

In The Era of Digital Intelligence, "the Philosophy of Preparing Objects for Practical Use" Drives Design Education: the Coupling Path of Technological Rationality And Humanism

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ABSTRACT

Against the backdrop of digital intelligence technology reconstructing the design education ecosystem, the unidirectional expansion of technical rationality and the gradual decline of humanistic spirit have become the key contradiction restricting the high-quality development of design education. The traditional Chinese Philosophy of Preparing Objects for Practical Use (Beiwuzhiyong Guan) contains the ideas of "utensils carry the Tao" and "the unity of Tao and utensils", which provides Oriental wisdom for resolving the dual opposition between technology and humanity. Through the construction of the three-dimensional analysis framework of "cultural decoding, technology translation, and value reconstruction", this study reveals the theoretical mechanism driving the coupling of technical rationality and humanism, and puts forward the practice paths from the dimensions of education concept, curriculum system and teaching methods, which provides the basis for the construction of localization theory of Chinese design education, and also provides a reference for balancing instrumental rationality and humanistic spirit under the background of global digital intelligence transformation.

KEYWORDS

The age of digital intelligence; The philosophy of preparing objects for practical use; Design education; Technology and humanity

1 Introduction

With the deep penetration of AI, big data and virtual reality technology, design education has entered the stage of digital intelligence transformation. Technical means such as parametric design and algorithmic generation restructure the mode of knowledge production, but also lead to the imbalance of value system: students excessively rely on digital tools, resulting in cultural hollowness, emotional alienation and homogenization. The separation of technical rationality and humanism is essentially the arrogation of instrumental rationality over value rationality, which has become a deep contradiction restricting the high-quality development of design education.

The traditional Chinese creation thought of "the Philosophy of Preparing Objects for Practical Use" (Beiwuzhiyong Guan) advocates the unity of the functions of utensils and cultural values. Its philosophy of "the unity of Tao and utensils" is highly consistent with the development demands of contemporary design education in the pursuit of technology and human integration. This paper takes this idea as a theoretical anchor to explore the path to drive the coupling of technical rationality and humanism in the era of digital intelligence, aiming to build a new paradigm of design education with both technical depth and humanistic temperature, and provide localized theoretical basis and practical solutions.

2 The connotation analysis and era mapping of the philosophy of preparing objects for practical use

"Prepared for use" originated from the "prepared for use, set up a tool for the benefit of the world" in the book of I Ching: Great Treatise. That is to create a variety of utensils to facilitate the meaning of the world. It constructs a complete logical chain of utensil production from material creation to social value realization. In the context of traditional creation, "preparation" refers to the systematic construction of the shape of utensils, and "application" emphasizes the response of functions to social needs. Its philosophical essence is to regard the production of utensils as a practical process of "unity of Tao and utensils". Its connotation extends to the new era, which reflects the mission of the current design to be world-renowned, practical, integrated and future oriented, as well as the responsibility of cultivating future oriented design talents.

Therefore, "the Philosophy of Preparing Objects for Practical Use" is a holistic design concept based on functional adaptability and extended by cultural symbolism in traditional Chinese creation thought. It contains three progressive relationships:

2.1 The material layer: the technical ethics of functional adaptability

"KAOGONGJI" records the creation principle of "the heaven and the earth have the air, the material has the beauty, and

the work has the skill", taking the natural law, material characteristics and technology into account as a whole, and emphasizing the precise response of the shape of the utensil to the use needs. This is in sharp contrast to the tendency of one-sided pursuit of form innovation and neglect of reasonable function in contemporary design education. For example, if the parametric design course excessively focuses on shape generation and ignores human body scale, it will lead to the design paradox of "advanced technology but ineffective experience".

2.2 Spiritual layer: the value bearing of cultural symbolism

The ethical pursuit of "justice, utilization and well-being" makes the traditional creation process beyond the instrumental rationality and become the carrier of cultural identity and moral norms. In contemporary design education, students lack a deep interpretation of the collage application of traditional cultural symbols, and "the Philosophy of Preparing Objects for Practical Use" advocates that cultural genes (such as the space philosophy of Jiangnan garden and the ritual symbols of bronze ware) be the core to give the spiritual depth of design works.

