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The Value Realization Mechanism and Path Optimization of Art Integration into Contemporary Design——Based on Multi-Dimensional Empirical and Theoretical Verification

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KEYWORDS

Art Integration;
Contemporary Design;
Value Realization Mechanism;
Path Optimization;
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ABSTRACT

This The in-depth integration of art and design is the core direction for the innovative development of the contemporary design industry. Their symbiosis can not only enrich the aesthetic level and innovative space of design works, but also promote the extension and upgrading of design value from the traditional functional level to the spiritual experience and social service levels. In the current practice of art and design integration, there are still many practical bottlenecks. Some designs fall into the misunderstanding of "formal grafting", simply applying artistic symbols but ignoring the in-depth integration of artistic connotation and design functions, resulting in the difficulty of converting artistic value into the core competitiveness of design. At the same time, some designs lack scientific artistic transformation paths and clear value orientation, which further reduces the quality and effectiveness of their integration. Taking "the value realization mechanism of art integration into contemporary design" as the core research topic, this paper, based on multiple perspectives such as design theory, visual culture theory and technology research, strictly relying on the designated references, comprehensively adopts the methods of literature research, case empirical research and comparative analysis to systematically define the value dimensions of art integration into contemporary design, deeply analyze the core links and key restrictive factors of value realization, construct a scientific and feasible value realization mechanism model, and put forward targeted path optimization strategies. It aims to solve the practical problem of "difficult value implementation" in the integration of art and design, improve the empirical research system in the field of art and design integration, and provide operable theoretical guidance and practical schemes for the coordinated unification of artistic value and design value in contemporary design practice. The research shows that the value of art integration into contemporary design is concentrated in three interrelated and symbiotic core dimensions: aesthetic value, innovative value and social value. Its value realization needs to follow the complete closed loop of "artistic element extraction - design transformation - value transmission - feedback optimization". The lack of design methods, insufficient technical adaptation and deviation in value orientation are the core crux that hinder the efficient operation of this closed loop and restrict the realization of value. The value realization mechanism model constructed in this paper, which combines the theoretical views of the designated references with empirical cases, makes up for the deficiency of existing research that focuses on "phenomenon description rather than mechanism construction" and "theoretical discussion rather than empirical verification" in the integration of art and design. It verifies the feasibility and scientificity of the mechanism through multi-field empirical cases, and improves the empirical research system in the field of art and design integration relying on the designated references, promoting the research in this field from the theoretical level to practical implementation and providing strong support for the high-quality development of contemporary design.

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INTRODUCTION

With the rapid iteration of the contemporary design industry, the competition in the design field has gradually moved away from the homogeneous competition at the traditional functional level to the differentiated competition at the value level. Users' demand for design works has also upgraded from a simple practical demand to a multi-dimensional demand that combines aesthetic experience, innovative expression and emotional resonance. This demand change has promoted the in-depth integration of art and design to become an inevitable choice for the innovative development of contemporary design, and also a key path to enhance the core competitiveness of design works. As an important carrier of human emotional expression and cultural inheritance, art provides rich aesthetic nourishment, creative inspiration and cultural heritage for design creation; while design provides a variety of landing carriers and communication channels for art, allowing art to get out of the ivory tower, integrate into people's daily life scenarios, and realize the popular communication of artistic value. Their symbiosis constitutes the core driving force for the innovative development of contemporary design, promoting design works to achieve the organic unity of function and aesthetics, practicality and art. However, from the perspective of current integration practice, there are still many practical problems to be solved in the integration of art and design: some designers have a superficial understanding of the integration of the two, simply piling up artistic elements and formally grafting them into design works, failing to achieve the in-depth adaptation of artistic connotation, design functions and user needs, resulting in design works lacking soul and competitiveness; some designs lack scientific artistic transformation methods, making it difficult to effectively convert artistic aesthetic concepts and creative thinking into design language that conforms to design rules and meets user needs, resulting in the disconnection between artistic value and design value; some designs overemphasize the presentation of aesthetic value, ignoring the social value and practical value of design, making the integration of art lose its due practical significance.

In the existing relevant research, many scholars have explored the relationship and integration path between art and design from different perspectives. Barnard (1998) in "Art, design and visual culture: An introduction" clarified the internal relationship between art, design and visual culture, and proposed that design is an important part of visual culture. The integration of art and design is essentially the concrete expression of visual culture. This view provides core theoretical support for analyzing the value basis of art integration into design. Le Masson et al. (2013) in "Design theory: history, state of the art and advancements" systematically combed the evolution of design theory, and proposed that the innovation of design paradigm needs to rely on multiple methodologies, which provides important methodological reference for constructing the transformation mechanism of art integration into design. Shen and Yu (2021) focused on the impact of artificial intelligence on art and design, deeply analyzed the application value of digital technology in the integration of art and design, and supplemented the technical adaptation perspective. In addition, Behrens (1998) applied gestalt theory to the research of art and design, providing a psychological theoretical basis for the design transformation of artistic elements; Daykin et al. (2008) from the perspective of social value, studied the application effect of art and design integration in the medical environment, enriching the research on the value dimension of art integration into design. However, on the whole, most existing studies focus on the phenomenon description or single-dimensional analysis of the integration of art and design, either focusing on the aesthetic empowerment of art to design, or emphasizing the supporting role of technology in integration. They lack systematic empirical research on the core issue of "the value realization mechanism of art integration into contemporary design", fail to clarify the specific process, core links and restrictive factors of converting artistic value into design value, and also fail to construct a scientific and feasible value realization mechanism and path. This research gap has become the core research entry

point of this paper.

