reflected in the reinterpretation and combination of nature and artificial work, space and form, color and texture. Designers can create more creative and personalized garden landscapes by drawing on the thinking and expression techniques of modern construction art, thereby meeting people's growing aesthetic needs.

1 Development of modern construction art

Originated in the early 1900s, construction art can date back to the exploration of the transformation of Western paintings from concrete to abstract in the late 19th to early 20th century. It continued to develop under the

influence of constructivism and Dutch style, and ultimately formed a complete theoretical system at Bauhaus Academy in Germany. Although there is no explicit expression to the concept of modern construction art, its core idea is to unified to the idea that it is an expressive art from created through the expression of basic elements. These basic elements such as points, lines, planes, colors, are no longer limited to inherent forms and patterns, but are a recreation of traditional concepts.

Overall, modern construction art mainly shows its unique charm in terms of artistic expression forms and material selection. Modern construction art is an art form that combines basic elements like points, lines, and planes. Most forms are abstract or even exaggerated, but this form of expression often can better express the language of thought in the current era, which not only expresses the meaning of the overall combination of elements, but also emphasizes the individual value of elements, making such kind of art more profound. Modern constructional art not only reflects the current changes in expression, but also closely follows the times in terms of materials. In terms of color selection, environmental protection and industrial technology complement each other.

Construction art plays an important part in historical trend of modern design, and its value is also very profound. It has a profound impact on modern landscape design. At each stage of modern design, its formation and concepts have a very close relationship and connection at different times. Landscape design is particularly

prominent in modern design, which makes it reasonable for modern landscape design to be influenced by construction art.

2 Development of landscape architecture planning and design practice

Landscape architecture planning and design is the creation of a livable and enjoyable spatial environment for leisure and recreation on large, medium, and small scales. Its essential core lies in creating a space that harmoniously coexists with nature. Throughout the history of the development of landscape architecture, the practice of landscape architecture has been influenced by social trends and art. Under the influence of classical philosophy, Western garden practice has continued for nearly a century in a regulated spatial layout and form, such as Italian terrace style gardens and French Le Notre's style gardens. Under the influence of humanistic ideas, classical British gardens abandoned traditional symmetrical axes and orders, and transitioned towards the scenic style, forming a unique British style garden and influencing Olmstede, who chose a natural spatial layout in his plan with Walker for Central Park in New York, and based on this, created the landscape architecture industry and discipline. Against the backdrop of the flourishing cultural trends, landscape architecture was influenced by different artistic genres such as Rococo style, structuralism, romanticism, modernism, and postmodernism, and the landscape architecture industry formed new development trends in practical concepts and spatial expression.

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In the process of modern urbanization, facing the problems of natural resource destruction and environmental degradation, landscape planning and design are committed to restoring the connection between humans and nature, emphasizing ecological protection and sustainable development, advocating the rational use of resources and environmental protection. That is to say, on the basis of traditional disciplinary practice, contemporary landscape planning and design is not only limited to the display of aesthetics and artistry, but also pays more attention to the ecological environment and harmonious communication between humans and nature, aiming to achieve harmonious coexistence between humans and nature through scientific planning and design. In the context of new social trends and changes in humanities and arts, facing the current complex situation of the sites, landscape planning and design need to face new thinking in the natural, rule-based, and mixed spatial layout, as well as the selection of different landscape elements.

3 Application methods and strategies of modern construction art in landscape architecture

The application of modern construction art in the field of landscape planning and design becomes innovative and integrated. Designers sophisticatedly integrate the principles and techniques of modern art into the spatial layout, form shaping, and color matching of landscape architecture, creating landscape works that are both modern and natural. With the development of the times, the content that constitutes art has also been continuously optimized and enriched. As people's living standards gradually improve, new requirements have also been put forward for landscape design. In terms of spatial layout, designers integrate various artistic elements such as points, lines, planes, and bodies, and scientifically allocates and arranges these elements^[1]; in terms of form shaping, designers draw on the modelling language of modern construction art to create unique landscape forms, endowing gardens with modern beauty; in terms of color matching, modern construction art emphasizes the contrast and harmony of colors, adding vitality and charm to gardens through skilled color combinations. The integration of these elements not only enriches the techniques and forms of landscape planning and design, but also enhances the artistic and ornamental value of the garden landscape. In addition, when introducing artistic elements, designers should actively apply macro design

concepts to make garden design activities more integrated and systematic^[2].

