

ARCHITECTS' ROLES TAKEN IN DESIGN AND CONSTRUCTION STAGE: BUILDING CONSTRUCTION PROJECTS IN JAPAN

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In former days, the high quality buildings were realized constantly in the construction projects participated in by the architects in Japan. Today, while the legal system has been enacted to ensure the further quality confirmation, there occur many construction defects. First purpose of this study is to show the architects' roles and the typical methods taken in the projects participated in by the architects. Second one is to consider how consistent such methods are under the present legal system and how to make use of such methods. The following are the main findings. Firstly, the former architects took three parts of roles in the projects participated in by the architects. They are a designer, a design manager and a construction manager. Secondly, there are three issues to make use of such architects' practice in today's situations. We also show three suggestions to confront the issues under the present legal system.

KEYWORDS: architect, constructor, drawings and specifications, communication.

INTRODUCTION

In Japan, the high quality buildings have been built in the design-build process by general contractors and the traditional process, in which separate organizations take design and execution of the work, and so on. In the traditional process, Ministries, Offices and local government might take design as public works. Design firms might take design too. Many high quality buildings have been realized in the projects participated in by the architects too. How were such projects progressed concretely?

On the other hand, in recent years, the Structural Documents Scam Issue happened and then the Building Standards Law and the *Kenchiku-shi* Law were revised. A *Kenchiku-shi* is a designer or a building engineer who has a national qualification. By the *Kenchiku-shi* Law, he/she has the exclusive rights of designing and *Kouji-Kanri*. *Kouji-Kanri* is, as defined by the law, to check the executed works with drawings and specifications and to confirm whether the works are executed according to the drawings and specifications. In actual services/tasks, *Kouji-Kanri* is a concept which includes 'supervise' and 'inspect' in the U.S.A. and the U.K.

The No. 15 bulletin of the Ministry of Land, Infrastructure, Transport and Tourism was put out in January, 2009 as revision of the No. 1206 bulletin of the Ministry of Construction put out in July, 1979. Such bulletins were aimed at providing the standards of fees for service of *kenchiku-shi*. Thus, it has been tried to make the legal system more orderly (Hirano and Furusaka, 2008). However, there are gaps in sharing of roles and responsibilities and defects in quality (Furusaka and Hirano, 2008) although the systems of sharing of roles and responsibilities and quality confirmation have become more strictly. This may not be the only way to confirm quality of buildings. It is also necessary to study the methods of quality confirmation in the projects participated in by the architects.

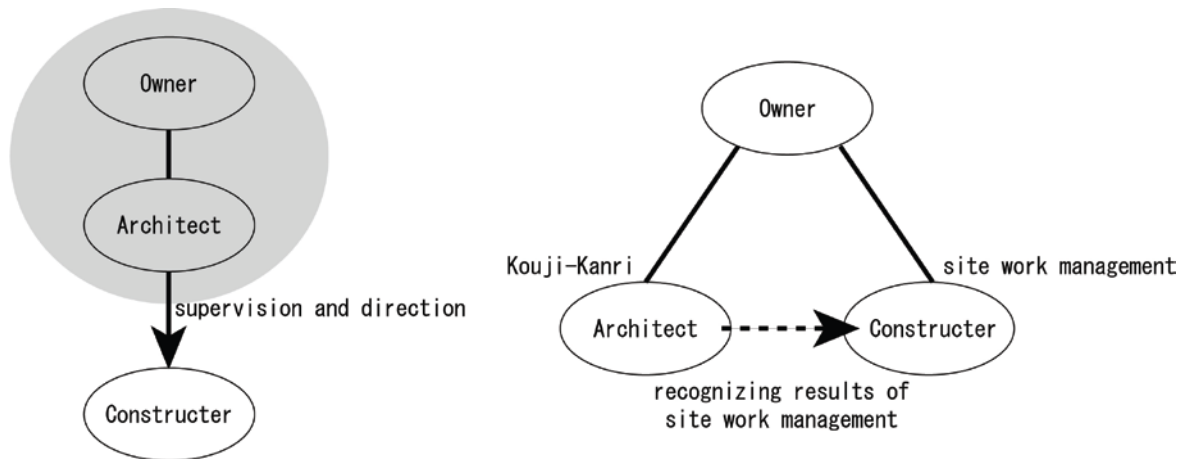
This study has two aims. First one is to show the architects' roles and typical methods taken in the former projects participated in by the architects in Japan. Second one is to consider how consistent such methods are under the present legal system, which have gotten more strictly and how to recognize such methods.

