

# Study on hankou digital building repair technology

[Environment](#), [Air](#)



*Summary* - In this context, traditional building crafts craftsman in artistic conception is under the control, use the appropriate tools or equipment, according to the ages, follow the way from raw material acquisition, manufacture components to install molding, to complete a post-renovation process technology ; endangered intangible cultural heritage in urgent need of rescue and system protection. In this paper, the current status of our architectural heritage protection process, analyzes the significance of the protection framework and ideas, discuss their research methods to analyze the feasibility of building process aimed at promoting heritage protection process, to resolve the current architectural Heritage Protection the “ lost technology” and “ craftsman team fault,” the urgent problem for protection policies provide reference formulation. On the building process is about building sophisticated cognitive system theory and principles and methods of generation, including: the principle of building technology, building technology system structure, and evolution of construction technology paradigm, Chinese modern architecture and sophisticated analysis of the problem 4 to improve its strategy part of a chain, the development of theory and practice in the field of architecture will have far-reaching significance. There is a neglect of traditional building technology issues in the protection of architectural heritage, traditional construction technology plays an important role in the building heritage protection system. Our architectural heritage protection from the perspective of the role of traditional Chinese architecture technology and explore effective ways to protect and respect their heritage.

Keywords - traditional construction technology; architectural heritage; protected mode; framework; building

China's ancient building in the world in the unique building system, the legacy of ancient buildings is our precious spiritual heritage, which more and more attention to protect the community. Architectural heritage protection is a complex project, which requires multi-disciplinary, multi-angle, multi-level study is a gradual, continuous exploration and improvement process. With the depth protection practical work, theoretical studies of architectural heritage protection of people also deepening. Entering the new century, China is facing more large-scale urban renewal and the construction of new socialist countryside construction, which makes architectural heritage protection more urgent, more complicated. Architectural heritage protection in thought and theoretical knowledge and practical aspects need to be a breakthrough.

At present, the study of architectural heritage conservation is more concerned about the shape of the building itself, the layout features, aesthetic features, architectural culture (in this case a narrow spiritual culture), etc., although these studies are important, but in this under the influence of the trend of species, researchers overlooked a very important issue, that is, traditional Chinese architecture technology protection. In the traditional architectural heritage protection work, emphasis is often placed on the protection of the building itself, the method taken only limited mapping, drawing analysis, by the drawing and other aspects, but they ignore the protection of its initial construction process of traditional crafts.

Traditional construction process technology research remained mostly at the micro level, or that is a purely technical level, but very few people from the architectural heritage of the height to look at this issue. Based on this, this paper discusses the architectural heritage protection system in the whole project, the important role of traditional construction technology occupied, and from the perspective of architectural heritage conservation study the protection and inheritance.

In recent years, China's traditional cultural heritage protection can be described as popular, a change in the past few experts campaigned situation, both the user heartfelt call, but also the introduction of relevant government policies and protection measures, and integrated into the global protection of the tides.

In architectural heritage protection, must involve traditional technologies and processes, they are an important part of the architectural heritage indispensable. So far, however, the academic field of architectural heritage protection process there are large gaps. In the longitudinal direction, the study of ancient architecture technology, building on the evolution process of contemporary architecture process itself deep level of research and so on, there are a lot of space. In the transverse direction, the building process of our regional heritage to explore, although the results still did not dare say overall, still a lot of areas for mining. And ineffective in practice, one-sided and inadequate protection of ideas, protection measures, lack of protection technologies, such as improper recycling, but also the protection of important issues currently facing the work.

Thinking traditional building craft heritage embodied values and create a code of conduct, the song spread Carpenter, Carpenter agreed, experienced the process to create, is a comprehensive understanding of the value of the architectural heritage foundation. As the process is invisible, by the specific craftsmen holds, vital records (such as video) than words and expressions based on time according to the process diagram nodes is more intuitive, accurate, easy to understand, and easy to spread. Craft skill level is a direct manifestation of the level of technology, the basic technology tradition and progress, the level of skills and technology is unique and individual. Historically, process improvements to improve the skills and technology are inextricably linked. Process objectively present in the artisan industry environment, industry environment and their social, economic, cultural and even government policy has a direct relationship.