2.3 System level: the symbiotic logic of "things human society"

Traditional creation emphasizes that utensils are the media to connect people and the environment, and emphasizes harmonious coexistence. In the era of digital intelligence, this concept can be extended to the systematic consideration of the social impact of design: for example, elderly-friendly design need to take into account the ease of technology and emotional care, and smart city design needs to integrate historical context and modern functions. At present, the design education project lacks the overall thinking of the social system, and "the Philosophy of Preparing Objects for Practical Use" provides a theoretical basis for the cultivation of cross scale design thinking.

The three connotations constitute a complete system of "from the material basis to the spiritual sublimation and then to the system construction", which provides a method of "traditional wisdom modern translation" to solve the problem of separation and imbalance between technology and humanity, form and function, and individual and society in design education.

3 The theoretical mechanism of the driving coupling of the philosophy of preparing objects for practical use

"The Philosophy of Preparing Objects for Practical Use" contains the essence of traditional culture such as "utensils to carry the way" and "holistic creation concept". Through cultural decoding, technical translation and value reconstruction, the three-dimensional driving coupling mechanism is realized to realize the humanistic empowerment of technical rationality.

3.1 Cultural decoding: humanistic gene implantation of technological rationality

The popularity of digital intelligence tools has triggered a shallow crisis of cultural decoding. In design education, the traditional concept of creation contained in "the Philosophy of Preparing Objects for Practical Use" is the theoretical anchor, such as the "overall creation concept" advocated in "KAOGONGJI". The modular thinking of traditional construction technology (such as the proportion of arch of wooden architecture), the ecological concept (Fengshui, a traditional Chinese practice of geomancy) and the algorithm logic are integrated to carry out the deep deconstruction of cultural genes. At the same time, the deep decoding mechanism of traditional cultural symbols is built relying on digital intelligence technology.

For example: in the parametric design teaching, the spatial scale law of Jiangnan garden is transformed into the scale parameters of the digital model, so that the generated architectural form has both modern engineering standards and Oriental aesthetic genes. It can also conduct 3D modeling and dynamic simulation of ancient buildings through virtual reality technology, transform static heritage into interactive cultural narrative carrier, and reveal the philosophical connotation of "unity of man and nature". In teaching, we can establish three evaluation dimensions of "technical path - cultural traceability - emotional verification", and guide students to deeply explore the social psychology behind cultural symbols through targeted homework design.

3.2 Technical translation: the construction of the technical carrier of humanistic spirit

The one-way development of technological rationality needs the value guidance of humanistic spirit. "The Philosophy of Preparing Objects for Practical Use" constructs the collaborative innovation ecology of "technology culture education"

through tool innovation and method reconstruction, and realizes the integration of Tao and instrument.

(1) Tool innovation: digital translation of traditional crafts

The modern translation of traditional craft wisdom can be realized by grafting traditional craftsmanship and digital technology. Taking the tenon and mortise joint as an example, its mechanical principle of "concave convex buckle" can be transformed into the intelligent node algorithm of parametric modeling, so that the digital model can meet the engineering accuracy and become the technical expression of Oriental philosophy of creation. This method of "skill parameterization" breaks through the formal imitation, and realizes the deep grafting of traditional process wisdom and modern manufacturing technology.

(2) Method reconstruction: dynamic translation of symbol system

It can rely on digital technology to build a dynamic translation system of traditional cultural symbols. For example, the Dunhuang Research Institute used image recognition technology to analyze the color composition of murals, established a mapping model of "traditional chromatography to modern color gamut", and generated a design vocabulary with historical charm and contemporary aesthetics. This kind of cultural symbol translation method based on digital intelligence technology realizes the transformation from "visual symbol" to "cultural code", so that traditional culture can obtain a new way of expression in the era of digital intelligence.

3.3 Value reconstruction: the construction of two-way coupling ecosystem

In the era of digital intelligence, design education needs to reshape the value coordinate system of "technology culture society", and "the Philosophy of Preparing Objects for Practical Use" realizes the ecological system construction of two-way coupling of technical rationality and humanistic spirit through the path of systematic value reconstruction.