JAPANESE ARCHITECTS

In Japan, until the Edo era, the design-build process by a master builder of wooden construction was the main project delivery system (Hashimoto, 1995). The master builders pulled carpenters together, and built houses, temples and shrines in Japanese traditional method of construction. The master builders performed not only designing buildings but also constructing them in person. It can be said that the origin of architects in Japan is the master builders (Fujii and Tsurumaki, 1997). In the Meiji era, a concept of "architect" was imported from Europe and the U.S.A. Architects came to be trained in the department of architecture at Engineering University, the following Tokyo University (Yamamoto, 1980). A professional institute was also established by imitating RIBA (Royal Institute of British Architects) and AIA (the American Institute of Architects).

The architects' service in these days was "Guide and Supervision" type. Mainly in public works, the architects designed buildings and also had broad responsibility and authority thorough a construction process as the Architects/Superintendents, who were commissioned by the owners. The architects, who were educated in modern architecture supervised and directed even execution of the work because constructors were poor at ability and knowledge of modern architecture.

The more modernized the building industry was, the more developing and multiple techniques of architecture became. Constructors' ability of site work management also improved. After the World War II, in the rapid economic growth era, demand of buildings, especially private buildings increased rapidly. The number of architects were inadequate to perform the service as "Guide and Supervision" type. As a result, site work management by constructors themselves became more important. The architects' service had changed into "Recognition of Constructors' Assurance" type. In "Recognition of Constructors' Assurance" type, architects perform design and *Kouji-Kanri*. About execution of the work, they recognize results of site work management by constructors themselves. (Ministry of Construction, Housing Bureau, Building Guidance Division, 1984). See Figure 1.



“Guide and Supervision” type

“Recognition of Constructors’ Assurance” type

Figure 1: Two Types of Architects’ Service

ARCHITECTS’ ROLES

Three Roles

Based on some interviews (Fujii, Tsurumaki, 1997), we give three roles of the architects taken in the former projects participated in by the architects. First one is a designer. Second one is a design manager. Last one is a construction manager.

Firstly, the architects took a role as a manager. Some architects designed detail in person. Other architects showed basic concept and direction of design, and then staff of the architects’ firms designed materially and made drawings.

Secondly, the architects took a role as a design manager. The architects supervised staff of their firms, and then coordinated and put staff’s design together. When staff of the architects’ firms and constructors made drawings from the architects’ schematic design, the architects confirm the drawings and gave instructions.

Lastly, the architects took a role as a construction manager. Some architects tried to realize the buildings faithfully to their design. Other architects made much of quality confirmation in the construction stage. Such architects actively participated in not only design but also execution of the work. Especially when owners asked the architects to design through direct selection, some architects participated in the projects from the programming stage.

It depends on each architect what roles they took and what roles they made much of. Concerning the same architect, there seems to be some changes accompanying changes of the legal system and social situations. Anyway, it is considered that they are between “Guide and Supervision” type, which started in the Meiji era and “Recognition of Constructors’ Assurance” type, which became the main style after the World War II.

Comparison with Architects in the U.S.A. and the U.K.

As was stated above, AIA and RIBA, the architects' professional institutes in the U.S.A. and the U.K., exerted great influence on Japanese architects. However, 'architect' is a commonly used name and has no legal corroboration in Japan. On the other hand, architects have the exclusive right to the name. How about to compare such architects in Japan with in the U.S.A. and the U.K.?

AIA is the largest architects' professional institute in the U.S.A. and was established in 1857. RIBA is the largest architects' professional institute in the U.K. and was established in 1834. A charter was given to RIBA in the U.K. in 1837. These professional institutes have made a system of education and qualification and regulated for practice in the U.S.A. and the U.K. In the Mandatory Code of Ethics to members, it was provided that they should exercise unprejudiced and unbiased judgement on their behalf. It was not allowed architects to engage in building contracting till the early 1980s. After that the ban on contracting was removed and architects became able to engage in design-build process. However, a rule was adopted that an architect should disclose conflicts of interest to clients and that the circumstance is accepted by them.

In Japan, State made an educational system and consequently professional institutes were established. Early Japanese architects engaged in construction unifying into the owners as the Architects/Superintendents, who were commissioned by the owners. A feature of Japanese architects, who have such history, is that they are lack a consciousness of an agent for a client. Furthermore, in Japanese construction process, contents and range of practice of design, *Kouji-Kanri* and construction are fuzzy. So it is difficult for architects to have independent standpoints of constructors. However, following methods which designers collaborate with constructors and confirm quality of buildings arose thus. The Bridging method was developed by imitating such methods.

METHODS OF PROJECTS PARTICIPATED IN BY ARCHITECTS

We assume that there are the standard drawings and specifications in the traditional process in Japan. Then we can classify the methods of the projects participated in by the architects into two types based on how far to make drawings and specifications. See Figure 2. In Japan, drawings and specifications are defined in the Building Standards Law as "drawings and specifications which are required to execute the work to construct a building (excepting full size drawings and such drawings)". The No. 15 bulletin of the Ministry of Land, Infrastructure, Transport and Tourism gives more detailed kinds and names of drawings. However, there is no reference to what drawings and specifications are required concretely.