Based on this, this paper takes the value realization mechanism of art integration into contemporary design as the core of the research, and follows the research idea of "theoretical combing - hypothesis proposal - empirical verification - mechanism construction - path optimization". Firstly, through systematically combing the designated references, it clarifies the theoretical basis and core concepts of the research, and constructs a multi-dimensional theoretical framework; secondly, it selects multi-field empirical cases, uses case empirical method and comparative analysis method to verify the research hypotheses, and analyzes the core links and restrictive factors of value realization; thirdly, based on the theoretical analysis and empirical results, it constructs the value realization mechanism model of art integration into contemporary design; finally, it puts forward targeted path optimization strategies for the restrictive factors, aiming to solve the practical problem of "difficult value implementation" in the integration of art and design, improve the empirical research system in the field of art and design integration, provide solid theoretical support and operable practical guidance for contemporary design practice, and promote the in-depth integration and value coordinated unification of art and design.

1.Theoretical Basis and Research Hypotheses

To deeply explore the value realization mechanism of art integration into contemporary design, the primary task is to clarify the connotation of core concepts, sort out the theoretical support of the research, and on this basis, put forward scientific and reasonable research hypotheses, laying a solid foundation for subsequent empirical research and mechanism construction. The "art integration into contemporary design" defined in this paper is not a simple superposition or formal grafting of artistic elements, but the in-depth integration of artistic aesthetic concepts, creative thinking and cultural connotation with design functional needs, technical applications and user experience, realizing the coordinated development state of "art empowers design and design carries art". Its core lies in the two-way transformation and coordinated unification of artistic value and design value. Different from the traditional shallow integration mode, it focuses on the adaptability of artistic connotation and design functions, the coordination of artistic thinking and design methods, and the consistency of artistic value and social needs. "The value realization mechanism of art integration into contemporary design" refers to the complete process of artistic elements from extraction, transformation to final value transmission and feedback optimization, as well as the interaction between various links and factors in the process. Its core includes four core links: "input (artistic elements) - transformation (design processing) - output (value presentation) - feedback (optimization and iteration)". It is the core carrier for converting artistic value into design aesthetic value, innovative value and social value, and also the key support for promoting the in-depth integration of art and design.

The theoretical support of this paper mainly relies on the core views in the designated references to construct a multi-dimensional and systematic theoretical framework, providing a solid theoretical basis for the research. Firstly, visual culture theory. Barnard (1998) in "Art, design and visual culture: An introduction" proposed that design is an important part of visual culture. The integration of art and design is essentially the concrete expression of visual culture. The aesthetic expression of design is not only the presentation of form, but also the concretization of artistic connotation and social culture. This view provides core support for analyzing the aesthetic value and cultural value of art integration into design, and also clarifies that the essence of art integration into design is the transmission and expression of visual culture. Secondly, design theory. Le Masson et al. (2013) in "Design theory: history, state of the art and advancements" systematically combed the

evolution of design theory, and proposed that the innovation of design paradigm needs to rely on multiple methodologies, and the development of design is inseparable from the support of scientific methods. This theory provides important methodological guidance for constructing the transformation mechanism of art integration into design and improving artistic transformation methods, and also provides a theoretical basis for analyzing the restrictive effect of the lack of design methods on value realization. Thirdly, gestalt theory. Behrens (1998) in "Art, design and gestalt theory" applied gestalt theory to the research of art and design, emphasizing that the form construction of design should follow the laws of visual perception, and the extraction and transformation of artistic elements should be consistent with human visual perception habits. This view provides a psychological theoretical basis for the accurate extraction and design transformation of artistic elements, ensuring that the design works after art integration can achieve a good visual experience. Fourthly, technology empowerment theory. Shen and Yu (2021) in "The influence of artificial intelligence on art design in the digital age" deeply studied the impact of artificial intelligence on art and design, and proposed that technological innovation is an important driving force for promoting the integration of art and design. Digital technology, artificial intelligence and other means can improve the adaptability of artistic elements and design, and optimize the efficiency of value transformation. This theory provides a contemporary perspective for analyzing the restrictive effect of insufficient technical adaptation on value realization and putting forward technology empowerment paths. Fifthly, relevant theories of art and design research. Biggs (2002) in "The role of the artefact in art and design research" emphasized the important role of design works as the carrier of art and design integration, and believed that the value expression of design works directly affects the transmission effect of artistic value; Daykin et al. (2008) confirmed through empirical research that the integration of art and design can enhance the value of the medical environment and alleviate patients' psychological pressure, providing empirical support for analyzing the social value of art integration into design; Coss (2003) in "The role of evolved perceptual biases in art and design" proposed that design should balance aesthetic value and practical value, avoiding the deviation of single value orientation. This view provides a theoretical basis for analyzing the restrictive effect of value orientation deviation on value realization.

