The Great East Japan Earthquake and Responses from Civil Engineering, Urban Planning, and Architecture Industry: Reconsidering Tokyo as a Center of Expertise

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PURPOSE

The Great East Japan Earthquake revealed that the modern society is founded on multiple, complex infrastructures consisting of materials, institutions, and knowledge.[1] It can be difficult to realize that infrastructures have sustained modern society and underlie our daily lives. However, the existence of such infrastructures clearly shows not only in the post-disaster experiences of the Tohoku and Northern Kanto regions, which were directly devastated by earthquakes, tsunamis, or the Fukushima Daiichi nuclear disaster, but also in the experiences of the Tokyo metropolitan region, which was subject to the impacts of liquefaction, rolling blackouts, and the contamination of water and food by radioactive materials.

Though many people who experienced the Great East Japan Earthquake realized the existence of infrastructure, it remained difficult to precisely determine how and what infrastructure was damaged or lapsed into malfunction. Especially, it has been difficult to grasp the entirety of the damage to infrastructure by reliable means, because the devastated area is large and the damage differs by region. Nevertheless, reliable information about the overall damage to infrastructure caused by the Great East Japan Earthquake is needed to plan for post-quake reconstruction, especially in the process of making decisions about the distribution of various resources on a national scale. Then, who can supply reliable information about the damage to infrastructure, and how can they obtain such information?

This paper examines the attempts to understand the entirety of the damage to infrastructure that occurred as a result of the Great East Japan Earthquake, in order to show some important points of argument related to the governance of infrastructure in post-disaster situations. Through this investigation, this paper reconsiders Tokyo as a center of the power structure that may appear in the governance of infrastructure.

To consider the problem mentioned above, this paper will focus on the build environment (Harvey 1985). The build environment is selected based on the following two points. First, due to the serious damage to the build environment and its drastic post-disaster reconstruction process, it is presumed that the build environment is one of the representative infrastructures revealed by the Great East Japan Earthquake. Second, following the structural changes to governance structure after the 1980s, the build environment is one of the suitable objects to consider the present governance of infrastructure. In the case of Japan, the national state had centrally governed the build environment throughout the modernization process. After the 1980s, however, the build environment has come to be governed not only by the national state but also by multiple actors such as local governments, enterprises, NPOs, and other CSOs and community organizations. When based on such a change, problems regarding who governs the build environment and how as well as what kind of

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knowledge makes governance possible are critical to consider the direction of structural change of governance of infrastructure in a post-disaster situation. [2]

A build environment as infrastructure consisted not only of materials but also of institutions and knowledge that enable management or maintenance of the build environment. Therefore, for the purpose mentioned above, this paper will focus on organizations that have expertise in the management or maintenance of build environment. Concretely, this paper reviews the activities that have been implemented by academic or professional organizations in civil engineering, urban planning, or architecture in the two months following the Great East Japan Earthquake. [3]

RESPONSES FROM ACADEMIC ORGANIZATIONS IN CIVIL ENGINEERING, URBAN PLANNING, AND ARCHITECTURE

What kind of activities have academic organizations in civil engineering, urban planning, or architecture done to deal with the damage caused by the Great East Japan Earthquake? The activities conducted by academic organizations for about two months after the disaster can be classified as follows (see also Figure 1).

Task Forces

First, academic organizations in civil engineering, urban planning, or architecture convened task forces for coping with the disasters in each organization, within several days of March 11. Thereafter, these task forces met periodically.