3.1 Implantation of spatial planning construction thinking

Firstly, modern construction art emphasizes abstraction and construction, which is in line with the humanistic care in the concepts of planning and design. In planning and design, designers need to give full consideration to human needs and interests, and pursue harmony and balance between humans and the environment. The application of construction art in modern landscape design starts from basic elements such as points, lines, and planes, and brings new creativity and inspiration to the landscape through innovative ideas and careful design, making the garden landscape more attractive and beautiful^[3]. At the same time, construction art emphasizes the combination and construction of elements, with the aim to form unique visual effects through techniques such as arrangement, combination, and deformation.

Secondly, the application of modern construction art in planning and design also reflects the concepts of environmental protection and sustainable development. Construction art focuses on the relationship between space, proportion, and rhythm in the picture, and such keen perception of space and environment enables designers to pay more attention to the protection and utilization of the natural environment in planning and design. For example, in urban planning, designers can use modern artistic techniques to create urban landscapes that not only meet people's aesthetic needs but also fully utilize natural resources, achieving harmonious coexistence between humans and nature.

In addition, the application of modern construction art in planning and design also reflects the principles of integrity and adaptation to local conditions. The principle of integrity requires designers to base their planning and design on the whole, consider various factors comprehensively, and ensure the coordination and unity of the design scheme. Modern construction art can effectively combine different elements and spaces through abstract and construction techniques, which can form design works with a sense of unity. The principle of adaptation to local conditions requires designers to combine regional characteristics and cultural background in planning and design, and create design schemes with local characteristics. Modern construction art can integrate regional culture into design works after refining and summarizing, which can make design schemes

more closely related to local culture and customs.

3.2 Combination of art and science in spatial planar design

From a preliminary perspective of planar design, the use of modern construction art mainly involves the recombination and creative expression of basic visual elements in the form. Firstly, it is of critical importance to understand the core concepts of modern construction art. Construction meaning to construct, combine, deconstruct and reconstruct, requires designers to recombine basic visual elements such as points, lines, planes, colors, structures, and materials according to the rules of formal beauty, so as to transform abstract perceptual patterns into aesthetic forms, and thus creating new forms. This process of reconstructing known elements is a creative act that provides rich expressive techniques and ideas for planar design. For example, when applying planar construction to achieve the combination of points, lines, and planes, it is necessary to enhance the research and application of skills in planar construction elements to combine these elements in two-dimensional technology, and design experts need to focus on the value of planar design in landscape architecture, and then comprehensively plan for elements such as points, lines, and planes^[4].

Secondly, in planar design, it is necessary to apply the concept of modern construction art to guide practice. Specifically, the overall construction can be achieved by adjusting the position, size, proportion, and spacing of elements, which can also convey specific visual and informational effects. For example, in planar construction, various shapes and patterns can be selected and organized to create visual effects, and the composition and balance of the whole can be achieved by adjusting and combining the shape, proportion, repetition, and contrast of the planes. Similarly, color is the primary factor in the cognitive process of individuals towards unfamiliar things^[5].

The selection and organization of appropriate colors can achieve different emotional and visual effects, thereby conveying the themes and emotions of the design. In addition, layout construction is also an indispensable part of planar design. Involving the selection, arrangement, and organization of characters, it can get the overall layout construction and balance by adjusting the settings of text size, font, line spacing, and alignment. Good layout can enhance the readability and visual appeal of a design, making information communication clearer and more effective.

3.3 Improvement of art ornamental installations

From the perspective of art installations and ornaments, the application of modern art construction presents a unique and creative trend. Modern art construction brings unprecedented forms of expression and visual experiences to art installations and sketches through the reconstruction and innovation of basic elements such as form, color, and material.

In terms of artistic installations, the application of modern art construction is mainly reflected in the innovative treatment of space, materials, and forms. Artists use the concepts of modern art construction to recombine and construct various objects and materials in daily life, creating artistic installations that are both unique and culturally rich. For example, some artists used discarded items or natural materials to create artistic installations with diverse forms and profound meanings through artful design and combination, triggering audience's thinking and resonance. These installation works not only have ornamental value, but also convey the artists' creative philosophy and emotional expression.

In terms of ornaments, modern art construction also plays an important role. As a short and concise art form, ornaments reveal the details and various aspects of human nature in life through humor, exaggeration, and other techniques. The application of modern art construction in ornamental creation is mainly reflected in the innovative handling of character modeling, action design, and stage layout. Artists use modern artistic techniques to abstract and symbolize the character images in ornaments, making them more vivid and interesting. At the same time, the artists also create a unique atmosphere and visual effect through the clever use and arrangement of stage space, bringing a richer viewing experience to the audience.

