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OF CULTURAL HERITAGE CONSERVATION SCIENCE
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中日韩三国遗产保护的区别

中日韩三国的传统建筑同属东方木构建筑体系，日韩建筑受中国建筑的影响，具有相似的特征。但是今天三国对于传统木构建筑的保护从理念到实际工程都存在着较大的不同。“真实性原则”是遗产保护的重要原则，其中对于“原状”概念的理解是“真实性原则”的核心问题。从《中国文物古迹保护准则》中我们可以看到，中国遗产保护语境中，“原状”的意思相当于“Historic Condition”，更加强调文物的历史状态的真实性；而在《日本文化财保护法》中可以看到，日本语境下的“现状”大约对应于“Present Condition”，也就是建筑物在修缮之前的状态。因为这样的理解差异，中日的保护在理念和方法上都有不同。

拿山西平顺天台庵的修缮举例。中国的修缮方法是，把屋顶拆除下来，卸载掉上部屋架结构的重量，然后对结构主体进行修缮，而在日本通常采用落架大修的方式，像中国这样不进行完全解体的修理在操作层面会带来很大的难度。这显示出中国古建筑保护是尽可能少地对建筑的历史状态进行干预。

韩国的寺院建筑或宫殿建筑通常像日本一样采用全部落架大修的方式。但是日韩的区别在于，韩国常常大量地将历史构件更换掉，例如韩国归信寺大寂光殿的修缮对木构件的 50%-70% 进行了替换，而日本的唐招提寺金堂虽然也进行落架大修，但是原有的木材基本上不会会进行更换。韩国这种做法的好处是，由于采用了新的构件，所以建筑结构强度较大，不需要采用很多额外的结构加固件，韩国江陵客舍门就是这样，而日本会尽可能多地保存原有的结构构件，用完善的方式对它们进行加固，因此会有较多的结构加固件。以日韩为参照可以看到中国文物保护的特点。

Differences in heritage protection among China, Japan and South Korea

The traditional architectures of China, Japan and South Korea belong to the Oriental wooden building system, and the architectures of Japan and South Korea are influenced by Chinese architecture and have similar characteristics. However, there are great differences in the protection of traditional wooden buildings in the three countries from the concept to the actual engineering today. "Principle of authenticity" is an important principle of heritage protection, and the understanding of the concept of "original state" is the core issue of it. It can be seen from the *Guidelines for the Protection of Chinese Cultural Relics and Historic Sites* that in the context of Chinese heritage protection, the meaning of "original state" is equivalent to "Historic Condition", which emphasizes the authenticity of the historical state of cultural relics. In the *Japanese Cultural Property Protection Law*, it can be seen that "current condition" in the Japanese context roughly corresponds to "Present Condition", which means the state of the building before it is repaired. Because of this difference in understanding, China and Japan have different concepts and methods of protection.

Take the repair of Tiantai Nunnery in Pingshun, Shanxi as an example. In China, the repair method is to remove the roof, unload the weight of the upper structure, and then repair the main structure, while in Japan, the way of overhauling is usually adopted. A repair without complete dismantlement, as in China, would bring great difficulty in operation. This shows that the preservation of ancient Chinese architecture is to minimize the intervention of the historical state of the building.

Temples and palaces in Korea often adopt the way of overhauling as in Japan. However, the difference between Japan and South Korea is that Korea often replaces a large number of historical components. For example, 50%-70% of the wooden components are replaced in the restoration of Daeshikwang Hall of Guishin Temple in Korea, while the original timbers in the Golden Hall of Toshodai Temple in Japan would not be replaced, although it is also overhauled. The advantage of this approach in Korea is that the use of new components has resulted in better structural strength of the building, and there is no need to use many additional structural reinforcement parts, as is the case with Gangneung Guest House Gate in South Korea, while Japan will preserve the original structural components as much as possible, and strengthen them in a perfect way, so there will be more structural reinforcement parts. Taking Japan and South Korea as references, we can see the characteristics of Chinese cultural relics protection.

Most of the buildings in Japan since the 12th century Kamakura era have a space

日本自 12 世纪镰仓时代以来的建筑绝大部分都有一个“野小屋”（のごや）空间，自古以来日本都会在野小屋的部分填入很多构件对建筑进行加固，但是中国和韩国的建筑中缺少这样的空间，所以古代中国和韩国对于建筑的修缮不会像日本一样通过在野小屋部分添加构件来进行，而更多地是通过对已有构件的加固、更换来完成，这种修缮方法对今天也产生了影响。简言之，构造和空间的不同也导致了三国修缮方法的不同。

日本建造物修理的特征

日本建造物修理的特征包括以下几个部分：

1、文化厅集中指导；

2、修理技师长期驻场；

3、修理技师在从事现场工程监理活动的同时，也进行建筑历史方面的调查研究；

4、详细调查、详细记录，并发行修缮工程报告书；

5、确定的保障复原的办法；

6、为确保安全性的结构补强。

日本的文化遗产修理由文化厅领导，而由被称为“修理技术者”的专业人员来完成，修理技术者隶属于公益财团法人、一般财团法人、地方公共团体三类团体（图 1）。修理技术者参与文化厅的研修，并得到文化厅的认证。

修理工事的体制：监督之下有设计监理和施工（图 2），修理技术者主要参与到设计监理部分。在施工门类会有各种工匠，技术高超者或更加专业化的人才会被选为“选定保存技

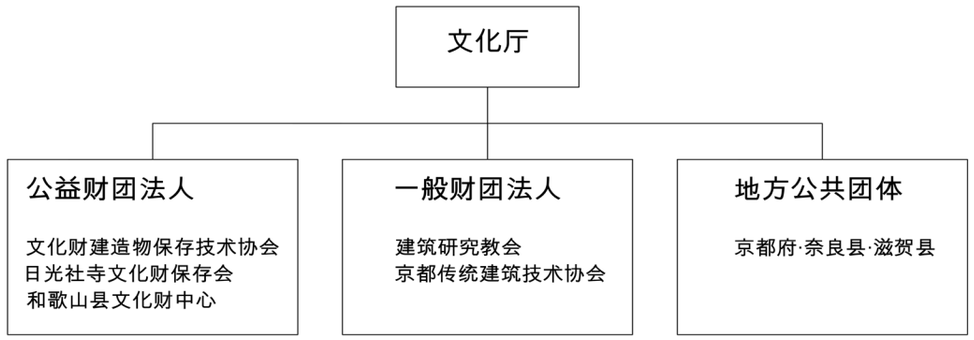

图 1: 日本文化遗产修理制度结构图
Figure.1 Structural chart of Japan's cultural heritage repair system

术保持者”，受制度保护。修理技术者会调查建筑物、作图（绘图要以手绘的方式完成）、制定调查报告书等工作。修理报告书的制定应从国家获取一定的资金，并一定要制作工事报告书，接受社会的审阅。大概从 1929 年开始，约有 5000 本工事报告书已经被公开发行。

日本的建造物修理的体制大约从 1897 年开始，被严格执行下来，既是修缮成果的体现，同时也积累了大量的可供查阅和研究用的信息。

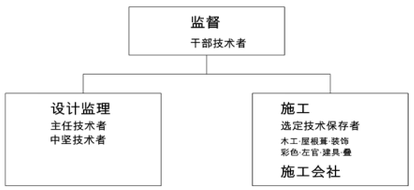

图 2: 日本修理工事体制结构图
Figure.2 Structural chart of Japanese repair project system

建造物修理的具体内容

1、完全落架：以唐招提寺为案例（图 3）。唐招提寺金堂的修缮是从屋顶开始进行完全的解体，一直进行到发掘调查。佛像被认定为奈良时代的国宝级文化遗产，建筑物因为地震倒塌的话，佛像也会遭到损坏，因此修缮时考虑到到加固防震的措施。对唐招提寺金堂进行落架大修的一个目的是恢复历史上健全的建筑状

named "Nogoya". Since ancient times, Japanese would fill many components in there to strengthen the building, but there is no such space in Chinese and Korean buildings. Therefore, China and Korea don't repair the building by adding components in the Nogoya as Japan, but more by reinforcing and replacing existing components. This method of renovation also has an impact today.