In addition, ad hoc organizations were founded by the cooperation of two or more academic or professional organizations. Examples include the "Liaison Committee among JAEE, JSCE, AIJ, JGS, and JSME on the Tohoku-Pacific, Japan Earthquake (「東北地方太平洋沖地震被害調査連絡会」)" formed on March 18 by the Japan Association for Earthquake Engineering (JAEE; headquartered in Minato Ward, Tokyo), Japan Society of Civil Engineers (JSCE; headquartered in Shinjuku Ward, Tokyo), Architectural Institute of Japan (AIJ; headquartered in Minato Ward, Tokyo), Japanese Geotechnical Society (JGS; headquartered in Bunkyo Ward, Tokyo), and Japan Society of Mechanical Engineers (JSME; headquartered in Shinjuku Ward, Tokyo); and the "Liaison Committee of Building-related Organizations on the Provision for the Disasters (「建築関連団体災害対策連絡会」)" formed on April 14 by the AIJ, City Planning Institute of Japan (CPIJ; headquartered in Chiyoda Ward, Tokyo), Japan Federation of Architects and Building Engineers Association (headquartered in Minato Ward, Tokyo), Japan Association of Architectural Firms (headquartered in Chuo Ward, Tokyo), Japan Institute of Architects (JIA; headquartered in Shibuya Ward, Tokyo), and Japan Society of Urban and Regional Planners (JSURP; headquartered in Minato Ward, Tokyo).

Moreover, academic organizations established new websites dedicated to disseminating information about their post-disaster activities or the damage caused by the disaster. For example, the JSCE created the "2011 Great East Japan Earthquake - JSCE Information Forum (「土木学会 東日本大震災情報共有サイト」)."

Research Activities

After the Great East Japan Earthquake, most of the academic organizations in civil engineering, urban planning, or architecture conducted research activities in the devastated areas of the Tohoku