4 Case analysis

4.1 Typical representative of spatial planning and design: La Villette Park

La Villette Park (Fig.1–2) is a typical landscape design case full of deconstructive elements. The core of deconstructionism is to oppose traditional principles and standards, advocate and criticize the principles and standards of modernism and internationalism, and so it can be seen as an opposition and dismantling of structuralism^[6]. It features scattered, incomplete, and abrupt styles with distinctive and expressive forms, which fully demonstrates the core idea of

modern construction art.

Such kind of design can easily be seen from the construction of points, lines, and planes in La Villette Park. In La Villette Park, "points" are mainly reflected in the buildings within the park. Bernard Tschumi drew a grid in the park according to a certain pattern and placed a structure called "Folie" (Crazy) at the intersection. These structures are painted red and arranged in a regular pattern, creating a unique sense of rhythm. These red structures are like props in spatial dramas, adding unique visual focus and vitality to the park. "Lines" are mainly reflected in the transportation system of the park, which include 2 long corridors in the park, several straight avenues planted with sycamore trees, a circular garden path spanning the Canal de l'Ourcq in the center, and a streamlined garden path known as the "movie style promenade". These linear paths and corridors not only form the transportation framework of the park, but also connect various theme gardens and structures, making the spatial layout of the park more integrated and orderly. Meanwhile, these linear elements also provide tourists with a variety of travel paths and visual experiences. "Planes" are mainly reflected in the landscape system of the park, such as lawns, gardens, and shrubs. These planar elements provide tourists with rich leisure and entertainment spaces, and different activities have their own specific activity areas. These planar landscape elements in the park are intertwined and stacked with point and line elements, together forming a unique and charming spatial experience in La Villette Park. Therefore, it can be seen that the La Villette Park emphasizes the comprehensiveness of design elements, combines each part together and stresses the design logic of hierarchy and disorder^[7].

4.2 Representative of planar construction design: Harvard Donald Fountain

The impact of modern construction art on landscape planning and design is directly reflected in landscape plane construction design. The Donald Fountain is a classic work by renowned landscape minimalist designer Peter Walker. Located on the Harvard campus, the fountain is constructed with 159 granite blocks evenly distributed in a circular space with a diameter of approximately 18.3 m, forming a circular stone square (Fig.3). Overall, irregular stones serve as the basic skeleton, point elements on the line of sight make up the basic shape, and 159 points arranged in a gradient pattern form a circular plane. As a representative figure of the modern landscape art school, Martha

Schwartz has made a high-profile use of artistic techniques and concepts to explore and try landscape designs, such as the Bagel Garden, the Four Color Garden of Swiss insurance company. Her design works all reflect her superb design concepts. Influenced by Martha Schwartz and the rise of consumerism, the construction design of landscape planning and design has become mainstream on small and medium-sized scales. Currently, the design of real estate landscapes, park landscapes, and popular tourist attractions is filled with plane construction design. For example, the landscape design of Shanghai Science and Technology Park adopts curves and gardens as the basic forms for spatial design (Fig. 4).

4.3 Representative of art ornaments: modern sculptures

Modern construction art emphasizes the abstraction and formation of basic elements, such as points, lines, planes, and bodies. In modern sculpture, these elements are endowed with new meanings and become important means of expressing the artists' emotions and concepts. For example, a point can represent an instant focus, a line can symbolize flow and direction, the plane can create a sense of space, and the body can construct a three-dimensional sense. Artists can create sculptures full of personality and creativity by skillfully combining and transforming these elements. As early as the late 1900s, designers used modern sculpture to express landscape design, such as the Mustang Fountain designed by Isamu Noguchi, the Lima Bean Spirit, the Brion-Vega Cemetery designed by Capa, and many other works such as "The Ring of Life" in Vigeland Park, the sculpture "Lerooy" in France, and the sculpture "Digital Orca" in Vancouver, Canada, which are well-known around the world.

Isamu Noguchi was one of the earliest designers to attempt to integrate sculpture into landscape design. He could analyze garden landscapes as a sculptor from the perspective that landscape designers were not aware of. One of his famous works is Hart Square in Detroit (Fig.5). In the center of the square, Isamu designed a circular fountain sculpture. This sculpture is 7 m higher above the circular granite pool, supported by paired diagonal pillars on both sides, resembling a "donut" lifted high. The unique future form of the design endows the entire picture with a metaphor of technology supremacy and the space age, making viewers strongly feel the greatness and unstoppable nature of modern technology^[9].