Characteristics of construction repair in Japan

The characteristics of Japanese construction repair include the following parts:

1. Centralized guidance from the Agency for Cultural Affairs;

2. Long-term stationing of repair technicians;

3. Repair technicians engage in both on-site engineering supervision activities and investigation and research on architectural history;

4. Detailed investigation, detailed records, and issuing repair works report;

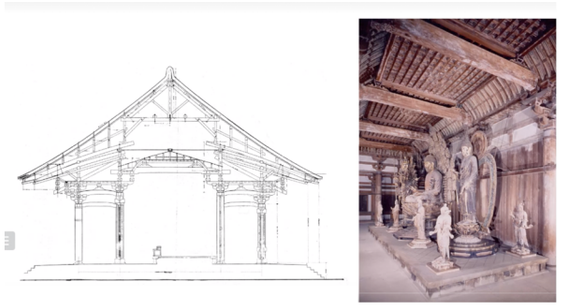

图 3: 唐招提寺金堂复原剖面图与造像照片
Figure.3 Reconstructed sectional drawing of Toshodai Temple and the statue's photo

态，另外也是为了弥补建筑自身结构上的缺点，使建筑免于在地震时受到破坏，从而保护佛像。1898 年左右由关野贞来主导修缮，具体的修缮方法是在小野屋部分加入西洋式的桁架，我们今天看到的桁架明显是 19 世纪的风格，但是这个桁架有的构件是利用了原来的木材，对其进行了转用。小野屋之下是奈良时代的结构，修缮时基本保持了原状。小野屋部分在修缮时是保持原本的材料，还是为了保证它的稳定性把这些材料替换下来，是一个反复讨论的问题。

2、以复原为目的的调查。日本从近代以前就一直对复原这一事情非常谨慎，文化遗产制度有一个叫“现状变更”的规定，即强调尽可能“不去变更现有的状态”。建筑的复原，如果需要对建筑进行变更，就必须获得文化厅的许可，修理技术者必须进行复原依据的调查，比如说对柱子的痕迹进行非常详细的调查，包括年代调查，进行了怎样的移动，进行了怎样的改建，有多大程度的腐朽等等，将这些结果形成一个数据庞大的调查报告。在上述基础上制定研究考察报告，制定复原方案，文化厅决定是否贯彻复原方案。文化厅会组成调查团（包含调查长官、建筑师）去检查建筑物的变更是否合适。 因此执行复原方案是一件非常复杂的事情。

唐招提寺金堂要复原成最初的奈良时代的样子是非常困难的事情，因此，它被复原成了修理前的样子（图 4）。日本近年来越来越出现一种倾向，虽然能够调查到建筑物最初建

5. Determined measures to ensure recovery;

6. Structural reinforcement to ensure safety.

In Japan, cultural heritage repair is led by the Agency for Cultural Affairs and carried out by professionals called "repair technicians", who are affiliated to public foundations, general foundations, and local public organizations (Figure. 1). Repair technicians participate in the research and training, and then be certified by the Agency for Cultural Affairs.

The system of the repair project: There are design supervision and construction under the supervision (Figure. 2), and repair technicians mainly participate in the design supervision part. In the construction category, there are various craftsmen, highly skilled or more specialized people would be selected as "selected preservation technology holders", protected by the system. Repair technicians survey buildings, make drawings (which should be hand-painted), and formulate survey reports. The formulation of the repair reports could be funded by the government, and the construction reports should be prepared and reviewed by the society.

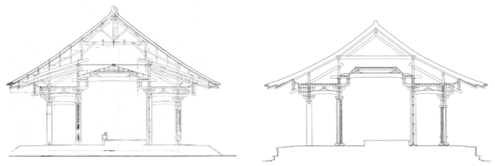

图 4: 唐招提寺金堂 19 世纪修缮后剖面图（左）与 8 世纪复原剖面图（右）

Figure.4 Restored sectional drawing of the Toshodai Temple in the 19th century (left) and the reconstructed section in the 8th century (right)

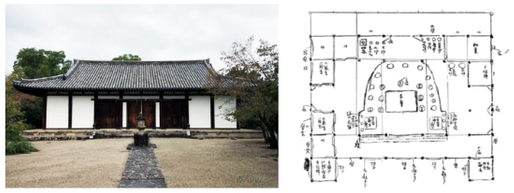

图 5: 新药师寺本堂修缮后照片与平安时代平面图

Figure.5 Photo of the main hall of New Yakushi Temple after restoration and plan of the Heian era

造出来的样子，但是出于各种现实的考虑，没有复原到最初的样子，而是遵从现状进行修缮。

当然日本也有将建筑复原到最初的状态而导致的过度修缮的案例，例如日本近代以来最早的解体修理案例——新药师寺本堂（图 5），将它从十二三世纪的现状状态，复原到了八世纪奈良时代的状态。从平面图可以看到，修缮之前建筑的内部有一个小房间，这个小房间大约是十世纪平安时期所建，供人们斋戒和祈祷所用，它反映的是从奈良到平安时代建筑空间的变化。

修理的过程中把这个小房间拆掉了，现在去看到的是奈良时期的一个状态，也就是没有中央房间的小房间，相应地平安时代的信息因为修缮就消失了。所以修复复原虽然是有利的事情，但是在这个过程中也会失去一些能够证明建筑历史变迁的证据，因此这样的做法是

About 5,000 copies of the construction report have been published since about 1929.

Japan's construction repair system has been strictly implemented since about 1897, which is not only the embodiment of the repair achievements, but also the accumulation of a large number of information for reference and research.

The specific contents of construction repair

1. Complete Overhauling. Take Toshodai Temple as an example (Figure. 3). The repair of the Golden Hall of Toshodai Temple began with the complete dismantlement of the roof and continued until excavation and investigation. The statue of Buddha was recognized as a national cultural heritage of the Nara era. If the building collapses due to an earthquake, the statue will be damaged. Therefore, aseismic and reinforcement measures are taken into consideration when repairing. One of the purposes of the overhaul of the Golden Hall of Toshodai Temple is to restore the complete state of the building in history, and also to make up for the structural shortcomings of the building itself, so that the building will not be damaged in the earthquake, so as to protect the Buddha statue. Around 1898, the restoration was led by Sekino Todashi, and the specific method was to add Western-style trusses to the Nogoya part. The trusses we see today are obviously the style of the 19th century, but some components of this truss were converted from the original wood. the structure of the Nara period is beneath the Nogoya, which was basically kept in its original state during the repair. Whether to keep the original material in the Nogoya or

值得商榷的。所以，日本近年来出现很多讨论，不但要复原原初的状态，也要保存历史上的状态，因此，目前的中世建筑修缮常见的重要问题是要在多大程度上保存建筑的历史状态。

3、构件更换。关野克修理法起寺三重塔时对建筑各个时期的构件比例进行了调查（图 6），受到自然风雨影响的部分更容易被替换，而柱子等主要结构则被完好地保留下来。日本的建筑修缮对于原本的部件有多少保留是非常谨慎的，但是有两个有趣的案例，其一是每二十年进行造替迁宫的伊势神宫，其二是锦带桥（图 7）。山口县锦川市木造桥，是分段式的拱桥，对它的修缮是按照次序对每一段桥进行修缮，大约三十年就会全部更换一遍，所以这座桥没有一根原本的木材。

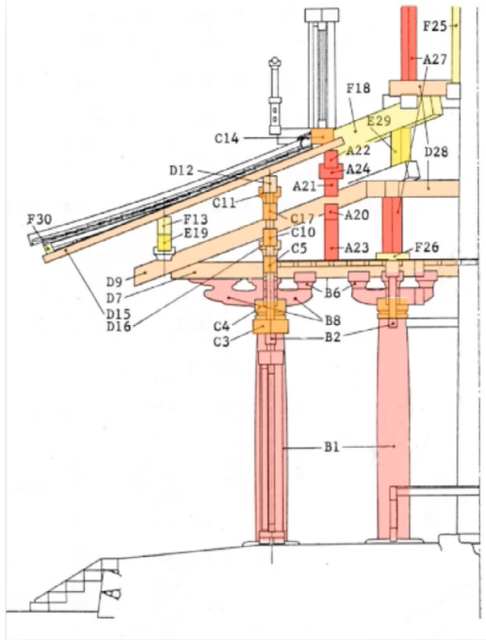

图 6: 法起寺三重塔构件新旧程度判断图（以颜色浓淡标识构件新旧程度）

Figure.6 Judgement diagram of the differences in condition of the triple pagoda of Honki Temple (the old and new degree of the components is marked by the color shade)

replace the material to ensure its stability is an issue that has been repeatedly discussed during the repair.

2. Investigation for the purpose of restoration. Japan has been very cautious about restoration since pre-modern times. The cultural heritage system has a rule called "change of the current condition", which emphasizes "no change of the current status" as much as possible. In the restoration of a building, if there is a need to make changes to the building, permission must be obtained from the Agency for Cultural Affairs, and repair technicians must conduct a thorough investigation on the basis of restoration, such as a detailed investigation on the traces of the pillars, including chronological survey, how they were moved, how they were rebuilt, and how rotten they were, and then results into a large survey report. Based on the above, a research report and a restoration plan will be prepared, and the Agency for Cultural Affairs will decide whether to implement the plan. The agency will organize an investigation team (including the minister of investigation and the architects) to inspect the appropriateness of the changes. So implementing a restoration plan is a very complicated thing.