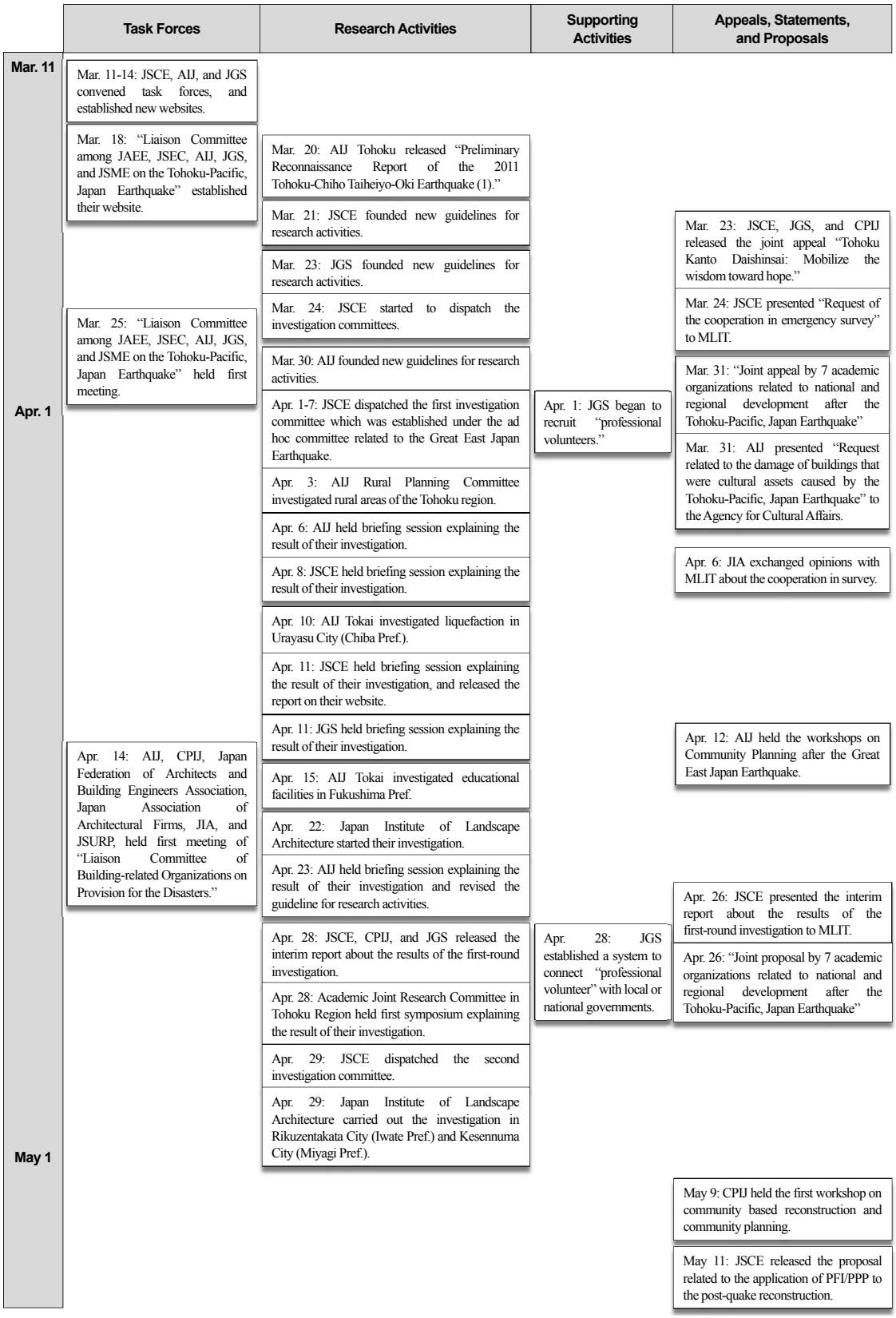

Figure 1. Responses from academic organizations in civil engineering, urban planning, and architecture (2011. 3. 11 – 2011. 5. 11)
Source: Author, based on Ueda et al. (2011).

region to determine the details and extent of the damage caused. However, these organizations did not necessarily perform research on a large scale immediately after the earthquake.

Specifically, the JSCE ordered members to refrain from research activities for the time being, and then founded new guidelines for research activities. The JGS also created new guidelines for research activities, and AIJ reviewed its guidelines. After the guidelines were reviewed and/or revised, starting from the beginning of April, the organizations conducted complete research activities. Shortly afterward, they began to hold briefing sessions explaining the results of their research activities in the Tokyo metropolitan or Tohoku regions.

Supporting Activities for Local Governments around Devastated Areas

Some academic organizations also sought to offer expertise to local or national governments to support the devastated areas. Beginning in April, the JGS began to recruit "professional volunteers" from among its members to support the activities of the local or national governments in the devastated areas of the Tohoku region. At the end of April, the JGS established a system to connect experts with local or national governments. In the first two months after the disaster, however, such types of supporting activities were not common.

Appeals, Statements, and Proposals

After the Great East Japan Earthquake, most academic organizations in civil engineering, urban planning, or architecture conducted some kind of appeals or statements. These include not only appeals or statements made by the organization director but also by joint appeals or statements made by multiple organizations or directors. Examples of these appeals and statements include "Tohoku Kanto Daishinsai: Mobilize the wisdom toward hope（「東北関東大震災――希望に向けて英知の結集を」）" released on March 23 by the JSCE, JGS, and CPIJ, "Joint appeal by 7 academic organizations related to national and regional development after the Tohoku-Pacific, Japan Earthquake（「東北地方太平洋沖地震後の国土・地域振興に関する関連学協会会長共同アピール」）" released on March 31, or "Joint proposal by 7 academic organizations related to national and regional development after the Great East Japan Earthquake（「東日本大震災後の国土・地域振興に関連する7学会会長共同提言」）" released on April 26 by the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan (headquartered in Shinjuku Ward, Tokyo), JSCE, CPIJ, JGS, AIJ, Japan Institute of Landscape Architecture (headquartered in Shibuya Ward, Tokyo), and Japan Concrete Institute (headquartered in Chiyoda Ward, Tokyo).

Some academic organizations tried influence the national government by lobbying. Examples of these appeals and statements include "Request of the cooperation in emergency survey（「緊急調査等への協力について（依頼）」）" presented by JSCE to the Ministry of Land, Infrastructure, Transport and Tourism on March 24, or "Request related to the damage of buildings that were cultural assets caused by the Tohoku-Pacific, Japan Earthquake（「東北地方太平洋沖地震による文化財である建築物の被害について（依頼）」）" presented by the AIJ to the Agency for Cultural Affairs on March 31.