Therefore, to explore under China's current situation construction craft heritage protection and effective way and overall application system, namely the establishment of craft heritage protection application framework, such as the scientific record technology, mining and collating system method to save, process original assertion the method, class determination, artisan craft skills assessment levels to develop, Carpenter field (ie, social, economic and industry environment, artisan craftsmen team to survive, etc.) cultivation, propagation mode artisans incentives, develop policies to protect, process, etc., architectural heritage is undoubtedly an important part of the process, with considerable reality and urgency.

Scientific “ method” Construction of the system depends on “ principle” basis. Refined or not the problem seems simple, actually covers a wide and deep problem, not only in the material level, but in all aspects of the theory of cognitive actual operation, in-depth and systematic about fine building awareness and basic principles of research generated to effectively solve the fundamental problems in practice have greater social significance.

For these reasons prompted the study period experienced an extended form of visual detail to focus on comprehensive knowledge, to explore specific emphasis from exquisitely detailed case as to learn from China’s countermeasures, and to explore the extension of the principle of recognition and generation of detail, the method of the present paper and paradigms, etc. as the basis for China countermeasure development process changes, new perspective deeper systematic return to the entire built environment quality construction craft origin of the study, research questions eventually extended to about exquisite architectural recognize “ construction of a universal significance Knowing and the resulting theoretical framework “ principles and methods to advanced multi-disciplinary integration of knowledge structure, based on in-depth cognitive and psycho-physiological mechanisms of human life built construction and the built environment, and to systematically explain the elaborate architecture development of scientific principles and the promotion of artistic and cultural significance of exquisite architectural generation method.

Thus, this paper creatively to build a “ building process of” theoretical framework, including: the principle of building technology, building

technology system structure, and evolution of construction technology paradigm, Chinese modern architectural elegance of the problem analysis and improvement strategies a chain of 4 parts, which proposed the “ digital divide of integrated computing generated art” building design and construction methods of conception exquisite architecture.

Principle construction process, namely through the “ people and the environment,” the model to explain the psychological and physiological basis for cognitive and construction of the generalized “ craft built environment”, significance and system configuration. Construction of human life determines the built environment and the construction of the meaning of art, craft and technology law system constitutes the material to achieve that sense of art, science and technology unified in the construction of human life.

In dialectical materialism, existentialism and phenomenology, constructivism, cognitive neuroscience, life sciences, digital and computing science is proposed based on the “ same Constructivism: the way people with cognitive issues exist” outlook and “ that is defined Relevancy in the Methodology “ in. The whole world is the integration of a substance present in any one thing as the standard reference, by defining the relationship established, you can construct the entire world, the “ World of the individual.” Define the boundary forming “ Form”, defines the characteristics associated boundary substance, material properties associated with the presence of the dialectical relationship between unity, such as transparent glass, is “ light - clear glass - light perception” overall unity of the three characteristics. “ Boundary” is “ performance” in the beginning, associate

have a “ sense”, the other potential “ association” that is defined in the corresponding “ meaning” content. Meaning: manifestations referred to, within the meaning of the other relationship. Substance material existence is all its properties that it is integrated with the outside world all affiliated body, the material has properties determine the potential association which may be established.

In modern science and technology on the “ electrode stimulation, neurons, mental events” materialized and quantitative research based on the results, you can construct scientific objectification and quantification of human life Construction, Built Environment and Environmental Principles and form new technical methods model. In neurons as the basic unit, electrically (non-graphical media) measurement, the life normalized to the overall regulation of the nervous system; neural mechanisms of cognition and the construction of the life authority boundary by the perceptual system parameter threshold “ perception domain stack information flow together “ approach and the construction of the Trinity, and the energy flow and material flow control jointly defined.

Other lives permission demarcation rules, such as: self-awareness and interior of the vehicle and its associated normalized to the substance, integrated personal measurement scale pattern and form a boundary, regional and social dimensions of personal property of a current presence materialized relationship, normalized historical time series up to now materialized.



In recent years, the traditional construction technology research has become an important topic in the field of the history of Chinese architecture, is valued by scholars and experts, and made some new results.