Based on the above theoretical basis and combined with the current practical difficulties in the integration of art and design, this paper puts forward the following three research hypotheses to provide clear guidance for subsequent empirical research. Hypothesis 1 (H1): The value of art integration into contemporary design is mainly reflected in three dimensions: aesthetic value, innovative value and social value. The three are interrelated and synergistic, forming a complete value system of art integration into design. Among them, aesthetic value is the foundation, innovative value is the core driving force, and social value is an important extension. The coordinated unification of the three is the core goal of the in-depth integration of art and design. Hypothesis 2 (H2): The value realization of art integration into contemporary design is not a scattered connection of links, but needs to go through the complete closed loop of "artistic element extraction - design transformation - value transmission - feedback optimization". These four links are connected and supported by each other.

The lack or imperfection of any link will directly restrict the overall effect of value realization. A perfect closed-loop process is the key to the effective conversion of artistic value into design value. Hypothesis 3 (H3): The lack of design methods, insufficient technical adaptation and deviation in value orientation are the core factors restricting the value realization of art integration into contemporary design, and their restrictive effects on value realization are different. Among them, the lack of design methods mainly affects the transformation effect of artistic elements, insufficient technical adaptation mainly affects the efficiency of value transformation, and deviation in value orientation mainly affects the accuracy and rationality of value transmission**(See Table.1 and Fig.1.)**

Value Dimension	Core Connotation	Representative Literature
Aesthetic Value	Visual perception, form beauty, artistic appeal, cultural transmission	Barnard, 1998; Behrens, 1998
Innovative Value	Breakthrough design logic, creative inspiration, paradigm update	Le Masson et al., 2013; Banach, 2009
Social Value	Scene adaptation, emotional comfort, public welfare, mental healing	Daykin et al., 2008; Coss, 2003

Table.1. Value Dimensions of Art Integration and Theoretical Basis

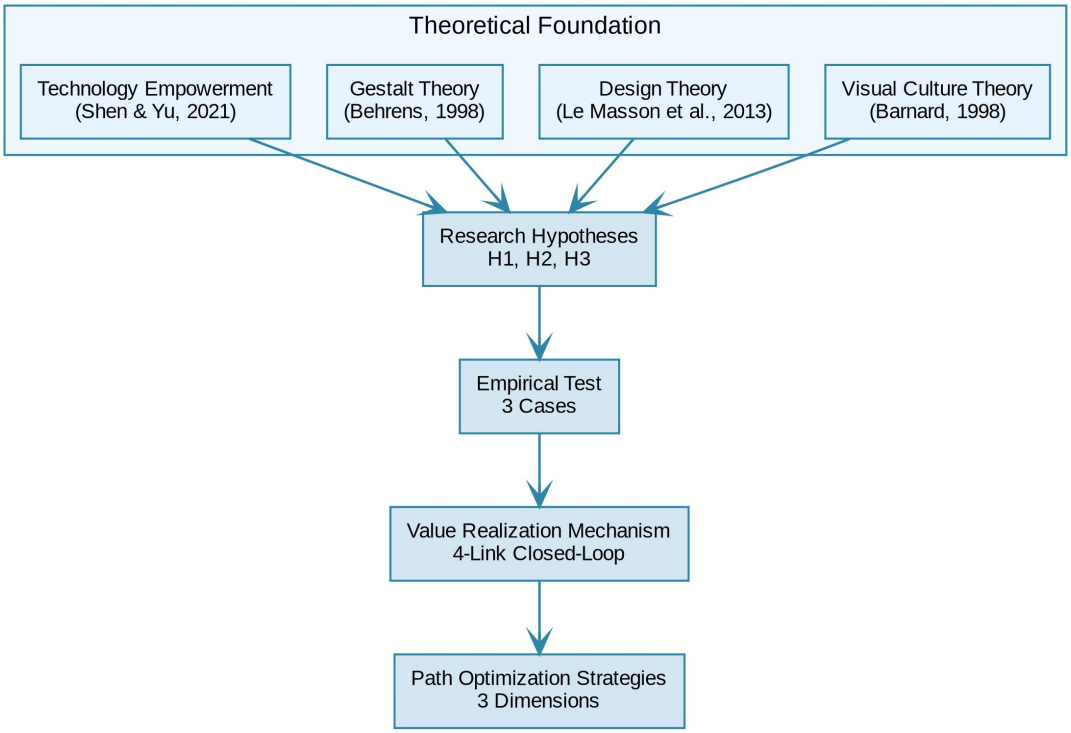

Fig.1. Overall Research Framework

2.Research Design and Empirical Analysis

To verify the scientificity and rationality of the above research hypotheses, and clarify the value realization links and restrictive factors of art integration into contemporary design, this paper comprehensively adopts the methods of literature research, case empirical research and comparative analysis to ensure the scientificity, pertinence and empiricism of the research. Among them, the literature research method is mainly used to sort out the theoretical basis and clarify the research status, providing theoretical support for the proposal of research hypotheses and mechanism construction; the case empirical method is mainly used to select representative cases in multiple fields, deeply analyze the process of art integration, the effect of value presentation and existing problems, and verify the effectiveness of research hypotheses; the comparative analysis method is mainly used to compare the methods of art integration, technical applications and value realization effects in different cases, analyze the core factors restricting value realization, and provide empirical basis for subsequent path optimization.