In addition, some academic organizations held workshops about the post-quake reconstruction. For example, the workshop on Community Planning after the Great East Japan Earthquake was held by the AIJ (beginning on April 12, 2011 in Tokyo).

RESPONSES FROM PROFESSIONAL ORGANIZATIONS IN CIVIL ENGINEERING, URBAN PLANNING, AND ARCHITECTURE

What kinds of activities have been conducted by professional organizations in civil engineering, urban planning, or architecture to deal with the damage caused by the Great East Japan Earthquake? Professional organizations have formed task forces in individual organizations for coping with the disasters, within several days of March 11, and conducted research activities in devastated areas of the Tohoku region to clarify the damage of the disasters. [4] Typical activities conducted by these professional organizations for about two months after the disaster are the following (see also Figure 2).

Logistic Support for Research or Supporting Activities of Local Governments around Devastated Areas

One characteristic activity conducted by these professional organizations was logistic support for the research activities of local governments near the devastated areas. These professional organizations had tried to dispatch required experts in response to a request from the Tohoku Regional Bureau Ministry of Land, Infrastructure and Transport in the Ministry of Land, Infrastructure, Transport and Tourism or local governments around the devastated areas. Especially, nationwide professional organizations requested or ordered their branches to cooperate for the requisition of experts and resources necessary for supporting activities in devastated areas, beginning in the second half of March. Some professional organization attempted to establish institutions to dispatch experts to devastated areas.

For example, the Japan Association of Architectural Firms requested or ordered these branches to cooperate for post-quake quick inspections of damaged buildings, and the Japan Federation of Architects and Building Engineers Association requested or ordered these branches to cooperate for the construction of temporary dwellings. In addition, the Urban Renaissance Agency (headquartered in Yokohama City, Kanagawa) or the Japan Sewage Works Association (headquartered in Chiyoda Ward, Tokyo) dispatched their experts to Iwate, Miyagi, and Fukushima Prefectures and basic municipalities in these three prefectures and tried to support their activities, including the construction of temporary dwellings or planning for post-quake reconstruction.

Reconsideration of Professionalism

These professional organizations formed some kind of task force in each organization, also after the second half of March. Through the activity of the task forces, the professional organizations attempted to reconsider their professionalism and design professional support activity in the post-disaster situation. However, few professional support activities were designed based on the reconsideration of their professionalism in the two-month period following the disaster. Then, it is necessary to examine their subsequent activities to determine the results of their attempts.

DISCUSSION

It is important to focus on academic or professional organizations that have struggled to deal with damages to infrastructure based on their expertise for the following reason.

Importantly, in the process of post-quake reconstruction, knowledge or information about the damage to infrastructure is necessary for planning. The measurement of the gap between a plan and