Individual value: educate students to re-examine the essence of design, guide students to transcend technology worship, and establish a cognitive framework of "design ethics, user empathy, and cultural identity". For example, students use big data to analyze user behavior and emotional preferences, so that the design works can meet the functional requirements and realize the deep expression of humanistic care and emotional resonance.

Social value: relying on the traditional creation idea of "making things for the benefit of the world" in "the Philosophy of Preparing Objects for Practical Use", strengthen the social responsibility consciousness of design education. The social topics such as adaptive elderly-friendly design and barrier free interaction are included in the teaching practice, and students are encouraged to use digital intelligence technology to assist in solving problems, so as to realize the dual value of technical functions and social services.

Ecological value: learn from the ecological wisdom of conforming to nature and making the best use of things in "the Philosophy of Preparing Objects for Practical Use", and integrate the concept of sustainable design into the teaching system. For example, the Digital Twin Technology (DTT) is used to simulate the life cycle environmental impact of products, and guide students to use waste recycling, modular design and other technical means to achieve efficient use of materials, so that technical innovation serves low-carbon goals and cultural expression.

The above mechanism helps to drive design education to form a two-way empowering paradigm of "technology decoding culture, culture feedback technology", cultivate composite design talents with digital technology expertise and cultural interpretation ability, and promote the transition of design education from "technical efficiency first" to "technology and culture symbiosis".

4 The practical path of the drive coupling of the philosophy of preparing objects for practical use

Based on the above theoretical mechanism, design education takes "the Philosophy of Preparing Objects for Practical Use" as the core, and carries out systematic reform practice in the innovation of educational philosophy, the reconstruction of curriculum system, the iteration of teaching methods, and the optimization of evaluation mechanism.

Innovation of education concept: establish the education tenet of "technology as instrument and culture as Tao". Open general education courses such as "traditional creation philosophy and modern design", analyze the double wisdom of traditional creation in the level of functional adaptability and cultural symbolism, and cultivate students' ability to think about the nature of design. At the same time, with the dual guidance of "serving social needs and cultural inheritance and innovation", the goal of design education and training is reconstructed.

Curriculum system reconstruction: establish a modular curriculum group of "Cultural Decoding technical practice value co creation". The basic courses integrate traditional material selection wisdom and digital tool training, such as "material performance and cultural symbols" course, to compare the technical characteristics and cultural semantics of bamboo weaving technology and carbon fiber materials; The professional courses offer interdisciplinary courses, such as "digital technology and traditional culture translation", covering algorithmic generation, semiotics and other content; Set up a compulsory course of "AI design ethics" to explore ethical issues such as AI bias and data privacy; The real projects such as

"Rural Revitalization cultural and creative design" are introduced into the practice curriculum to promote the transformation of theoretical knowledge to social value.

Teaching method iteration: create the teaching mode of "double teacher collaboration + immersion experience". Set up a cross field tutor team composed of designers, engineers and cultural scholars, and form a teaching matrix with multiple wisdom. Relying on virtual reality technology to create the "immersion Cultural Decoding classroom", through multi sensory experience to improve students' cultural understanding and technical operation ability.

Evaluation Mechanism Optimization: build a three-dimensional dynamic evaluation system. The evaluation model of "technology realization (30%) - Cultural Interpretation (30%) - social value contribution (40%)" is established. Students are required to submit multi-dimensional results such as cultural symbol translation reports and user experience feedback data, reverse the single evaluation mode, and promote the deep integration of technical rationality and humanistic spirit.

5 Conclusion

In the dual context of digital intelligence transformation and cultural renaissance, "the Philosophy of Preparing Objects for Practical Use", with its philosophical core of "unity of Tao and instrument", provides a Chinese scheme for the coupling of technical rationality and humanism for design education. Through the gene implantation of cultural decoding, the carrier construction of technical translation and the ecological construction of value reconstruction, design education can form a two-way empowering paradigm of "technology bearing humanities and humanities guiding technology". This theoretical innovation not only provides a theoretical basis for the localized development of Chinese design education, but also contributes Oriental wisdom to the balance of digital instrumental rationality and humanistic spirit globally. In the future, it is necessary to further deepen the research on the integration of the concept of "using things" and the cutting-edge technologies such as metauniverse and productive AI, continue to expand the value boundary of design education, and cultivate innovative talents with both technical insights and cultural consciousness.

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