Process to life, is the construction of life forms in the process, but also the construction and interpretation of the built environment shape the process; people the construction of life skills system determines the built environment process system consisting of: human life forms and the need to build the program and the built environment in the form of 3 sub-systems.

### **A. Building a system configuration process**

Architecture is a detail of the entire built environment, building technology system configuration including human life forms and the need to build programs and architectural forms, etc. 3 sub-elements.

Architecture is the whole “ personal world of” linkage chain “ external environment - media - perception - cognition” in the perception of some elements of the linkage, its radius, there is a common interface to define their domain material, it is a detail of the entire built environment. Thus, the meaning of “ building technology” and its system structure is determined by the “ Built Environment Technology” system, but different.

Consistently, the building of human life is to construct its meaning and the ultimate value of the target, it can be based on the structure of “ Built Environment Technology” system of determining “ building process” system consisting of: human life forms and the need to build the program, architectural forms . Building technology elements of the system, that

building is the core technology for social, artistic and cultural system organizations. Related issues and human scale “ human life forms and demand” mainly corresponds to the principle of human life, the value of life-related trends, socio-cultural and social system. Construction program is a property of the program, the major elements including materials, processing; generalized material that is a collection of material properties, processing and generalized generalized force that is changing the shape of the boundary defining attributes collection. Architectural form is a collection of attributes, including the main elements of detail, structure hierarchy.

The difference is, “ built environment” means all associated with the body’s environment, from the beginning of all associated media to perceive all the external environment; and buildings associated interfaces do not necessarily provide a direct effect on people’s perception of the channel, being direct perception, to aware services, like hierarchical structure does not necessarily have to be perceived, but it is linked chain of life indispensable part, together with the rest of the construction of life.

Building technology is not a traditional space and time coordinates relationship to define structure levels and the construction program of the building, but the people-oriented, individuals with social and cultural nature as a yardstick to determine the building material by all types of perceptual field superimposed manner property boundary material to form the basic components and parts, and thus logically associated construction to meet the needs of the dynamic development of integrated functionality into the core of the whole building, and ultimately the formation of common

perception and memory interaction, integration of knowledge inside the “architecture” meaning and value judgments.

## **B. Paradigm evolution and building technology**

Each has its own built environment exists reasonable vividness. “

Construction craft principle,” based on the “ process of building a system configuration” as a framework, the degree of media evolution, cognitive and operational scale to measure accuracy, to sense superimposed on cognitive domain, construction and performance of construction form and level of evolution as the standard building process paradigm into the building process occurs, intuitive manual monomer gestalt techniques, logical mechanical sub-composite technology, digital computing and other points of integration builds skill four evolution stages.

With the evolution of the cognitive dimension of life: ignorant, deified, anatomy, life sciences, psychology, physics, the occurrence of cognitive theory, cognitive neuroscience, individual scale evolution expressed as “divine monarch, individual anatomy, human rights and freedom, human factors, mechanical aesthetics, psychology, constructivism, sustainable development, “ the sequence of depth and integration. Material properties and processing associated by way affect the basic unit of construction and construction logic, the basic unit of aesthetic cognitive and aesthetic philosophy, continue to promote the evolution of architectural forms; time and space to determine the nature of the original conditions of the raw material represents the “ local” is replaced by a new international order under the uniform “ building process” represents human cognitive

processing capacity and “ local.” Multisensory site involved in manual processing to bring the building in the form of a sense of the limitations of the processing capacity of humane scale early industrial processes resulting in limited access to basic material properties and associated elements and makes the whole built environment lacks humanity needs abundant and freely, digital computing Science and Technology It supports flexible integration of design and manufacturing processes to achieve a modern industrial building the humane sense of scale. Because the thought process is the general idea of the whole people deal with the external environment connected all, the difference between the levels of development process, far more than on the same level as between different sizes or specific spatial location defined by different types of buildings, or between cases differences.