The case selection follows the core principles of "typicality, diversity and operability". Combined with the main application fields of art and design integration, three representative cases in different fields of visual design, product design and

environmental design are selected to ensure that the cases can fully cover different scenarios of art integration into design and fully reflect the overall situation and existing problems of value realization. Case 1 is a Chinese character cultural and creative visual design in the field of visual design. This design takes Chinese calligraphy art as the core, extracts the lines, structures and other elements in calligraphy art, and completes the design transformation combined with the aesthetic needs and communication characteristics of contemporary visual design, focusing on the transmission of aesthetic value and cultural value. Referring to the view of "the relationship between artifacts and artistic value" in Biggs (2002) "The role of the artefact in art and design research", it focuses on analyzing the extraction and transformation effect of artistic elements and the completeness of value transmission. Case 2 is a minimalist furniture design in the field of product design. This design integrates the color matching and composition concepts of modern painting art, and organically combines the artistic expression of abstract painting with the practical functions of furniture. Referring to the design methodology in Banach and Ryan (2009) "The art of design: A design methodology", it focuses on analyzing the adaptability between art and design functions, and the application of design methods in the process of artistic element transformation. Case 3 is an environmental design of a mental health center in the field of environmental design. This design integrates installation art and natural art elements, improves the overall atmosphere of the medical environment and relieves patients' psychological pressure through the reasonable placement of art installations and the ingenious integration of natural elements. Referring to the research results in Daykin et al. (2008) "The impact of art, design and environment in mental healthcare", it focuses on analyzing the social value realization effect of art integration and the impact of technical adaptation on value realization.

Data collection is mainly carried out through three methods: case analysis, literature combing and expert interviews to ensure the authenticity, comprehensiveness and pertinence of the data. Case analysis mainly focuses on the art integration process, artistic element extraction methods, design transformation methods, technical application status, value presentation effects and existing problems of the three cases, collecting first-hand data such as design schemes, finished product displays and user evaluations related to the cases; literature combing mainly focuses on the designated references and related field research results, collecting second-hand data such as theoretical support, value dimensions and restrictive factors of art integration into design; expert interviews select 5 senior experts in the design field and 3 scholars in the art field to conduct interviews on the value dimensions, realization processes and restrictive factors of art integration into design, collecting expert opinions and suggestions to provide supplementary support for empirical analysis.

Through the systematic empirical analysis and comparative research of the three cases, the three research hypotheses proposed in this paper are effectively verified. In terms of value dimension verification, empirical analysis finds that the value of art integration into contemporary design is indeed reflected in three dimensions: aesthetic value, innovative value and social value, which are interrelated and synergistic, consistent with research hypothesis H1. Among them, aesthetic value is mainly reflected in that the integration of artistic elements effectively improves the visual beauty and artistic appeal of design works. The application of calligraphy art elements in Case 1 makes the Chinese character cultural and creative visual design get rid of the monotony of traditional cultural and creative works, forming a visual expression with both aesthetic and cultural properties, which is consistent with the view proposed by Barnard (1998) that "design is the concretization of visual culture"; innovative value is mainly reflected in that the integration of artistic elements breaks the thinking limitations of traditional design, providing new ideas and directions for design innovation. The integration of modern painting art and furniture design in Case 2 innovates the form and aesthetic expression of furniture, breaking the homogenization dilemma of traditional furniture design, which confirms the theory proposed by Le Masson et al. (2013) that "design innovation needs to rely on multiple

methodologies"; social value is mainly reflected in that art integration into design can meet diverse social needs and convey positive social values. The application of installation art and natural art in the environmental design of the mental health center in Case 3 effectively improves the atmosphere of the medical environment, relieves patients' psychological pressure, and enhances the humanistic temperature of medical services, which is consistent with the conclusion in Daykin et al. (2008) research that "art and design can enhance the value of the medical environment".

In terms of the verification of the value realization process, empirical analysis shows that the value realization of art integration into contemporary design does follow the closed-loop process of "artistic element extraction - design transformation - value transmission - feedback optimization", which is consistent with research hypothesis H2. However, there are obvious differences in the process perfection of different cases, which further affects the effect of value realization. Among them, the process of Case 1 (visual design) is relatively perfect. From the accurate extraction of calligraphy art elements, the simplified transformation combined with visual design laws, to the presentation of visual works, the collection of user feedback and optimization iteration, a complete value realization closed loop is formed, so that artistic value can be effectively converted into the aesthetic value and cultural value of design, with good value realization effect; Case 2 (product design) lacks the "feedback optimization" link. After the transformation of artistic elements, user feedback is not collected in time for iteration and optimization, resulting in a deviation between artistic value and actual user needs. Some design details overemphasize artistic expression and ignore the practical experience of furniture, affecting the overall effect of value realization; Case 3 (environmental design) has obvious deficiencies in the "design transformation" link. The extraction and transformation of artistic elements fail to fully adapt to the functional needs of the medical environment, and the placement of some art installations affects the normal development of medical services, resulting in the failure of the full play of the social value of art and restricting the effect of value realization.