In the practice with the standard drawings and specifications, designers design and make drawings and specifications in the design development stage and the construction document stage. Based on the standard drawings and specifications, a contract with a general contractor is made and the works are executed to realize drawings and specifications. In the construction stage, *Kouji-Kanri* is performed by a *Kouji-Kanri sha*. A *Kouji-Kanri sha* performs *Kouji-Kanri* and he/she must be a *Kenchiku-shi*.

One of the typical method of the projects participated in by the architects is "Papers Communication" type. In this type, designers make full size drawings and detail drawings surpassing the standard drawings and specifications. They even examine and suggest

construction methods. Thus, they confirm quality of the buildings. Another one is “Human Communication” type. In this type, designers start collaboration with constructors in the design stage. The designers attached much importance to shop drawings and directions on a building site. Thus, they confirm quality of the buildings. Practically, many architects make projects progressed in a method which is between these two types, namely in a method which have features of the two types.

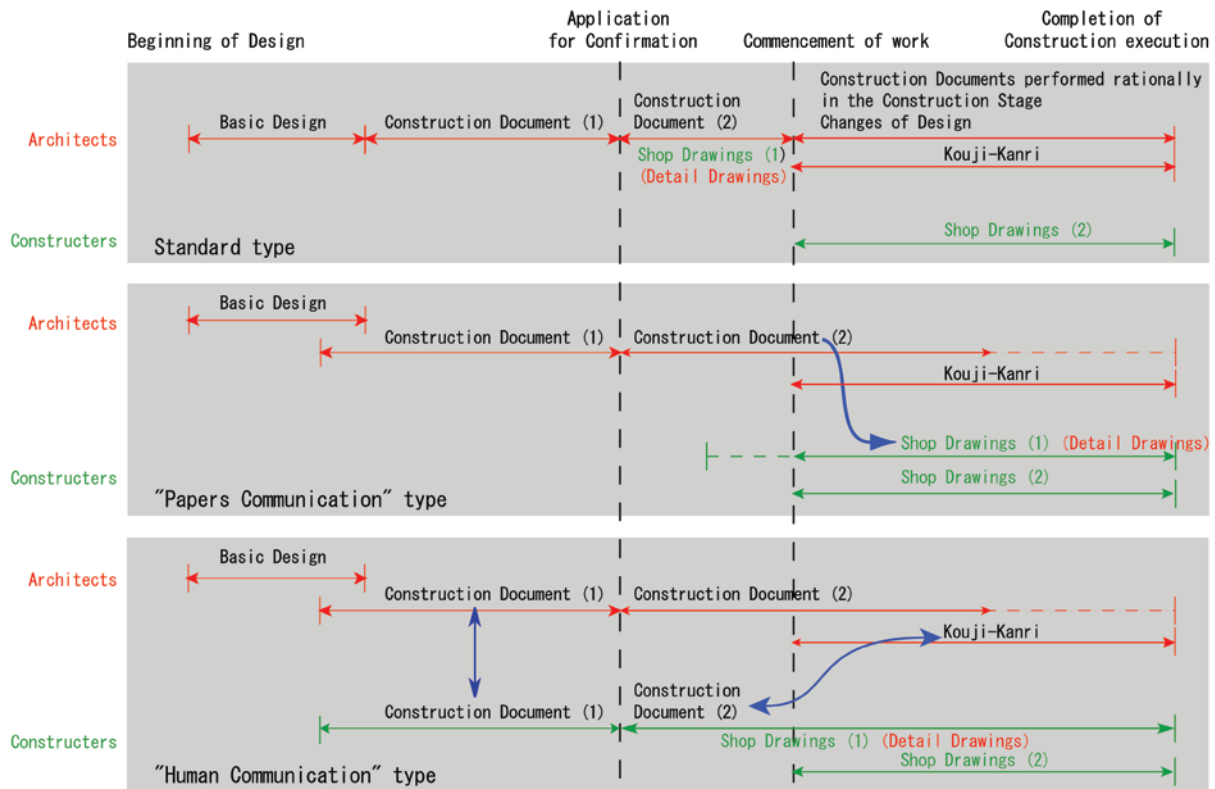


Figure 2: Two Types of Architects' Methods

MAKING USE OF METHODS IN TODAY'S SITUATIONS

Issues

In today's situations, there is three issues to make use of methods of the former projects participated in by the architects.