It was very difficult to restore the Golden Hall of Toshodai Temple to its original Nara appearance, so it was restored to its pre-repair appearance (Figure. 4). In recent years, there has been a growing tendency in Japan that although it is possible to investigate the original appearance of buildings, due to various practical considerations, not to restore the original appearance, but to follow the current condition.

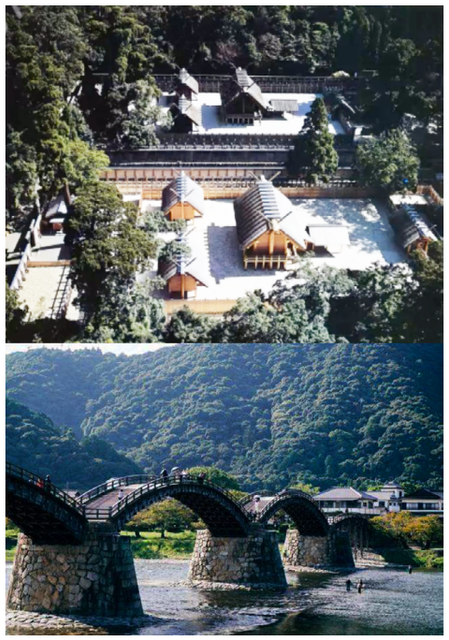

图 7: 伊势神宫（上）锦带桥（下）
Figure.7 Ise Shrine (top) and Kintai Bridge (bottom)

所以日本的修缮存在两种不同的方式，一个是尽可能保存原本的材料的做法，另一个则是像伊势神宫那样完全更换的做法。

4、结构补强。结构补强大体上分两类情况，一种是长期性补强，主要是为防止建筑物本身长时间内自然变形而进行加固；短期性补强，主要是对于突发的自然灾害对建筑所造成的影响进行加固。

5、维修涂装。这种修复方式以平等院凤凰堂为例（图 8），当时凤凰堂的外观出现干裂的情况，所以对其进行从上到下的涂装的修复。因为凤凰堂在历史上已经不断地通过涂装修复，所以现代也采用了涂装修复的方法，只是现在的涂装所使用的是名为“丹土”的丹青材料，和上一个时代的颜色不尽相同，上一个时代的颜色偏暗。在日本以涂漆修复是很难达到原来的状态的，所以平等院凤凰堂是一个少见的案例。

Of course, there are also cases of excessive repair caused by restoring buildings to their original state in Japan. For example, the earliest case of dismantlement and repair in modern Japan, the main hall of New Yakushi Temple (Figure. 5), it was restored from its current state in the 12th and 13th centuries to the state in the Nara era in the eighth century. As can be seen from the floor plan, before the renovation, the interior of the building contains a small room for fasting and prayer, dating from the Heian period around the 10th century, which reflects the change in the architectural space from Nara to the Heian period.

The small room was removed during the repair process, and now we see a state of Nara period, which is a small room without a central room, and accordingly the Heian information was lost because of the repair. Therefore, although the restoration is beneficial, some evidence that can prove the historical change of the building will be lost in the process, so this approach is worth discussing. In recent years, there has been a lot of discussion in Japan about not only restoring the original state, but also preserving the historical state. Therefore, the most common and important issue in the current restoration of medieval buildings is to what extent the historical state of the buildings should be preserved.

3. Component replacement. Sekino Todashi investigated the proportion of components in each period of the building (FIG. 6) when he was repairing the triple pagoda of Honki Temple. The parts affected by natural wind and rain were easier to be replaced, while the main structures such as pillars were kept intact. Building restoration in Japan is very cautious about how much of the original parts are retained, but there are two interesting cases. One is Ise Shrine, which is built and replaced every 20 years, and the other is Kintai Bridge (Figure. 7). The wooden bridge in Nishikigawa City, Yamaguchi county, is a segmental arch bridge, each section of the bridge is repaired in turn. It is replaced about every 30 years, so there is not a single original wood in this bridge.

图 8: 平等院凤凰堂实景照片
Figure.8 The photo of the Hoo-do Pavilion of Byodo-in

（巨凯夫、黄迪崎、杨岍芸编译）

There are two different systems for restoration in Japan. One is to preserve the original material as much as possible, and the other is to replace it completely, as in Ise Shrine.

4. Structural reinforcement. Structural reinforcement is generally divided into two types. One is long-term reinforcement, which is mainly to prevent the natural deformation of the building itself for a long time. Short-term reinforcement is mainly to prevent the impact of sudden natural disasters on the building.

5. Maintenance and painting. Take the Hoo-do Pavilion of Byodo-in as an example (Figure. 8). At that time, the appearance of the Hoo-do Pavilion was dry and cracked, so it was repaired by painting from top to bottom. Because the Hoo-do Pavilion has been constantly repaired by painting in history, the method of painting restoration is also adopted in modern times. However, the current painting is made of mineral material named "Dantu", which is different from the color of the previous era, which was darker. In Japan, it is difficult to restore building to its original condition with lacquer, so the Hoo-do Pavilion is a rare case.

(translated and edited by
Kaifu Ju, Diqi Huang, Qianhui Yang)

人物 Figure

清水重敦
Shigeatsu Shimizu

资料来源 Source：
清水重敦个人履历，https://www.hyokadb.jim.kit.ac.jp/profile/ja.c532efa723328619c9ac73d311a4cf53.html

人物介绍：

1971 年生于日本东京，1993 年于东京大学工学部毕业，1993 年 -1995 年攻读东京大学大学院工学系研究科建筑学修士课程，1995 年 -1999 年攻读东京大学大学院工学系研究科博士课程，研究方向为建筑历史与文化遗产保护理论，并于 2005 年取得博士学位（工学）。

目前清水重敦任京都工艺纤维大学设计·建筑学系教授，同时为日本建筑学会、建筑史学会、明治学术学会、日本 ICOMOS 国内委员会、都市史学委员会的会员，曾任职独立行政法人国立文化财机构奈良文化财研究所景观研究室长、奈良国立文化财研究所研究员，京都大学大学院人类环境学研究科客员准教授、日本学术振兴会特别研究员、哥伦比亚大学客座研究员。

清水重敦对于东亚建筑史、城市史领域的诸多层面有广泛而深入的思考。他的研究涵盖了从古代的都城到建筑，从近代的都市景观到近代建筑等方方面面的内容，当然对于历史研究的方法清水重敦也有自身的思考。对建筑与城市历史的扎实研究，成为了清水重敦探索并形成建筑保护理念的基础，文化遗产研究方面，他的研究对象包括单体建筑，历史城市、街道和聚落，文化景观，对研究对象进行田野考察、解读，进而进行建筑的活化利用，或者城市设计、地域性保护设计。他主持或参与了诸多重要文化遗产的保护工作，如平城宫大极殿的复原、药师寺建筑的复原研究，此外还主持编纂了一系列调查报告书，此外，他还撰写过论文讨论文化遗产保护中经济政策的问题，这些都显示出清水重敦是一位重视实践的研究者。

Character Introduction:

Born in 1971 in Tokyo, Japan, he graduated from the Faculty of Engineering, University of Tokyo in 1993. he studied for the master's degree in School of Architecture, University of Tokyo from 1993 to 1995 and the doctor's degree from 1995 to 1999. The research direction of him was architectural history and cultural heritage conservation theory. And then he received his PhD in engineering in 2005.

Currently, Shigeatsu Shimizu is a professor at the Department of Design and Architecture of Kyoto Institute of Technology. He is also a member of the Architectural Institute of Japan, the Society of Architectural Historians of Japan, Meiji Academic Society, ICOMOS Japan, and the Urban Historical Society of Japan. He has served as the director of the Landscape Research Office and researcher of National Institutes for Cultural Heritage, Nara National Research Institute for Cultural Properties, Associate Visiting Professor of Graduate School of Human and Environmental Studies, Kyoto University, post doctor of The Japan Society for the Promotion of Science, visiting research fellow of Columbia University.

Shigeatsu Shimizu has extensive and in-depth thinking on many aspects of east Asian architectural history and urban history. His research covers many aspects from ancient capital to architecture, from modern urban landscape to modern architecture, etc. Of course, he also has his own thoughts on the methods of historical research. A solid study of architecture and urban history has become the basis for Shimizu to explore and form the concept of architectural conservation. In terms of cultural heritage research, his research objects include single buildings, historical cities, streets and settlements, and cultural landscapes. He conducts field investigation and interpretation of the research objects, and then carries out the activation and utilization of buildings, or urban design and regional protection design. He has presided over or participated in lots of important work of cultural heritage protection, such as the reconstruction of the Former Imperial Audience Hall, restoration research of Yakushi Temple, compilation of a series of investigation report, in addition, he also wrote papers to discuss the problem of economic policy in the protection of cultural heritage, which shows that Shigeatsu Shimizu is a researcher who attaches great importance to practice.