In terms of the analysis of restrictive factors, through comparing the empirical results of the three cases, it is found that the lack of design methods, insufficient technical adaptation and deviation in value orientation are the core factors restricting the value realization of art integration into contemporary design, which is consistent with research hypothesis H3, and their restrictive effects are significantly different. Among them, the lack of design methods is mainly reflected in Case 2. This case lacks scientific artistic element transformation methods, and fails to scientifically adapt the concepts of modern painting art to the functional needs and user experience of furniture design. Referring to the design methodology of Banach and Ryan (2009), it can be seen that perfect design methods are the key to the in-depth integration of art and design. The lack of design methods will make it difficult for artistic elements to be effectively converted into design language that conforms to design rules, thereby restricting value realization; insufficient technical adaptation is mainly reflected in Case 3. This case lacks effective technical means to realize the adaptation of artistic elements and the functions of the medical environment, and fails to use digital technology, simulation technology and other means to optimize the placement and size of art installations, resulting in the disconnection between artistic elements and the medical environment, which is consistent with the view proposed by Shen and Yu (2021) that "technological innovation can promote the integration of art and design". Insufficient technical adaptation will directly affect the efficiency and effect of value transformation; deviation in value orientation is mainly reflected in some cases. Some designs overemphasize the presentation of aesthetic value, ignoring social value and functional needs. For example, some furniture designs in Case 2 overemphasize the expression of artistic form, ignoring the practicality and comfort of furniture, which is contrary to the view of "design should balance aesthetics and practicality" in Coss (2003) "The role of evolved perceptual biases in art and design". Deviation in value orientation will make the integration of art lose its practical

significance and difficult to achieve the coordinated unification of multiple values**(See Table.2)**.

Item	Case 1: Visual/Cultural Design	Case 2: Product/Furniture Design	Case 3: Environmental/Healthcare Design
Art Form	Calligraphy & Visual Art	Modern Painting & Minimalist Art	Installation Art & Natural Art
Core Value	Aesthetic & Cultural Value	Innovative & Practical Value	Social & Emotional Healing Value
Key Theoretical Support	Biggs (2002); Barnard (1998)	Banach & Ryan (2009); Le Masson (2013)	Daykin et al. (2008); Shen & Yu (2021)
Strengths	Complete closed-loop process	Clear artistic-function integration	Significant social value performance
Weaknesses	Insufficient innovation exploration	Lack of feedback optimization	Technical adaptation insufficiency

Table.2. Comparison of Three Empirical Cases

3. Construction of the Value Realization Mechanism of Art Integration into Contemporary Design

Based on the above theoretical analysis and empirical research results, combined with the core views of the designated references, this paper constructs a value realization mechanism model of art integration into contemporary design. Taking "value coordinated symbiosis" as the core orientation and "closed-loop linkage" as the operation logic, the model integrates four core links: input, transformation, output and feedback. Each link has an independent functional positioning and forms an organic whole through internal logical connections, realizing the efficient conversion of artistic value into design value and the coordinated unification of multiple values. It makes up for the deficiency of the existing mechanism models in the field that "focus on process rather than connection" and "focus on theory rather than practical operation", providing a theoretical framework with both scientificity and operability for contemporary design practice. The construction of this mechanism model strictly relies on Barnard (1998) visual culture theory, Le Masson et al. (2013) design theory and Shen and Yu (2021) technology empowerment theory, combined with the value realization rules summarized in empirical cases. It not only responds to the core demands of the integration of art and design, but also solves the practical dilemma of "difficult value implementation" in current integration practice, with distinct theoretical innovation and practical guidance.

As the basic premise of value realization, the core function of the input link is to complete the accurate screening and connotation refinement of artistic elements. Its operation quality directly determines the effect of subsequent value transformation. Different from the traditional "blind extraction" mode, this mechanism clarifies the three-stage operation logic of "context adaptation - connotation refinement - value prediction". Referring to the core view of "design is the concretization of visual culture" in Barnard (1998) visual culture theory, the extraction of artistic elements needs to be based on the in-depth research of design context, user needs and social culture, avoiding invalid extraction divorced from the design scenario.

Specifically, first of all, it is necessary to screen the artistic forms highly consistent with the design theme and functional needs combined with the core positioning of the design project (such as cultural and creative design, medical environment design), exclude the artistic elements contrary to the design context, and ensure the pertinence of extraction; secondly, relying on Behrens (1998) gestalt theory, refine the connotation of the selected artistic forms, strip the surface form symbols, and explore

the aesthetic concepts, cultural connotations and emotional expressions behind them. For example, calligraphy art not only extracts visual elements such as lines and structures, but also refines the Oriental aesthetic spirit and cultural heritage contained in it, achieving the extraction goal of "integrating form and spirit"; finally, conduct value prediction, predict the aesthetic value, innovative value and social value that the extracted artistic elements can be converted into combined with the value orientation of design, and screen out the core elements with high value potential, laying a foundation for the subsequent transformation link. In addition, the input link needs to establish an "artistic element database" to store the core elements and connotations of different artistic forms in categories. Combined with the digital technology application concept proposed by Shen and Yu (2021), big data technology is used to dynamically update and intelligently match the element database, improving the extraction efficiency and accuracy**(See Fig.2)**.