Firstly, in such practice, it was assumed that design is also performed in the construction stage. However, it has become difficult to continue to design in the construction stage like a conventional practice. At the active Building Standards Law, if we want to change contracts of buildings which have finished the Application for Confirmation, we must perform the Application for Confirmation again, except for small changes which are provided by the bulletin of the Ministry of Land, Infrastructure, Transport and Tourism. In Japan, we must not commence any works before the Application for Confirmation. Meanwhile, the present fees for design are not enough to continue design in the construction stage. It is necessary to clarify design in the construction stage as change of design, and thus to gain fees for that

service. In this connection, based on some interviews (Furusaka, Hirano, 2008), it is almost the actual conditions that after selection of general contractors, they make shop drawings and designers consider them. Therefore details are designed and the Application for Confirmation is performed.

Secondly, in the direct employment process, the architects once had much broader responsibility and authority as owners than today. Such “Guide and Supervision” type practice of the architects has changed through professional differentiation after the World War II and is seldom found in the today’s construction projects. Under the active legal system, the roles which were once taken by the architects in “Guide and Supervision” type practice are shared between architects, owners, construction managers, site work managers and special constructors. On the other hand, there is some influence of “Guide and Supervision” type practice upon the standard form of contract agreement.

Lastly, it is not strictly defined what should be made as drawings and specifications and what should be performed as *Kouji-Kanri*. Techniques of architecture have developed. A number of mechanical services and special constructors has increased. Projects have become larger scale. Therefore, a numbers of drawings and specifications to construct buildings has increased. Moreover, there is considerable difference between constructors’ ability. There is the typical methods of the former projects participated in by the architects as the types mentioned above. However, each project’s method was very various. If what should be made as drawings and specifications and what should be performed as *Kouji-Kanri* are not shown clearly, gaps in sharing of roles and responsibilities and some services left behind will possibly swell up. On the other hand, if they are shown, the architects’ roles in some methods will not be consistent with the present legal system.

Suggestions

We give three suggestions to confront the three issues mentioned above under the present legal system and to make use of such methods in today’s situations.

Firstly, if design is also performed in the construction stage, it is necessary that designers make a design agreement with owners on such assumption. In the agreement, it should be shown clearly for what design will be performed in the construction stage. Constructors also have to negotiate with owners about ways to change costs and time of completion when design is performed in the construction stage. Moreover, in drawings and specifications, designers should write what and how design will be performed in the construction stage clearly. The No. 15 bulletin of the Ministry of Land, Infrastructure, Transport and Tourism defined “the standard service of making construction documents which is performed rationally in the construction stage”. The contents are the following. The first one is question and answer and explanation to tell constructors what designers intend exactly. The second one is consideration and advice from designers’ standpoints to select materials and mechanical services.

Secondly, if an organization has ability to perform “Guide and Supervision” type service by itself, such organization provide that it has responsibility and authority like owners in a *Kouji-Kanri* agreement with owners. However, in fact, organizations which have such ability may be very few. It is more practical that owners, designers, general contractors and sub contractors, who share services of “Guide and Supervision” type practice, cooperate systematically. Therefore the same organization is able to participate in construction projects

from the design stage to the construction stage as the Architects/Superintendents. Communication between designers and constructors is also done there.

Lastly, it supposes that the model of drawings and specifications and the manual of *Kouji-Kanri* are prepared. After how far to make drawings and specifications and what should be performed as *Kouji-Kanri*, designers and *Kouji-Kanri sha* will make an agreement about their service taken in each project. Today in Japan, the standard forms of contract agreement are about design service and *Kouji-Kanri* service. So design service has to be divided into basic design, detailed design and design in the construction stage on the standard forms of contract agreement. *Kouji-Kanri* is also to be ramified. Then each contract will be made about each service. Therefore, sharing of roles and responsibilities will be clarified and become more flexible under the legal system.

CONCLUSIONS

In this paper, we studied the architects' roles taken in the former projects participated in by the architects and considered the issues and the suggestions to make use of such architects' practice in today's situations. The main findings are the following.

(1) The former architects took three parts of roles in the projects participated in by the architects. First one is a designer. Second one is a design manager. Last one is a construction manager.

(2) There are three issues to make use of such architects' practice in today's situations. First one is that design was assumed to be also performed in the construction stage. Second one is that the architects once had much broader responsibility and authority like owners. Last one is what should be made as drawings and specifications and what should be performed as *Kouji-Kanri* are not strictly defined.

(3) We gave three suggestions to confront the issues mentioned above under the present legal system. First one is that if design is also performed in the construction stage, designers have to make such design agreement with owners. Second one is who share services of "Guide and Supervision" type practice will cooperate systematically. Last one is that the standard forms of contract agreement should be prepared for more detailed service.

In the future study, we want to consider the practice more concretely in the former projects participated in by the architects.

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APPENDIX

[1] The authors had interviews with four members of staff of the architects' firms and two constructors between July, 2008 and February, 2009. We would like to take this opportunity to express our deepest gratitude for them.

[2] The authors discussed at the workshop on a model for cooperative design and practice between July, 2008 and March, 2009 in Kyoto.

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