This way of expression does have a special

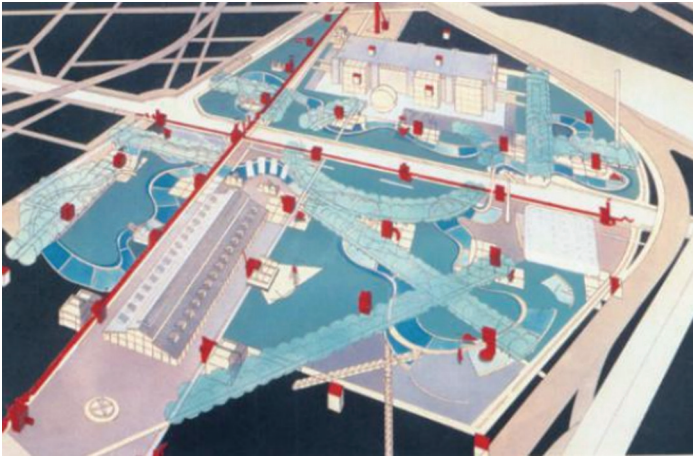
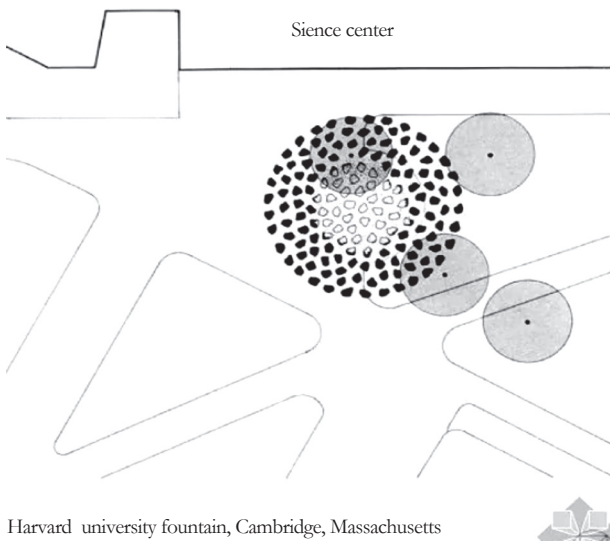


Fig.1 Park plane



Fig.2 Park structures



Harvard university fountain, Cambridge, Massachusetts

Fig.3 Downer Fountain plane



Fig.4 Shanghai Science and Technology Park plane construction



Fig.5 Hart Square in Detroit and its installation arts



resonance in industrial cities like Detroit. Detroit, as the manufacturing center of airplanes and rockets, is a representative city of contemporary industrial character in the United State, and its industrial atmosphere and sense of power

complement the style of Isamu Noguchi's sculptures. His works emphasize form and symbolism, and this design language forms an interesting dialogue with Detroit's industrial temperament.

5 Conclusion

Taking modern construction art as the starting point, this paper explores its application in landscape planning and design. The results show that: ① Throughout the history of

disciplinary development, the practice field of landscape architecture has been influenced to varying degrees by humanistic arts and social trends, and in the process of modern and contemporary development, modern construction art is the sublimation of art and science in landscape planning and design; ② The influence of modern construction art on landscape planning and design is mainly reflected in 3 aspects, namely the structured deduction of spatial planning layout, the limitation of spatial form, and artistic ornaments.

With the continuous development and deepening of modern construction art, its application in landscape planning and design has shown enormous potential and broad prospects. Modern construction art has injected new vitality and creativity into landscape planning and design with its unique perspective and techniques. The application of modern construction art in landscape planning and design is not

simply copying and imitating, but requires targeted innovation based on specific site conditions, cultural background, and functional requirements. Only with a deep understanding of modern construction art concepts and mastery of their design methods can its effective application in landscape planning and design be truly realized.

References

[1] Zhou, Y. Y., Zhang, J., L. & Guan, H. et al. (2022). Analysis of the application of artistic elements in modern landscape architecture design. *Jushe*, (27), 146-149.

[2] Xing, M. (2022). Application of artistic elements in modern landscape architecture design. *Real Estate World*, (2), 47-49.

[3] Liu, L.X. (2024). Analysis of the application of Construction art in modern landscape architecture design. *Modern Horticulture*, (2), 153-155.

[4] Shen, N. (2020). Exploration of the Application of Artistic Elements in Modern Landscape Architecture Design. *Western Leather*, (21), 86-87.

[5] Lou, X. M. (2019). Application of Construction art in modern landscape architecture design. *Anhui Architecture*, (12), 43-44.

[6] Chen, R. L. (2009). *History of Western Design*. Wuhan: Hubei Fine Arts Publishing House.