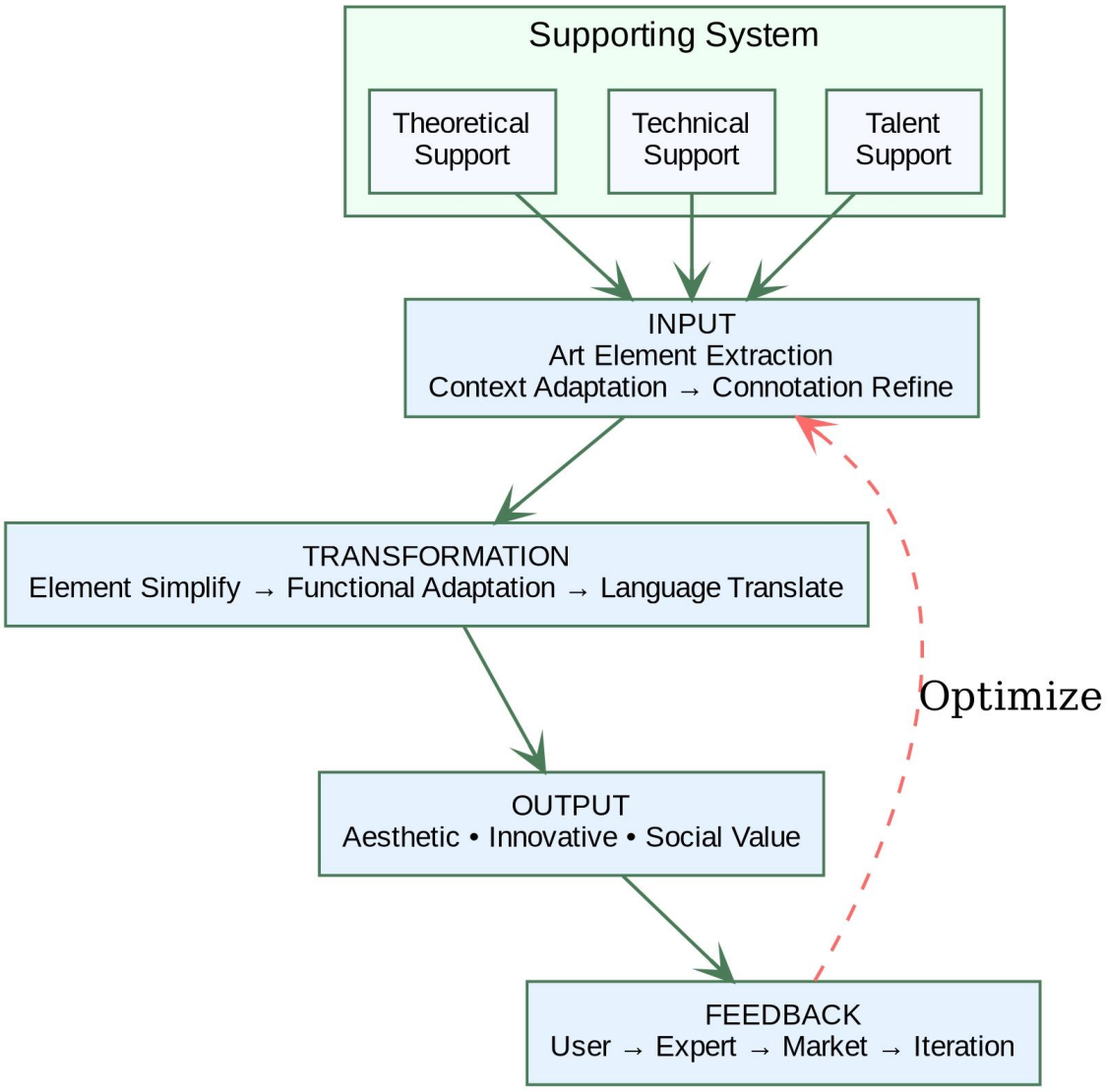

Fig.2. Value Realization Mechanism

As the concrete presentation of value realization, the core function of the output link is to accurately transmit the transformed artistic value and design value to users through design works, realizing the landing of value. This mechanism emphasizes the operation logic of "hierarchical value transmission + accurate scene adaptation". Referring to the view of "design works are the core carrier of value transmission" in Biggs (2002) "The role of the artefact in art and design research", the output link needs to clarify the focus and way of value transmission combined with the application scenario and user group of design works,

realizing "accurate transmission and effective perception". From the perspective of value stratification, aesthetic value is mainly transmitted through the visual form, color matching and form expression of design works, allowing users to obtain aesthetic experience in visual perception; innovative value is mainly transmitted through the form innovation, function innovation and concept innovation of design works, breaking the homogenization dilemma of traditional design and highlighting the uniqueness of design; social value is mainly transmitted through the scene adaptation and emotional transmission of design works. For example, medical environment design relieves patients' psychological pressure and conveys humanistic care through the integration of artistic elements. From the perspective of scene adaptation, the user needs of different application scenarios are different, and the focus of value transmission needs to be adjusted pertinently. For example, in cultural and creative design, the focus is on transmitting the cultural value and aesthetic value of art, realizing the unification of cultural inheritance and aesthetic experience; in public space design, the focus is on transmitting the social value and public value of art, creating a harmonious and comfortable public atmosphere. In addition, the output link needs to establish a value transmission evaluation standard, and judge the effect of value transmission combined with user perception, expert evaluation and other methods, providing data support for the feedback link.