图 1. 清水重敦
Figure.1 Shigeatsu Shimizu

清水重敦的研究常常显示出明确的问题意识，文化遗产的保护以及为使文化遗产适应当下而进行的活化是他思考的核心问题。目前清水重敦的研究以文化遗产的新类型“文化景观”为核心，致力于开拓对于城市相关的文化遗产保护与活化利用的综合性研究。

研究思想：

《建筑保护概念的生成史》是清水重敦近年力作，该书体现了他对于遗产保护的理论性思考。日本建筑遗产保护既存在通过精细的科学手段和程序进行的保护，同时也有建筑解体修理等传统色彩浓郁的保护手法，这些特质的出现与日本近代以来建筑保护概念的生成的过程密切相关。清水重敦通过对日本文化遗产保护历史的重新读解，研究了日本建筑保护的概念的演变、日本近代建筑史与西洋思想的交流、遗产保护与东亚新建筑史叙事的关系等内容。该书获得 2015 年日本建筑学会奖（论文）、2014 年日本 ICOMO 奖、2014 年建築史学会奖等多个重要奖项。此外，清水重敦的《再访今和次郎 < 日本的民家 >》一书获得 2013 年日

Shimizu's research often shows a clear awareness of the problem, and the preservation of cultural heritage and its activation to adapt to the present is the core of his thinking. At present, Shigeatsu Shimizu's research focuses on the new type of cultural property "cultural landscape". It is committed to exploring comprehensive research on the protection and activation of urban cultural heritage.

本建築学会著作奖。

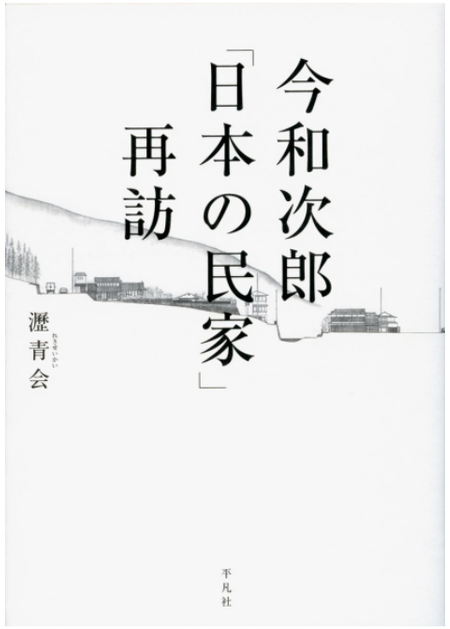

图 2:《再访今和次郎 < 日本的民家 >》
Figure.2 *Revisiting Wajiro Kon: The dwellings of Japan*

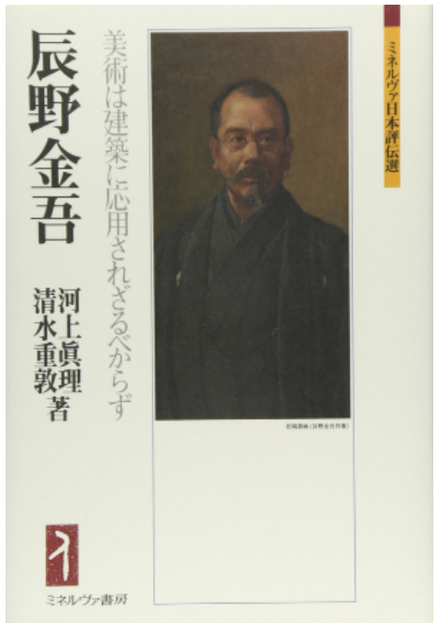

图 3:《辰野金吾》
Figure.3 *Kingo Tatsuno*

Research ideas:

The History of the Generation of the Concept of Architectural Conservation is Shigeatsu Shimizu's masterpiece in recent years, which reflects his theoretical thinking on heritage protection. The preservation of Japanese architectural heritage is carried out not only by sophisticated scientific means and procedures, but also by traditional methods such as building disintegration and repair. The emergence of these characteristics is closely related to the formation of the concept of architectural preservation in Modern Japan. Shigeatsu Shimizu studies the evolution of the concept of Japanese architectural protection, the exchange of modern Japanese architectural history and Western thought, and the relationship between heritage protection and the narrative of new architectural history in East Asia by re-interpreting the history of Japanese cultural heritage protection. The book has won many important awards, including the Architectural Institute of Japan Prize (Thesis) in 2015, The ICOMO Award in 2014, and the Society of Architectural Historians Award in 2014. In addition, Shigeatsu Shimizu's book *Revisiting Wajiro Kon: The dwellings of Japan* won the 2013 Book Prize of the Architectural Institute of Japan.

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旧高梁尋常高等小学校本館調査報告書（2013 年 03 月）

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長良川中流域における岐阜の文化的景観保存調査報告書（2015 年 03 月）

佐渡相川の鉱山都市景観　保存調査報告書（2015 年 03 月）

葛飾・柴又地域文化的景観調査報告書（2015 年 03 月）

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Report of the Cultural Landscape Research Conference (3rd) (December 2011)

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Report of the Cultural Landscape Research Conference (4th) (December 2012)

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Kingo Tatsuno 1854-1919 (March 2015)

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Comprehensive Survey Report on Modern Japanese Style Buildings in Nara Prefecture (March 2011)

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Kyoto Okazaki Cultural Landscape Survey Report (March 2013)

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Investigation Report on Urban Landscape

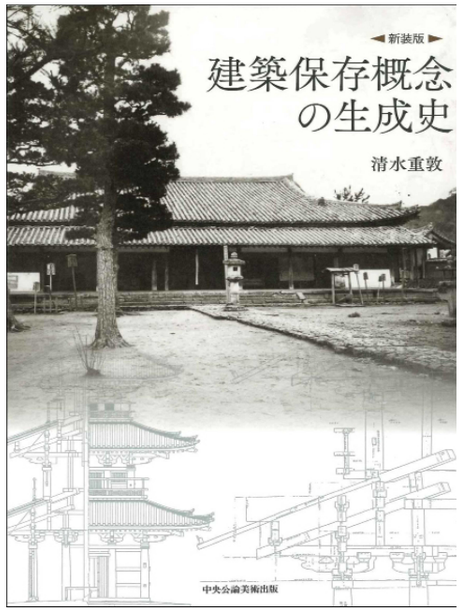

图 4:《建築保存概念の生成史》
Figure.4 *The History of the Generation of the Concept of Architectural Conservation*

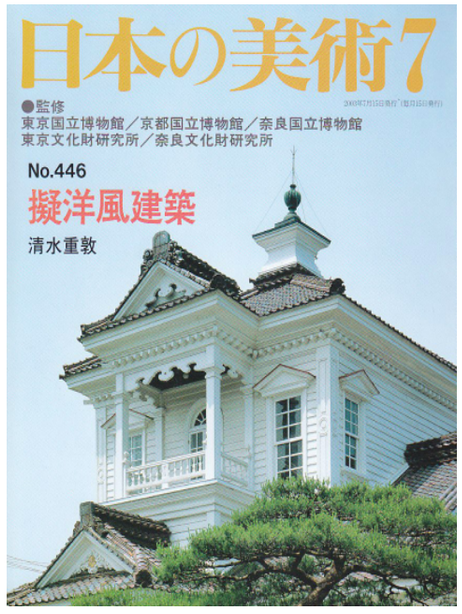

图 5:《日本の美術 446 号 擬洋風建築》
Figure.5 *Art of Japan NO.446 Western Style Architecture*

（巨凯夫、黄迪崎、杨岍荟编译）

Preservation of Sado Aikawa Mine (March 2015)

Investigation Report on The Regional Cultural Landscape of Katsushika · Shibamata (March 2015)

(translated and edited by Kaifu Ju, Diqi Huang, Qianhui Yang)

实践案例 Case Study

平城宫第一次大极殿的复原设计
Restoration Design of Daji Hall of Pingcheng Palace

资料来源 Source：
平城宫第一次大極の殿復原設計 . 奈良文化财研究所纪要 [M],2003.20-23.