[7] Yao, G. L. (2023) Analysis of landscape architecture design based on La Villette Park. *Modern Horticulture*, (17), 140-142.

[8] Xu, T. Y. (2019). Innovative design based on the integration of modern sculpture and modern landscape. *Daguan*, (9), 24-25.

[9] He, J. R. (2021). Semantic expression of sculpture in landscape: exploring the symbolic metaphor of Isamu Noguchi's works. *Modern Horticulture*, (4), 73-74.

(Continued from P42)

[15] Connie, T., Lisbeth, U. & Regner, B. (2015). Room for caring: patients' experiences of well-being, relief and hope during serious illness. *Scandinavian journal of Caring Sciences*, 29(3), 426-434.

[16] Kohn, R., Harhay, M. O. & Cooney, E. et al. (2013). Do windows or natural views affect outcomes or costs among patients in ICUs. *Critical Care Medicine*, 41(7), 1645-1655.

[17] Timmermann, C., Uhrenfeldt, L. & Birkelund, R. (2015). Room for caring: patients' experiences of well-being, relief and distractibility. *Scandinavian Journal of Caring Sciences*, 29(3), 426-434.

[18] Emami, E., Amini, R. & Motalebi, G. (2018). The effect of nature as positive distractibility on the healing process of patients with cancer in therapeutic settings. *Complementary Therapies in Clinical Practice*, 32, 70-73.

[19] Verderber, S., Reuman, D. (1987). Windows, views, and health status in hospital therapeutic environments. *Journal of Architectural and Planning Research*, 120-133.

[20] Wang, C. H., Kuo, N. W. & Anthony, K. (2019). Impact of window views on recovery: An example of post-cesarean section women. *International Journal for Quality in Health Care*, 31(10), 798-803.

[21] Iwamoto, J., Saeki, K. & Kobayashi, M. et al. (2020). Lower incidence of in-hospital falls in patients hospitalized in window beds than nonwindow beds. *Journal of the American Medical Directors Association*, 21(4), 476-480.

[22] Lawton, M. P., Nahemow, L. (1973). Ecology and the aging process.

[23] Mihandoust, S., Joseph, A. & Kennedy, S. et al. (2021). Exploring the relationship between window view quantity, quality, and ratings of care in the hospital. *International Journal of Environmental Research and Public Health*, 18(20), 10677.

[24] Aomura, D., Yamada, Y. & Harada, M. et al. (2021). Hospital admission to a window-side bed does not prevent delirium: A retrospective cohort study of older medical inpatients in general wards. *Frontiers in Medicine*, 8: 744581.

[25] Mascherek, A., Weber, S. & Riebandt, K. et al. (2022). On the relation between a green and bright window view and length of hospital stay in affective disorders. *European Psychiatry*, 65(1), e21.

[26] Ulrich, R. S. (1991). Effects of interior design on wellness: theory and recent scientific research[C]//Journal of Health Care Interior Design: Proceedings from the... Symposium on Health Care Interior Design. *Symposium on Health Care Interior Design*, 3, 97-109.

[27] Zaal, I. J., Spruyt, C. F. & Peelen, L. M. et al. (2013). Intensive care unit environment may affect the course of delirium. *Intensive Care Medicine*, 39, 481-488.

[28] Van Oel, C. J., Mlihi, M. & Freeke, A. (2021). Design models for single patient rooms tested for patient preferences. *HERD: Health Environments Research & Design Journal*, 14(1), 31-46.

[29] Lengen, C., Kistemann, T. (2012). Sense of place and place identity: Review of neuroscientific evidence. *Health & Place*, 18(5), 1162-1171.

[30] Radikovic, A. S., Leggett, J. J. & Keyser, J. et al. (2005). Artificial window view of nature//CHI'05 Extended Abstracts on Human Factors in Computing Systems, 1993-1996.

[31] Tanja-Dijkstra, K., Pahl, S., White, M. P., et al. (2018). The soothing sea: a virtual coastal walk can reduce experienced and recollected pain. *Environment and Behavior*, 50(6), 599-625.

[32] Jawed, Y. T., Golovyan, D., Lopez, D. et al. (2021). Feasibility of a virtual reality intervention in the intensive care unit. *Heart & Lung*, 50(6), 748-753.

[33] Nanda, U., Eisen, S., Zadeh, R. S. et al. (2011). Effect of visual art on patient anxiety and agitation in a mental health facility and implications for the business case. *Journal of Psychiatric and Mental Health Nursing*, 18(5), 386-393.

[34] Hospital Curtains[EB/OL]. (14.0.0)[2024-04-01]. <https://sereneview.com/>.