As the guarantee mechanism of value realization, the core function of the feedback link is to ensure the efficient operation and continuous improvement of the entire mechanism through dynamic feedback and iterative optimization, forming a closed-loop operation mode of "extraction - transformation - transmission - feedback - optimization", solving the problem of "lack of feedback and difficulty in iteration" in the current value realization process. Referring to the view of "dynamic evolution of design paradigm" in Le Masson et al. (2013) design theory, the feedback link needs to establish the operation logic of "multi-dimensional feedback - systematic analysis - precise optimization". Multi-dimensional feedback mainly includes user feedback, expert feedback and market feedback. User feedback focuses on users' aesthetic experience, practical experience and emotional resonance of design works, collected through user surveys, questionnaire statistics and other methods; expert feedback focuses on the rationality of art integration and the effectiveness of value transformation, collected through expert review, forum exchange and other methods; market feedback focuses on the market recognition and competitiveness of design works, collected through market sales, industry evaluation and other methods. Systematic analysis is to sort out the collected feedback information, clarify the core root causes of feedback problems, distinguish whether it is the deviation of element extraction in the input link, the insufficient adaptation in the transformation link, or the inaccurate value transmission in the output link, and analyze the impact of the problems on the realization of aesthetic value, innovative value and social value combined with the view of "multi-value balance" proposed by Coss (2003). Precise optimization is to make targeted adjustments to each link according to the root causes of the problems, such as optimizing the artistic element extraction standards in the input link, improving the adaptation methods in the transformation link, and adjusting the value transmission methods in the output link. At the same time, combined with the technology empowerment view of Shen and Yu (2021), artificial intelligence technology is used to simulate and test the optimization scheme, improving the optimization effect. Through the dynamic iteration of the feedback link, the continuous improvement of the value realization mechanism is realized, ensuring that the value of art integration into contemporary design can be continuously improved.

In addition, the mechanism also clarifies three supporting conditions to ensure its efficient operation: first, theoretical support, with visual culture theory, design theory, gestalt theory, etc. as the core, providing theoretical guidance for the operation of each link; second, technical support, relying on modern technologies such as digital technology, artificial intelligence and 3D simulation to improve the operation efficiency and accuracy of each link; third, talent support, requiring designers to have

artistic literacy and design ability, realizing the coordination of artistic thinking and design thinking, and providing talent guarantee for the landing of the mechanism. The three supporting conditions are coordinated with each other and form an organic whole with the four core links, jointly promoting the efficient realization of the value of art integration into contemporary design.

4. Path Optimization Strategies for Art Integration into Contemporary Design

Based on the above value realization mechanism and the problems found in empirical analysis, combined with the core views of the designated references, aiming at the three core restrictive factors of lack of design methods, insufficient technical adaptation and deviation in value orientation, this paper puts forward targeted path optimization strategies to promote the efficient realization of the value of art integration into contemporary design, realize the coordinated unification of artistic value, design value and social value, and provide operable practical guidance for contemporary design practice.

Aiming at the restrictive factor of lack of design methods, it is necessary to improve the artistic transformation design methods, solve the dilemma of formal integration, and provide scientific methodological support for the in-depth integration of art and design. Referring to the core views in Banach and Ryan (2009) "The art of design: A design methodology", construct a standardized design method of "artistic element extraction - simplification - adaptation - presentation", clarify the operation process, core requirements and evaluation standards of each link, standardize the transformation process of artistic elements, and eliminate the simple piling up and formal grafting of artistic elements. At the same time, combined with Behrens (1998) gestalt theory, integrate the laws of visual perception into the artistic transformation process, pay attention to the coordination of artistic elements with design forms and visual experience, ensure that the design works after artistic transformation can conform to users' visual perception habits, and improve the aesthetic experience. In addition, strengthen the training of designers' artistic literacy and design ability, promote the in-depth integration of artistic thinking and design thinking, and improve designers' ability to understand artistic connotation, extract artistic elements and transform design through training and exchange activities related to the integration of art and design, so that designers can truly master the core methods of art and design integration and realize the in-depth adaptation of artistic connotation and design functions.

Aiming at the restrictive factor of insufficient technical adaptation, it is necessary to strengthen technical adaptation support, improve the efficiency of value transformation, and give full play to the enabling role of modern technology in the integration of art and design. Relying on the view of "artificial intelligence empowers art and design" proposed by Shen and Yu (2021), actively promote the application of modern technologies such as AI design tools, digital twins and 3D simulation in art integration into design, use AI tools to realize the rapid extraction, optimization and transformation of artistic elements, and use digital twin technology to complete the adaptation test of artistic elements and design in virtual space, reducing design costs, shortening the design cycle, and improving the adaptability of artistic elements and design. At the same time, referring to Le Masson et al. (2013) design theory, promote the in-depth integration of technology and design methods, develop targeted artistic transformation technology tools combined with the specific needs of art integration into design, and solve the problem of insufficient technical adaptation. For example, develop adaptation test tools for artistic elements and design functions to help designers quickly find and optimize adaptation problems in the process of artistic transformation. In addition, strengthen interdisciplinary cooperation, promote the in-depth integration of design, computer science, art, psychology and other disciplines, set up interdisciplinary research teams, explore new paths and methods for technology to empower the integration

of art and design, and provide solid technical support and innovative ideas for art integration into design.