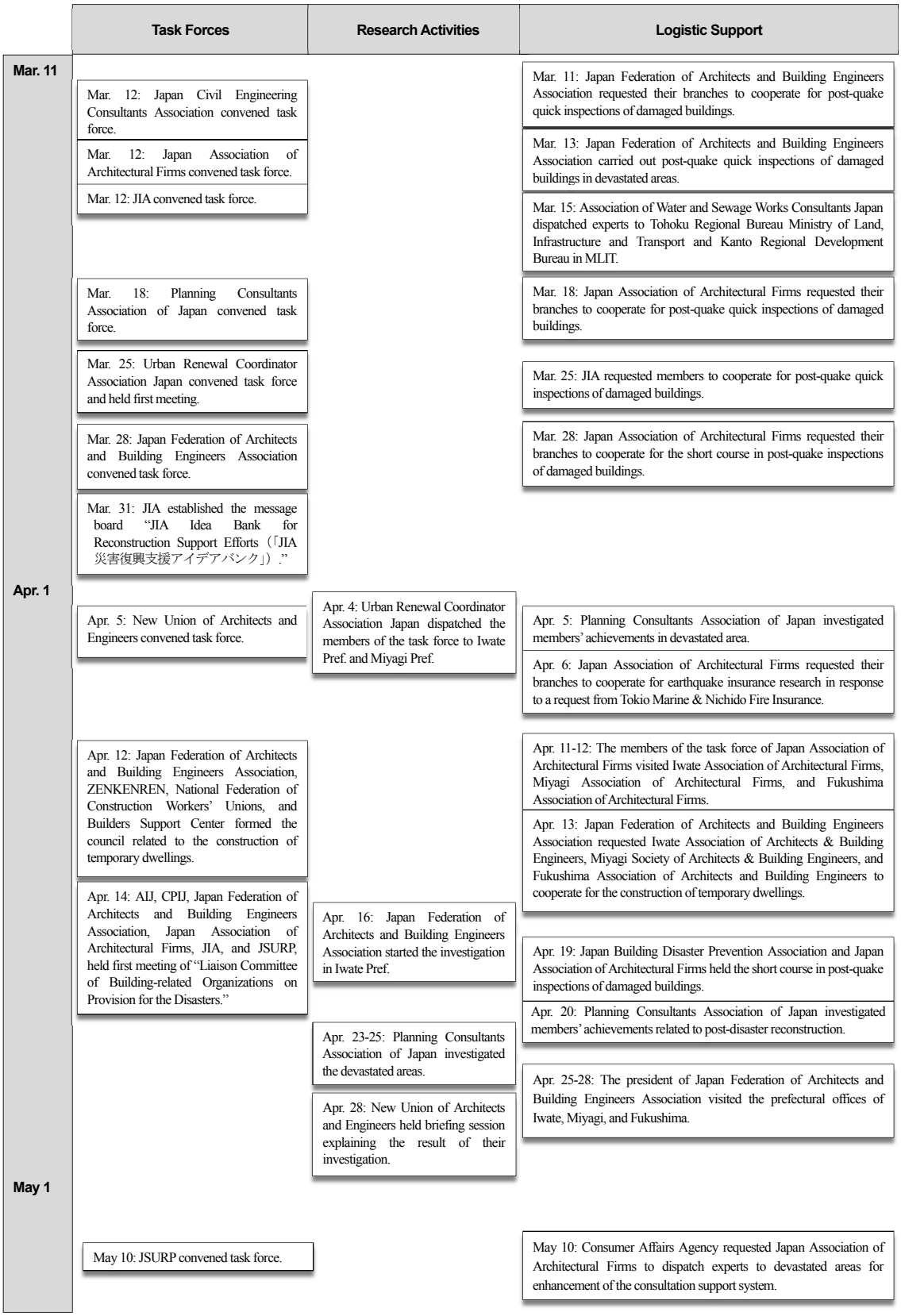

Figure 2. Responses from professional organizations in civil engineering, urban planning, and architecture (2011. 3. 11 – 2011. 5. 11)
Source: Author, based on Ueda et al. (2011).

reality, which is necessary for the concrete process of post-quake reconstruction, also depends on having knowledge or information. Then, academic or professional organizations that supply reliable knowledge or information about infrastructure damage based on their expertise should possess critical positions,[5] because the determination of which infrastructure should be reconstructed will be made through a series of processes from research activities to planning.[6] The reliable fact that the build environment infrastructure was damaged or lapsed into malfunction should be constructed through the activities of academic or professional organizations.

The following arguments are evoked from here.