讨论背景：平城宫第一次大极殿的复原计划在《平成报告 XI》（奈文研 1982 年）中第一次提出。从那以后对第一次大极殿院落组群进行的复原工作便成为我们的愿景，并开始不断地对复原方案进行讨论，1993 年我们制作了大极殿院落 1:100 的整体模型，94、95 年的研究更进一步，制作了 1:10 的大极殿模型，96 年以来，模型方案不断修正，并对模型的结构力学状态进行不间断的研究，98 年终于提出了正式的复原方案。

在对大极殿进行复原设计之际，对建筑的结构力学也进行了分析，一方面对结构薄弱点附加额外的补强结构，从而确保现代结构的安全性，另一方面也通过使用免震基础来避免上部所采用的额外补强结构过于庞大。99 年《建筑基准法》第 38 条有关“建筑评定”的条文进行了修正，因此大极殿的复原方案也需要按照新条文的规定重新进行评定。这期间，我们制作出屋架结构的构造节点的详细的 1:5 模型，以此为基础讨论了包括确认作业的一系列事情，这些成果反映在 01 年的最终复原方案中，并接受了建筑评定。

以上述工作为基础，在文化厅的带领下，复原工作逐步开展，1998-2000 年进行了实施方案的设计，2001 年开始动工，计划到 2010 年为止工程竣工。

第一次大极殿遗构：第一次大极殿遗构 SB7200 中，关于奈良时代后期“西宫”建设工程的痕迹基本不存，只检测出了可以被看作基座和梯段的地覆石的沟状遗构。1998 年第 295

Background to the discussion: The first restoration plan of Daji Hall of Pingcheng Palace was first proposed in *Pingcheng Report XI* (Nara National Research Institute for Cultural Properties, 1982). Since then, the restoration of the Daji Hall courtyard group has become our vision, and we have been discussing the restoration plan continuously. In 1993, we made a 1:100 overall model of Daji Hall. In 1994 and 1995, we further made a 1:10 model of Daji Hall. Since 1996, the model scheme has been revised, and the structural mechanics state of the model has been studied non-stop. In 1998, we finally proposed our formal restoration plan.

During the restoration design of Daji Hall, the structural mechanics of the building was also analyzed. On the one hand, additional reinforcement structures were added to the weak points of the structure, so as to ensure the safety of the modern structure. On the other hand, the earthquake-free foundation was used to avoid the excessive size of the additional reinforcement structures used in the upper part. The revision of article 38 of the *Building Standards Act* on building evaluation in 1999 requires the restoration of Daji Hall to be re-evaluated according to the new provisions. During this period, we produced a detailed 1:5 model of the structural nodes of the roof truss structure, based on which we discussed a series of things including the validation work. All these results were reflected in the final restoration plan in 2001 and accepted by architectural assessment.

Based on the above work, the restoration project has been carried out gradually under the leadership of the Agency for Cultural Affairs. The implementation was designed from 1998 to 2000, and construction began

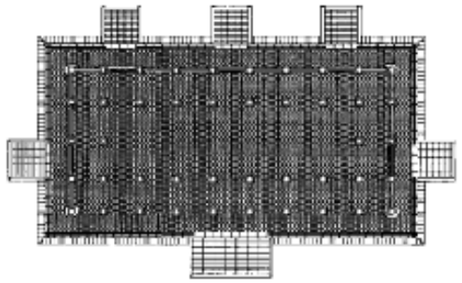

图 1: 第一次大极殿平面图
Figure.1 Plane figure of Daji Hall

图 2: 第一次大极殿侧面图
Figure.2 Lateral view of Daji Hall

次调查能够对地覆石的安装、拆除痕迹进行明确的区分，因此，我们终于有可能对基座和柱网配置进行比以往更加精密的复原。

有移除痕迹的墙壁是直立的，地覆石的宽幅为 1 尺 2 寸 ~1 尺 3 寸的规模，可以判断它的尺寸与建筑的规模是相衬的，另外，因为拆除部位的痕迹含有大量的凝灰岩粉和碎片，所以基座应该是外部装饰凝灰岩内部填土的基座形式。至于梯段遗构的情况，我们检查出北面有 3 个梯段、西面有 1 个、南面有 1 个。北面各梯段的宽幅和梯段间的相互距离，从地覆石的中心算起按照 17 尺（5.02m）进行复原，西面的梯段按照 18 尺（5.32m）复原，梯段的总长度经测定是 14 尺（4.13m）。

第 69 次和第 72 次调查的时候，检测出南侧的梯段在遗址的中央位置，宽 38 尺（11.22m），伸出 14 尺（4.13m）。根据临近基座的临时建筑进行推定，基座之上的建筑应该是面阔 9 间，进深 1 间的东西脊柱使用掘立柱的建筑物 SB6680，与北侧梯段相对位的柱开间较为宽广，因此推测南面应该也有相应的梯段（《平成报告 XI》）。但是第 295 次调查并没有确定南侧西面有梯段的遗构，与北面梯段的地覆石相对称的位置是 SB6680 的梯段位置的柱洞。因此，第一次大极殿的营造最初在南面并没有建造梯段，接着准备建造 1 间 x9 间的东西栋的 SB6690 建筑，这时期在比较宽的柱间部分建造木构梯段的可能性是存在的。最终我们制定了废除东西栋建筑，而在基座的南侧中央位置设置宽 38 尺的大梯段的这一时期的复原方案。

平面形式：如果假设梯段的地覆石的中心与建筑内的当心间位置相对位是古代建筑的通用形式，那么根据北面残留的三个梯段和西面梯段的痕迹，能够按照面阔 7 间（每开间 17 尺）进深 2 间（每间 18 尺）的平面形式对建筑进行复原。

建筑庇檐深度的线索虽然没有，但是据考证，平城宫第一次大极殿有可能是恭仁宫大极殿移筑而成，可以推测庇檐深度应为 15 尺。

这种情况下，按照建筑庇檐到基座的边缘距离为 16 尺，基座的总规模为东西 181 尺（53.47m）x 南北 98 尺（28.95m）、基准尺为 1 尺 =29.54cm。

基座 · 柱础：梯段的长度达到 14 尺之长，由此可以判定基座的高度非常高，地覆石的尺寸为 1 尺 3 寸的小尺寸，因此它上面的羽目石的厚度受到限制，也不会很厚。正因为如此，大极殿的基座应分为上下两段。

in 2001. The project is scheduled to be completed by 2010.

The first construction remains of Daji Hall: In the first construction remains of Daji Hall SB7200, there are basically no traces of the late Nara period "West Palace" construction, and only the gully construction remains detected that can be regarded as the ground-covering stone of the base and the ladder section. The 295th survey in 1998 was able to clearly distinguish the installation and removal traces of the cladding, so it was finally possible to restore the base and column grid configuration more precisely than ever before.

The wall with removal traces is upright, and the width of the ground-covering stone is 1 foot 2 inches to 1 foot 3 inches. It can be judged that its size is in line with the scale of the building. In addition, because of the traces of the demolition site contains a lot of tuff dust and debris, the plinth should be in the form of a plinth which has the tuff-decorated exterior and earth-filled interior. As for the stair construction remains, we found that there are 3 stairs in the north, 1 in the west, and 1 in the south. The width of each stair section on the north side and the mutual distance between the stair sections shall be restored to 17 feet (5.02m) from the center of the ground-covering stone, the stair section on the west side shall be restored to 18 feet (5.32m), and the overall length was determined to be 14 feet (4.13m).

During the 69th and 72nd surveys, it was detected that the staircase on the south side was in the center of the site, 38 feet (11.22m) wide and 14 feet (4.13m) out. According to the inference based on temporary buildings near the plinth, the building above the plinth should be SB6680 which is 9 bays wide and 1 bay deep, using the excavated columns as its east and west middle pillars. The bays opposite to the north stair section are wider, therefore, it is speculated that there should also be a corresponding staircase in the south (*Pingcheng Report XI*). However, the 295th survey did not determine the stair construction remains on the west side of the south side area, and the position symmetrical to the ground-covering stone on the north side stairway of SB6680. Therefore, in the construction of Daji Hall, there was no staircase built in the south at first, and then in the east-west direction SB6690 building with 1 bay deep and 9 bay width was planned to be built. During this period, it is possible to build a wooden staircase in the wider bay. In the end, we formulated a restoration plan for this period in which the east-west buildings were abolished, and a large staircase with a width of 38 feet was installed in the center of the south side of the plinth.

Plan form: If it is assumed that the relative position between the center of the ground-covering stone of the stair section and the position of the center of the building is a common form of ancient buildings, then according to the traces of the three remaining stair sections in the north and the western stair section, the building can be restored according to the plan form of 7 rooms (17 feet per bay) wide and 2 rooms (18 feet per room) deep.

Although there are no clues about the depth of the building's eaves, according to research, Daji Hall of Pingcheng Palace may be built by removing Daji Hall of Gongren Palace, and it can be speculated that the depth of the eaves should be 15 feet.