Machine Aesthetic Modernism does not refer to material or machining machine the same shape, but rather like a machine designed and built in line with the product from the principles of logic cut. Its core concept to grasp the principles of the art of architecture, combined with the evolution of socio-technical system, and constantly create new forms of “ modernism”, for example, Arts and Crafts Movement and Art Nouveau, Bauhaus and machine aesthetics, late modernity doctrine and high-tech, minimalist, ecology and integrated digital computing generation, together constitute the main line of development of modernism, its unified nature. Just fine with respect to the human sensory system, the initial machining flexibility and community design concept to grasp the lack of capacity, resulting from the practice of modernism formal dogmatic interpretation of flooding and poor content. In

cognitive neuroscience, science and technology of digital computing, sensing and more flexible integrated manufacturing and other advanced scientific and technological achievements, supported by art form gradually shift from intuitive visual modeling to calculate a variety of shapes and feel integrated generation, computer-controlled machine in line with modernist aesthetics center more refined and rich cultural connotation of the architectural form of the concept is to be completely realized.

“ Construction craft principle,” based on the “ process of building a system constitutes a” framework, refer to the “ Building Technology Paradigm and Evolution” in the case and, combining modern architecture objective situation in China, it does not lead to sophisticated analysis crux of strategies for improvement.

## **A. Cognition and Research on Principle**

China principle on the nature of modern architecture that is refined building awareness of its scientific significance of arts and humanities, research is not enough, the existing international studies and very few advanced building systems, depth and correct learning, understanding, application.

Improvements: Learning the principles of construction of human life; to strengthen research and construction of the built environment essence of teaching, teaching basic theory of systemic architecture; the establishment of the “ big design” concept; the establishment of a modern aesthetic based industrial process.

## **B. Stages of social development**

1840 to 1949, are being destroyed craftsmanship of traditional architecture and the beginning of Western Learning mostly symbolic formalism of modern architecture, a fine is immune. 1949 ~ big roof - European style, emphasis on “ form language.” Chinese modern building situation is precisely the delicate process towards the middle part, the “ development phase” in which the question of inevitability.

## **C. Life forms and demand**

Construction status, various types of work and damage the aesthetic design of uncoordinated building surfaces showed that the construction industry and the society as a whole aesthetic ability, sensitivity needs to be improved. Improve the whole society of the modern architecture of exquisite aesthetic ability, training and raising awareness of perceptual sensitivity (or “ vision”), to improve the cultural and aesthetic accomplishment (or “ vision”).

## **D. Structural design**

The corresponding material properties and their associated fine perception and cognition refined, modern industrial manufacturing technology has been reconstructed human life and aesthetic construction of the basic unit and its associated system rules, building systems to adapt to the industrial process based. “ Understanding modern technology, architectural detail and grasp an industrial manufacturing process node configuration is the need of modern architects.

China today has been lost in the construction of traditional craftsmanship, still stuck in the technical level of manual operation, did not enter the industrial process manufacturing stage. Manufacturing needs the intervention of modern industrial manufacturing process transformation construction, improve building manufacturing precision, flexibility levels.

### **E. Vitality building mode**

Model design and construction of a human an effective life skills, such as a standard atlas, others architectural works; however, its vitality comes from the model combines flexible application specific conditions. Designers need to understand the principle, carry out a new model studies to building technology system and elements of the Platform: (1) the establishment of relevant advanced laboratories, such as cognitive research laboratory, material properties in a virtual environment research laboratory; (2) to collect feature data, such as people's initiative from the bottom of the internal demand, mood, processing and materials; (3) a "plasticity digital mode" technology research, combined with modern computer technology to build digital plasticity model language repositories; (4) based on the above work, construction of a relational database to provide basic support for the CIBS.

### **F. Establish a sound mechanism**

Studio teaching mode: To establish and introduce industry-wide structure, mode of cooperation, the use of the underlying database, basic research methods, new growth point, in order to achieve a smooth integration and to

improve students' academic and social functioning; College of the teaching building, research work to unify basic research projects.

Binding studies and education. There are different types of industry research, such as the development of research disciplines of basic research, technology research related special laws regulate the industry standards, and so on. Among them, the most closely combined with the teaching of basic research is a discipline, because it is carried out in terms of research subjects on the basis of the overall concept, thinking and other subversive, rather than social practice during the gradual development; therefore most suitable for the new the beginning of a generation of education professionals.