Uneven Spatial Distribution of Expertise in Build Environment Infrastructure

The spatial distribution of expertise on build environment infrastructure has been uneven, as many of the academic or professional organizations mentioned above are located in Tokyo. Many of these academic or professional organizations formed task forces that were headquartered in Tokyo and dispatched experts or investigation committees to devastated areas in the Tohoku region from there. Some academic organizations also negotiated with ministries and government offices located in Tokyo about their cooperation in supporting or research activities in devastated areas or the requisition of resources required for their activities. In addition, some academic organizations released from Tokyo their statements or proposals based on their activities in the devastated areas of the Tohoku region. Thus, through the Great East Japan Earthquake, it became clear that Tokyo is the center of expertise on build environment infrastructure.[7] This fact may entail the following problem.

The fact that the build environment infrastructure was damaged or lapsed into malfunction in the local field is relayed through the activities of academic or professional organizations that translate the local and elusive reality into logical documents or numerical information based on their expertise. However, this translation process includes the possibility of creating a gap between the reality in local fields and reliable facts that will serve as the premise for decision making on the distribution of resources. It will be able to share the reality that cannot be translated into logical documents or numerical information on the condition that there is spatial proximity, and vice versa. Therefore, it is necessary to investigate whether there is any gap between the reality in local fields, such as devastated areas of the Tohoku region, and the "reality" in Tokyo that has been reconstructed from documents or numerical information.[8]

Toward an Argument on Governance of Build Environment Infrastructure

After the 1980s, in Japan, due to a severe financial situation, the national government tried to retreat selectively from the supply of collective consumption goods and regulation on development by private capital on one hand, and to realize policies through spontaneous development activities by private enterprises and all kinds of activities by NPOs and other CSOs and community organizations on the other hand.

After the 1980s, governance structure such as "government at a distance" (Miller and Rose 2008) seemed to decentralize the distribution of power that governed the build environment infrastructure. However, the uneven spatial distribution of expertise on the management and maintenance of build environment infrastructure, or concentration in Tokyo of such expertise, suggests that there is a center of power that governs build environment infrastructure from a distance. Therefore, Tokyo as a center of expertise is critical to consider the power structure

that may appear in the governance of infrastructure.

The above argument is based on the situation that unfolded for about two months after the disaster. It is necessary to consider the direction of structural change of governance of infrastructure in post-disaster situation on a long-term basis and to examine whether the usefulness of expertise on governing build environment infrastructure falls, through the experience of the Great East Japan Earthquake that made many people realize the "limits" of technological expertise.

Notes

1 See the argument by Graham (2010).

2 Also, see the indication of Miller and Rose (2008) that "Central to the possibility of modern form of government, we argue, are the association formed between entities consisted as 'political' and the projects, plans and practices of authorities-economic, legal, spiritual, medical, technical -who endeavor to administer the lives of other in the light of conceptions of what is good, healthy, normal, virtuous, efficient or profitable. Knowledge is thus central to these activities of government and to the very formation of its objects, for government is a domain of cognition, calculation, experimentation and evaluation" (Miller and Rose 2008: 55).

3 The following description is based on "The Great East Japan Earthquake Chronicle 2011.3.11-2011.5.11" made by the Study Group on Infrastructure and Society, which recorded more than 11,000 events that occurred in the two months following March 11, 2011 (see Ueda et al. 2011). In addition, references for the chronicle, such as documents or websites made by each academic or professional organization, are also referred to (see Ueda and Mori 2011).

4 The earliest case is the Urban Renaissance Agency dispatching the investigating commission to Sendai on March 12.

5 Such a critical position of academic or professional organizations is not unique to the post-quake reconstruction process. Rather, the Great East Japan Earthquake may have made the potential of academic or professional organizations visible.

6 See the arguments by Power (2007) or Power (1997) indicating that the object of risk management or audit constructed through the procedure and technique of risk management or audit.

7 Many people in Tokyo might be forced to imagine the entire structure of the disaster from various kinds of fragmented information that has been concentrated in Tokyo, in addition to their direct experience. The uniqueness of experiences of the Great East Japan Earthquake in Tokyo may be emphasized here. However, this argument is beyond the scope of this paper.

8 It is also necessary to look carefully into policy evaluation related to the post-disaster reconstruction and indexes such as progress rate or achievement quotient.

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