Aiming at the restrictive factor of value orientation deviation, it is necessary to establish a multi-value orientation, realize the coordinated unification of values, and make art integration into design balance aesthetic value, innovative value and social value, avoiding the deviation of single value orientation. Referring to the research view of Coss (2003), guide designers to establish a trinity value orientation of "aesthetic value, innovative value and social value", clarify that the core goal of art integration into design is to realize the coordinated unification of multiple values, not only focusing on the aesthetic expression of art and the innovative development of design, but also attaching importance to the social value and practical value of design, avoiding overemphasizing aesthetic value while ignoring practical value and social value, or overemphasizing practical value while ignoring aesthetic value and innovative value. Combined with the research results of Daykin et al. (2008), strengthen the social value orientation of design, promote the application of art integration into design in fields such as medical care, public services and rural revitalization, so that the integration of art and design can solve practical social problems, convey positive social values, and enhance the practical significance of design. At the same time, referring to Barnard (1998) visual culture theory, pay attention to the transmission of cultural connotation of artistic elements, integrate traditional culture, regional culture and other elements into design practice, realize the unification of artistic value, cultural value and design value, and promote the coordinated development of cultural inheritance and design innovation. In addition, establish a multi-value evaluation system, include aesthetic value, innovative value, social value, practical value and other indicators into the design evaluation index, guide designers to establish a correct value orientation, and ensure that art integration into design can realize the coordinated unification of multiple values（**See Table.3**）.

Constraint Type	Performance	Optimization Path
Lack of Design Methods	Superficial grafting, formalization, unclear transformation logic	Standardized design process; Gestalt-guided transformation
Insufficient Technical Adaptation	Low integration efficiency; poor simulation; mismatched spatial effects	AI tools; digital twin; 3D simulation
Deviated Value Orientation	Overemphasis on aesthetics; neglect of function and social value	Three-value balance; multi-dimensional evaluation

Table.3. Constraints and Corresponding Optimization Paths

Conclusions and Prospects

Taking the value realization mechanism of art integration into contemporary design as the core research issue, this paper, based on multiple perspectives such as design theory, visual culture theory and technology research, relying on the designated references, adopts the methods of literature research, case empirical research and comparative analysis to systematically carry out empirical research and theoretical discussion, clarify the value dimensions, value realization process and restrictive factors of art integration into contemporary design, construct the value realization mechanism model of art integration into contemporary design, and put forward targeted path optimization strategies, drawing the following core conclusions. The value system of art integration into contemporary design is composed of aesthetic value, innovative value and social value, which are interrelated and synergistic. Among them, aesthetic value is the foundation, innovative value is the core driving force, and social value is an important extension. This conclusion verifies the relevant views of scholars such as Barnard (1998) and Daykin et al. (2008), enriching the value research in the field of art and design integration. The value realization of art

integration into contemporary design needs to follow the complete closed loop of "artistic element extraction - design transformation - value transmission - feedback optimization". The four links are connected and supported by each other. The lack or imperfection of any link will restrict the effect of value realization. This finding supplements the application of Le Masson et al. (2013) design theory in the field of art integration, clarifying the core process of value realization. The lack of design methods, insufficient technical adaptation and deviation in value orientation are the core factors restricting the value realization of art integration into contemporary design, and their restrictive effects are different. The path optimization strategies proposed for these three factors can effectively promote the in-depth integration of art and design and realize the coordinated unification of values. The value realization mechanism model constructed in this paper, which combines the theoretical views of the designated references with empirical cases, makes up for the deficiency of existing research that focuses on "description rather than mechanism" and "phenomenon rather than empirical verification" in the integration of art and design, improves the empirical research system in the field of art and design integration, and provides operable theoretical guidance and practical paths for contemporary design practice.

At the same time, this study also has certain limitations, which need to be further improved in subsequent research. On the one hand, the number of selected cases is limited, and it focuses on three fields: visual design, product design and environmental design, failing to cover more design fields such as digital design, fashion design and public art design, resulting in the need for further verification of the universality of the research conclusions; on the other hand, the discussion on the specific path of technology empowering art integration into design is not in-depth enough, only initially analyzing the application value of artificial intelligence and digital technology, failing to construct a detailed application scheme combined with specific technical scenarios. At the same time, the views of scholars such as Gargarian (2012), Kim (2006) and Arts (2007) are not fully applied, and their theoretical value in the field of art and design integration has not been fully explored.

Future research can be further deepened and expanded from three aspects. First, expand the scope of case selection, cover more design fields such as digital design, fashion design and public art design, increase the number of cases, and improve the universality of research conclusions. At the same time, combined with the view of Arts (2017), explore the value realization path of art and design integration in fields such as gender and identity expression, enriching the research content. Second, in-depth exploration of the specific application paths of modern technologies such as artificial intelligence, big data and digital twins in art integration into design, combined with the research of Shen and Yu (2021), construct a detailed scheme of technology empowering art integration into design, improve the pertinence and effectiveness of technical adaptation, and promote the in-depth integration of technology, art and design. Third, combined with the views of Gargarian (2012) "The art of design" and Kim (2006) "A history of design theory in art education", explore the application of art integration into design in the field of education, promote the innovation of design talent training mode, strengthen the coordinated training of artistic literacy and design ability, provide solid talent support for the in-depth integration of art and design, and further improve the value realization mechanism model, promoting the research in the field of art and design integration to develop in a deeper and broader direction.

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