In this case, the distance between the building's eaves and the edge of the plinth is presumed to be 16 feet, the total scale of the plinth is 181 feet (53.47m) from east to west and 98 feet (28.95m) from north to south, and the reference meter is 1 foot = 29.54cm.

Plinth & Column Foundation: The length of the ladder is 14 feet long, from which it can be determined that the height of the plinth is very high, and the size of the ground-covering stone is a small size of 1 foot 3 inches, so the thickness of the feather stone above it is limited and not very low. Because of this, the plinth of Daji Hall should be divided into upper and lower sections.

Also, if there is only one plinth, the distance from the pedestal to the edge is 16 feet. Even if the lower eaves roof is used dougong of three-handed form[1], it is impossible for the eaves to reach 16 feet. If it is made into a two-story plinth, the upper plinth is more retracted than the lower base, which can be protected by the eaves from the erosion of rainwater.

Regarding the form of the stairs, the detected stairs in the center of the south of Daji Hall of Gongren Palace show

此外，如果只有一重基座，从庇檐柱到基座边缘的距离为 16 尺。即使下檐屋面使用三手先[1]，出檐也不可能达到 16 尺。如果做成二层的基座，则上层基座比下层内收，可以受到庇檐的保护，免遭雨水的侵蚀。

关于梯段的形式，从恭仁宫大极殿检测出的南面中央的梯段显示，其残余的 4 段为 0.59 的较缓的坡度，由此判断平城宫大极殿阶梯的高度约为 6 寸。

柱础仿照恭仁殿，四角的柱础和地覆座使用经过加工的花岗岩自然石，其他柱的位置上采用经过加工的凝灰岩切石。

关于地板的样式，从《年中行事绘卷》中看到平城宫大极殿为四半敷的形式。但是恭仁宫大极殿残留的凝灰岩柱础的上表面角部有矩形的切口，这可以解释为装配敷石的痕迹，为的是使地面平整。从分配方式来看，石材的长边方向朝向建筑的进深方向。

结构形式：从发掘遗构能够得到的与上部结构有关的信息只有建筑的平面和出檐相关的情形，上部的结构是一层还是二层、另外，建筑是庑殿顶还是歇山顶，与此相关的基本信息我们无法得知。

关于平城宫大极殿本体的确切证据虽然欠缺，但是根据天禄元年（970）写作的《口游》中所记载的“云太、和二、京三……”，像出云大社本殿和东大寺大佛殿这样被称颂的大型建筑物，以及奈良时代佛教寺院中的金堂，重楼建筑不可谓不多。与这些情况相符，平城宫大极殿也采用重楼的形式进行复原。

有关于屋顶形式《平城报告 XI》中的描述也并没有给出确凿的证据。如果从受到唐朝制度的影响的角度考虑，大极殿用可能采用了中国建筑最高等级的屋顶形式庑殿顶，《平城报告 XIV》（奈文研 1993）就将第 2 次大极殿描述为庑殿顶建筑。但是另一方面，在日本真

that the remaining 4 steps have a gentle slope of 0.59. From this, it is judged that the height of the stairs of Daji Hall of Pingcheng Palace is about 6 inch.

The column plinth is modeled after Gongren Hall, the four corners of the column plinth and the ground-covering stones are made of processed granite natural stone, and the other columns are made of processed tuff cut stone.

Regarding the style of the floor, it can be seen from *the Scroll of Actions in the Mid-Year* that Daji Hall of Pingcheng Palace is in the form of four-and-a-half wraps. However, the corners of the upper surface of the tuff pillar foundation remaining in Daji Hall of Gongren Palace have rectangular incisions, which can be interpreted as traces of assembling stones, in order to level the ground. From the point of view of the distribution method, the long side direction of the stone is towards the depth direction of the building.

Structural form: The information related to the upper structure that can be obtained from the excavation of the remains is only the plan and eaves of the building. We are unable to obtain relevant basic information, such as whether the upper structure is one or two floors and whether the building is hip-and-gable roof or hip roof top.

Although there is a lack of definite evidence about the body of Daji Hall of Pingcheng Palace, according to the "Yuntai, Heer, Jingsan..." recorded in the *Kouyou* written in the first year of Tianlu (970), there are many double-floor buildings, such as the main hall of Izumo Daisha, the Todaiji Grand Buddhist Hall, and Golden Hall in the Buddhist temples of the Nara period. Consistent with these circumstances, Daji Hall of Pingcheng Palace was also restored in the form of a double-floor building.

The description in *Pingcheng Report XI* about the roof form does not have conclusive evidence either. From the perspective of being influenced by the system of the Tang Dynasty, Daji Hall may have adopted hip roof, the roof form of the highest level of Chinese architecture.

1. 一种出三跳的斗栱形式　A form of dougong with three jumps

屋（双坡顶建筑）都要比东屋（庑殿顶建筑）更显尊贵，双坡顶形式发展而来的歇山顶被视为日本的最高级的屋顶形式。《年中行事绘卷》中画录的平安宫大极殿也是歇山顶形式，因此，平安宫第一次大极殿的复原方案也采用歇山顶。

一层柱网：一般来说，日本的佛堂建筑通常内柱高于檐柱，内柱衔接梁和檐下斗栱。另一方面，中国宋代的《营造法式》（1100 年）记载来看，内柱与檐柱等高的“殿堂”是比内柱高于檐柱的“厅堂”更为高级的建筑。在日本内柱与檐柱相一致的情况除在法隆寺金堂中可以看到外，现存建筑的实例只有兴福寺东

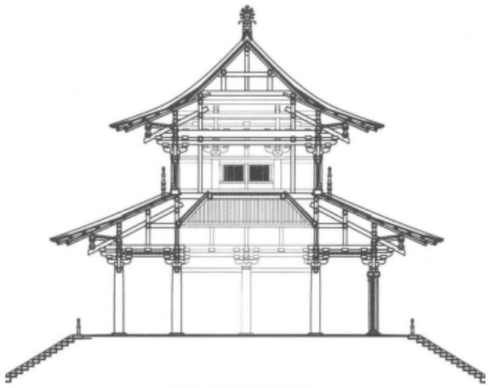

图 3: 第一次大极殿梁行断面图（整体）
Figure.3 Section of beam row of Daji Hall (whole)

图 4: 梁行断面图（局部）
Figure.4 Section of beam row of Daji Hall (part)

Pingcheng Report XIV (Nara National Research Institute for Cultural Properties, 1993) described Daji Hall as a building with a hip roof for the second time. But on the other hand, in Japan, the real house (double-sloping-roof building) is more noble than the east house (building with a hip roof). The hip-and-gable roof, which is developed from the double-sloping roof form, is regarded as the highest level of form in Japan. Daji Hall of Pingcheng Palace recorded in *Scroll of Actions in the Mid-Year* is also in the form of a hip-and-gable roof. Therefore, the first restoration plan of Daji Hall of Pingcheng Palace also adopts the hip-and-gable roof.

First layer of column grid: Generally speaking, Japanese buddhist temple buildings usually have inner columns higher than eaves columns, and inner columns connect beams and brackets under the eaves. On the other hand, according to the records of *YingZaoFaShi* (1100) of the Song Dynasty in China, the "palace" with the same height of the inner column and the eaves column is a more advanced building than the "hall" with the inner column higher than the eaves column. In Japan, the same condition in which the inner column coincides with the eaves column can be seen in Golden Hall of Horyuji Temple, and the only example of existing buildings is the east Golden Hall of Kofukuji Temple.

Although it is a good choice to imitate Golden Hall of Toshodai Temple and adopt the form of lower eaves and columns in Daji Hall, we still decided to use the only double-floor building in the existing ancient buildings, Golden Hall of Horyuji Temple, which is also earlier than Daji Hall, as the basic restoration policy. From the view of structure, it can also be concluded that it is more favorable to adopt the form of eaves column and inner column in the form of equal height in large-scale buildings.