Through legislation to ensure direct involvement of a registered architect and architect of maintaining the registration authority. The role of a registered architect is not just reflected in the design drawings, but also to adapt to the market economy, in the construction project pre-planning, economic accounting, technical services, materials and timber, etc. should give full play to the fundamental improve the current construction enterprises backward technology readiness, design drawings cheap, low quality of workers and management level is not high status, improve construction quality.

Establish sound policies for the protection of architectural and artistic quality and the establishment of national policies, regulations, laws and certain national institutions.



## **G. Academic status of research, significance and innovation**

On the building process is a systematic study on cognition and exquisite architectural principles and methods of generation, about the nature of construction and architectural aesthetics, science, technology independent and complete a unified theory of architecture, the National Natural Science Fund Project “ Computer part of an integrated building system (CIBS) basic research “. Architectural theory and practice of all aspects of profound significance.

“ Building process principles,” explains the aesthetic refinement of perceptual cognitive architecture, building performance, construction process, the principle of the nature of art, the proposed future generation of sophisticated construction technology and methods laid the foundation; “ building technology system configuration” provides framework analysis “ construction technology Paradigm and Evolution” and exquisite case method further evidence, deepen understanding, to draw on, and propose specific building process model and its vision of the new design method; Chinese modern architecture combined with the objective the actual situation, analyze the crux of the proposed improvement strategy. In this paper, the Chinese modern architecture development, improved teaching, research extension, architectural innovation and appreciation, the basic building technology system reform art, enlightening understanding, provide a theoretical basis, and provide a reference case reference practices framework; the architecture source of innovation, will contribute to the cognitive ability to feel the birth and exquisite architecture, design innovation, and increase the ability of China to build a modern building

management original design, which in turn helps to build exquisite architecture and the built environment, and ultimately high quality of life and modern Chinese architectural culture. This paper includes five innovation.

Digital art computing research division of the integration build. In this paper, based on the theory building process principle and system configuration analysis, digital computing science and technology, we proposed the idea of cognition, integrated design and construction methods of the “ digital computing points of integration build skills,” the exquisite architecture, the need for further technology research, in order to effectively used in modern architectural practice, generate new forms of exquisite architecture.

Based on the principle of building processes, systems configuration, analysis and evolution of the system paradigm of Chinese modern architecture delicate task of defining the problem, problem analysis, proposed strategies to improve the systematic, integrity-related research is an innovation.

In principle the building process, the system constitutes a systematic and scientific analysis of aesthetic perception, based on the combination of modern digital technology and computer science, advanced materials and manufacturing technology, excellent modern architecture concepts and practices, conceived the new elegant building generation and creation.

Scientific architectural aesthetics and art studies terminology system, method: materialized and quantified. This thesis topic is to explain the principles and methods, both unity; nature of the world is unified and

method, the “ building process theory” is also part of the process of building a lot of aesthetic methodology included content.

#### **Conclusion**

Achievements of modern digital media and technology for the process of recording heritage, conservation, education, mass media, etc. provides a reference for the direct method; and organize research on the process of building heritage, our predecessors have been some achievements and experiences ; coupled with more intensive targeted supplementary survey analysis, by analyzing the differences between traditional construction process known geographical heritage, summed up a theory. Carried out on the basis of in-depth analysis and judgment, and even research results and application of the theory to other related disciplines, the necessary statistics, quantification and analysis, determination process originality, technical level, artisan skill level, and establishing appropriate standards and evaluation mode is also able to complete. By analyzing the questionnaires and the social, environmental industry, to identify existing problems and countermeasures places Carpenter, propose solutions, but also in this period can be completed. All of these initial results, constitutes the final part of the protection and inheritance of an overall application of the system, and the scientific and meticulous preparation. In addition, through the establishment of heritage conservation practice base, with ancient local architectural craft practitioners, after theories and systems have made possible the pilot and Adjustment. Research on this question, need to combine theory and practice, research and application of both. Namely the fieldwork research-based, quantitative evaluation as the basic means to “ System”, “ science” and “

practical” application system as the ultimate objective of the study. This paper discusses only the thinking of the traditional building craft heritage protection system, application framework, concrete results need further efforts to practice and shall continue to test and perfect. We look forward to the insight with advice and put together this study ranks.