Second layer of column grid: The position of the second-floor column also imitates the structure of Golden Hall of Horyuji Temple, which is moved 0.5 feet outward from the inner column on the first floor. The height of the columns on the second floor is much lower than that on the first floor. In order not to create a narrow and cramped impression of the column spacing on the second floor, like Golden

金堂了。

在第一次大极殿中仿照唐招提寺金堂采用檐柱较低的形式虽然是有力的选择，但是我们还是决定,以现存古代建筑中唯一的重楼建筑，并且在时代上也早于第一次大极殿的法隆寺金堂作为基本的复原方针。从结构的角度考虑，也能得到在大规模的建筑中采用檐柱内柱等高的形式会更为有利的判断结果。

二层柱网：二层柱的位置也效仿法隆寺金堂的结构，从一层内柱向外移 0.5 尺。二层的柱高较一层缩减很多，为了不让二层的柱间距产生狭小局促的印象，和金堂一样，二层的柱列在开间和进深方向都在一层开间数的基础上减去一间，在与一层柱间的中央对位的位置配置二层的柱子。这样做的结果是二层平面在面阔方向有 8 开间（中央 6 间 16.5 尺，两端边间为 10.5 尺），在进深方向有 3 开间（中央 1 间 16 尺，边间 10.5 尺）。

柱间装置：一层的侧柱以《年中行事绘卷》中的平城宫大极殿作参考，正面的各个开间是开敞的，侧面和背面作为墙壁分别设置了门。

《年中行事绘卷》中描绘的平城宫大极殿前面是开敞的的，不得不说是这应该是为了详细描绘仪式的情形而做的绘画处理。但是《日本纪略》记载昌泰二年（899）五月二十二日“最后，大风吹进，大极殿的高高的御座向巽的方位倾倒”，由此可以知道风吹进来时，大极殿结构的情况。记载中的情形不仅仅伴随着仪式发生，其实在在平时殿前也是开敞的。另外，《贞观仪式》对大极殿内所进行的仪式的描绘，只言及北侧和东西两侧的窗，而对前面的窗的开合状态的记载则完全没有。综上所述，大极殿一层的前侧，根据《年中行事绘卷》的描绘，可以判断大部分时间是开敞的。95 年通过 1:10 的模型进行了风洞实验，确认了这样的结构形式是可以成立的。

背面和两个侧面安装的门采用大型的门，以奈良时代后期唐招提寺金堂的门的形式作为参照，做成内开的板门形式。

Hall, the columns on the second floor are subtracted from the number of bays on the first floor in both the width and depth directions. The columns on the second floor are arranged in the center of the column spacing, aligned with the columns on the first floor. The result of this is that the second-floor plan has 8 bays in the width direction (6 bays in the center of 16.5 feet, and 10.5 feet at the two ends), and 3 bays in the depth direction (16 feet in the center and 10.5 feet between the sides).

Installation between pillars: The side columns on the first floor are based on Daji Hall of Pingcheng Palace in *Scroll of Actions in the Mid-Year* as a reference. The front bays are open, and the side and back walls are respectively set with doors.

The front of Daji Hall of Pingcheng Palace depicted in *Scroll of Actions in the Mid-Year* is open, and it must be said that this should be done to describe the situation of the ceremony in detail. However, *Japanese Chronicle* records that on May 22, the second year of Changtai (899), "At the end, a strong wind blew in, and the high throne of Daji Hall fell to the direction of Xun." From this, we can know the situation of the structure of Daji Hall when the wind came in. The situation in the records is not only accompanied by the ceremony, in fact, the front of the hall is also open in normal times. In addition, *Zhenguan Ceremony* describes the ceremony held in Daji Hall, only mentioning the windows on the north side and the east and west sides, but there is no record of the opening or closing status of the front windows. To sum up, it can be inferred that the front side of the first floor of Daji Hall is open most of the time according to the depiction in *Scroll of Actions in the Mid-Year*. In 1995, a wind tunnel experiment was carried out through a 1:10 model, and it was confirmed that such a structural form could be established. The back and two side-mounted doors adopt large doors, according to the form of the gate of the Golden Hall of Toshodai-ji Temple in the late Nara period, which was made into the form of a panel door that opens inwards.

The installations between the columns on the second floor are modeled after Golden Hall of Horyuji Temple, and all sides and walls at both ends, as well as other bays, use lianzi windows.

二层柱间的装置仿照法隆寺金堂，各个面和两端墙壁，以及其他的开间都使用连子窗。

斗栱和屋檐：斗栱的形式和复原朱雀门时一样都采用奈良时代前期的药师寺东塔的样式，从基座的规模推测出建筑的深远出檐，考虑到建筑的高规格，确定使用三手先形式的斗栱。

各个构件的尺度，通过对古代建筑的统计以及法隆寺金堂和药师寺东塔的比例的参考，依次确定了 17 尺柱间距所对应的柱径和柱高、柱径所对应的大斗·散斗，然后是栱、昂、橑檐方等构件的尺寸。

屋檐仿照东塔的地円飞角的双垂木的做法[2]，屋檐天花板不是水平的，而是前翘的。桁、木负和茅负[3]从对古建筑的统计中计算得出。

内部结构：仿照法隆寺金堂，用方杖状[4]的支轮[5]来支撑有井桁组成的天井桁，通过这些做法制作出天井[6]，来对抗建筑物水平方向的扭曲变形。

内部与法隆寺金堂相比进深更加宽广，所以在中间位置也有必要支撑屋顶，在结构上适当的位置架设床梁和系梁，并在其上下设立支柱进行支撑。

屋架仿照法隆寺金堂，不使用二重柱筋，而是通过面阔方向柱间中央处的筋进行组合。

一层与二层柱的位置的不同在于，二层柱间的中央插入间柱，主柱用于承托屋檐，而间柱用于承托屋架的荷载，各自分担负重，最终将屋架的荷重通过间柱传递给一层柱子。

屋架与屋顶：屋顶效仿法隆寺金堂的二重梁的形式，但由于进深更大、举高更高，因此梁的重叠数采用了三重。屋架部分，二层的檐椽尾部上方承敷桁，梁架组合架设在敷桁之上。在坡度比较平缓的周遭檐椽之上，通过假设通长的坡度陡峭的屋架椽形成双坡顶，形成了向下倒扣的形状。檐椽和屋架椽交折的地方，为

Dougong and eaves: The form of dougong is the same as the restoration of Zhuque Gate, using the style of the East Pagoda of Yakushi Temple in the early Nara period. From the scale of the base, the far-reaching eaves of the building were inferred. Considering the high specification of the building, it was determined to use dougong of three-handed form.

The scale of each component, through the statistics of ancient buildings and the reference of the proportions of Golden Hall of Horyuji Temple and the east pagoda of Yakushi Temple, was determined, including the column diameter and the column height corresponding to the 17-foot column spacing in turn, the column diameter corresponding to the big bracket set, and then the dimensions of the components such as gong, ang, and square-column.

The eaves are imitated by the double hanging wood[2] of the east tower. The eave ceiling is not horizontal, but forward warped. The truss, wood and maofu[3] are calculated from the statistics of ancient buildings.

Internal structure: imitating Golden Hall of Horyuji Temple, the square pole-shaped[4] supporting wheel[5] is used to support the patio truss composed of well trusses. Through these methods, the patio[6] is made to resist the distortion of the building in the horizontal direction.

The interior is deeper and wider than Golden Hall of Horyuji Temple, so it is necessary to support the roof at the middle position, and set the bed beam and tie beams at the appropriate position on the structure, and columns are set up and down to support them.

The roof truss is modeled on Golden Hall of Horyuji Temple, instead of using double column reinforcement, it is combined by the reinforcement at the center of the columns in the width direction.

The difference between the positions of the columns on the first floor and the second floor is that the middle column on the first floor is inserted between the columns on the second floor. The main column is used

2. 大约相当于我国的檐椽用方椽、飞椽用圆椽的做法
It is roughly equivalent to the practice of using square rafters for eaves rafters and round rafters for flying rafters in China
3. 相当于我国木构建筑的大小连檐　Equivalent to the size of the eaves of wooden buildings in China
4. 类似于斜撑　Similar to a diagonal brace
5. 相当于我国古建筑中鹅颈轩位置的轩椽
The rafters, which are equivalent to the position of Ejinxuan of the rafter in ancient Chinese architecture
6. “天井”相当于我国古建筑中的“天花”　"Patio" is equivalent to the "ceiling" in ancient Chinese architecture

了调整屋面曲线对屋面的面层进行了设计。

屋顶复原的最后一道工序，根据大极殿院落所在地出土的瓦，能够复原出本瓦葺的形态[7]。屋脊部分，通过考据同时期的建筑形态，在端头采用了相应的鸱尾形式，在中央位置装上了宝珠。山面的装饰采用了法隆寺金堂上所见到的向上弯曲的合掌形状的豕扠首组合的形式[8]。

细部处理：细部处理通过制作1:5（1999年）的模型进行讨论，以此为依据进行调整确定最终方案。

修正前的屋架参照法隆寺金堂，二层檐椽尾部压槽枋位于二层柱内收0.5尺的位置，也就是与一层内柱正对的位置。但是对于进深方向较大的大极殿而言，如果将椽的折点作为屋檐的端头，则无法形成平滑的屋顶曲线，破風尻[9]底部的山面和水平面的高差会变得非常巨大，因此二层檐椽的尾部向内延伸，将作为屋架折点的檐椽尾部压槽枋的位置调整为从二层的柱子向内移动6.5尺。山面叉手的位置也随之向内侧移动，缩小了山面装饰的尺度。

周遭屋檐的形式，从平城宫出土的建筑模型的种类来看，通肘木应使用3段组合的形式，但是从现存的建筑实例来看，即使将时间推衍到平安时代后期也无法确认这种做法，既然要复原这样一座反映奈良时期整体意匠的代表性建筑，就应该避免引起误解。出于这种考虑，参照常见的实例，通肘木改为2段式的组合形式。另外，二层转角处柱间的尺度较小会产生繁杂的问题，因此取消了这个开间的斗子蜀柱。

除此之外，我们对于标准用材的断面尺寸、栱的长度、出挑长度等也进行了微调。

to support the eaves, while the middle column is used to support the load of the roof truss. It is passed to the first layer of columns through the middle column.

Roof truss and rooftop: The roof imitates the form of the double beams of Golden Hall of Horyuji Temple, but because of the greater depth and higher height, the number of beams overlapping is tripled. For the roof truss part, the upper part of the eaves rafter on the second floor bears the truss, and the beam-frame combination is erected on the truss. Above the surrounding rafters with relatively gentle slopes, the double-sloped roof is formed by assuming a full-length roof truss rafters with steep slopes, forming a downwardly buckled shape. Where the eaves rafters and the truss rafters intersect is designed to adjust the roof curve and the roof surface layer.

In the final process of roof restoration, according to the tiles unearthed in the courtyard of Daji Hall, the shape of the original tile[7] can be restored. Through the textual research on the architectural form of the same period, the roof ridge part adopted the corresponding owl tail form at the end and installed the orb at the central position. The decoration of the mountain surface is in the form of inokosasu in the shape of a gassed palm[8] that is bent upward as seen on Golden Hall of Horyuji Temple.

Detailing: Detailing is discussed by making a 1:5 (1999) model, and based on this, adjustments are made to determine the final plan.

The roof truss before the revision refers to Golden Hall of Horyuji Temple, and the rear grooved square-column of the eaves rafter on the second floor is located at the position where the second-floor column is retracted by 0.5 feet, which is the position directly opposite to the inner column on the first floor. However, for the Daji Hall with a large depth, if the vertex of the rafter is used as the end of the eaves, a smooth roof curve can't be formed, and the height difference between the mountain surface and the horizontal surface at the bottom of Bofeng Board[9] would become very large. Therefore,

7. 也就是平瓦和筒瓦相互交叠的瓦屋面砌筑方法
That is the tile roof masonry method in which the flat tile and the tubular tile overlap each other
8. 类似于我国唐宋古建筑中常见的带中柱的叉手结构
Similar to the fork-hand structure with a central column commonly seen in ancient buildings in the Tang and Song Dynasties in China
9. 相当于中国建筑山面的“博风板”
Equivalent to the "Bofeng Board" on the mountain surface of Chinese buildings

总结：受限于大极殿遗构SB7200中所能获得的信息，上部结构的复原受到了想象力的局限，情况并非绝对真实，因此复原出的建筑物作为历史真实被社会所接受并非一件好事。复原方案作为长期以来诸多相关研究者殚精竭虑不断摸索的结果，反映了现阶段对古代建筑研究所达到的界限。本稿作为复原参与者共同的责任和对今后研究进展的助力，是对参与者集思广益所获得的证据的整理。

（巨凯夫、黄迪崎、杨岍荟编译）

the tail of the eaves rafter on the second floor extends inward, and the position of the grooved square-column at the end of the eaves rafter, which is the hinge point of the roof truss, is adjusted to move 6.5 feet inward from the column on the second floor. The position of the sway rod of the side elevation would also move inward, reducing the size of the decoration on the mountain.

The form of the surrounding eaves, according to the types of architectural models excavated from Pingcheng Palace, the through-the-elbow wood should be in the form of a combination of three sections. But from the existing architectural examples, even if the time is extrapolated to the late Heian period, it is impossible to confirm this. Since we are going to restore such a representative building that reflects the overall craftsmanship of the Nara period, we should avoid causing misunderstandings. For this consideration, referring to common examples, the through-the-elbow wood is changed to a 2-segment combination. In addition, the small scale between the columns at the corner of the second floor will cause complicated problems, so the Douzishuzhu in this bay is cancelled.

In addition, we have also fine-tuned the cross-sectional size of the standard material, the length of the rod, and the length of the overhang.

Summary: Limited by the information that can be obtained in SB7200, the remains of Daji Temple, the restoration of the upper structure is limited by the imagination and is not absolutely true. Therefore, the restoration of the restored building as a historical reality to be accepted by society is not a good thing. The restoration plan, as the result of the long-term efforts of many related researchers, reflects the limit reached by the research on ancient architecture at this stage. This manuscript is a compilation of the evidence obtained by the participants' brainstorming as a means to the shared responsibility of the participants of the restoration and to assist future research progress.

(translated and edited by Kaifu Ju, Diqi Huang, Qianhui Yang)

活动动态 Latest Events

2022 年度日本建筑学会大会（北海道）

2022 Architecture Institute of Japan Conference (Hokkaido)

资料来源 Source：http://taikai2022.aij.or.jp

2022年度日本建築学会大会（北海道）

学術講演会

AIJ HOKKAIDO 2022

图 1：会议标志
Figure.1 Conference Logo

日本建筑学会创立于 1886 年，是日本最为历史悠久的工学系学会之一。该协会通过会员间的相互协作，以谋求与建筑相关的学术、技术、艺术的进步与发展为目标，目前共有会员 3 万 6 千余名，会员最初来自教育机构、综合建设业、设计事务所，目前已遍及官公厅、公共社团、建筑材料和机器制造商、企业顾问、学生等多个行业和部门。作为不断做出社会贡献的学术团体，日本建筑学会在日本建筑界发挥着领导性作用，每年召开的全国大会是最重要的活动之一。

日本建筑学会大会每年在不同的城市召开，借助召开地的会员的力量，大会计划一系列的活动，包括有关建筑、城市建设、儿童教育方面的演讲，历史与文化的发展，有助于灾害复兴与地球环境的信息交流等等。

本年度日本建筑学会大会将于 2022 年 9 月 5 日 -8 日，在北海道科学大学以及线上会场同时举行。根据已递交的摘要统计，本次会议的将发表的题目数量与去年一致，约 6200 个。由于新冠疫情的影响，今年的学术演讲和设计发表会将主要在线上进行，讲演与提问环节将通过预定会议，并以线上实时的方式完成。本次大会的主体是“描绘”，今天的世界正处于疫情、温室化效应、灾害、战争等纷繁的困难之中，正因如此我们有必要做好迎接新的困难的准备，并且，当下的我们更应该以实际的行动描绘一个光明的未来前景。

Architecture Institute of Japan (AIJ) was founded in 1886, which is one of the oldest engineering institutes in Japan. Through the association between members, the institute plans to seek the progress and development of science, technology and art, and currently has over 36,000 members. Members of it originally came from educational institutions, comprehensive construction industry and design firms. At present, it has spread to government offices, public organizations, building materials and machine manufacturers, enterprise consultants, students and other industries or departments. As an academic organization that continues to contribute to society, the Architectural Institute of Japan plays a leading role in the Japanese architectural community. The conference which it holds annually is one of the most important activities.

Architecture Institute of Japan is held in different cities every year. With the help of the members of the conference place, the conference plans a series of activities, including lectures on architecture, urban construction, children’s education, the promotion of history and culture, and information exchange for disaster recovery and the global environment.

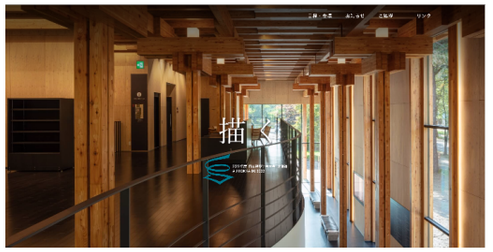

图 2: 会议海报
Figure.2 Conference poster

（巨凯夫、黄迪崎、杨岍荟编译）

Current annual year conference of Architecture Institute of Japan will be held at Hokkaido University of Science and online from September 5 to 8,2022. According to the submitted abstracts, the number of topics to be presented at this conference is the same as last year, about 6,200. Due to the COVID-19 pandemic, current annual academic lectures and design presentations will mainly be conducted online, with lectures and question-and-answer sessions scheduled and completed online in real time. The main theme of this conference is "portrayal". Today's world is in the midst of epidemics, the greenhouse effect, disasters, wars and other difficulties, which is why it is necessary to prepare ourselves for new difficulties and, moreover, to take practical action to portray a brighter future.

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