



Federated rural organization for governing the commons in Japan



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ABSTRACT

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Olson argued that larger (smaller) organizations or groups are weaker (stronger) in terms of collective action performance and advances the idea that small groups exhibit better collective action performance. Olson also argued that a coercive centralized state is required to sustain collective action by an organization or group. A considerable body of scholarship has developed over the past half century to investigate these two insights. Scholarship, however, has not focused on his third insight: when a large organization is divided into federated groups, its collective action performance becomes efficient. In an analysis of Japan's large-scale, federated irrigation management experience, this study demonstrates that Olson's third insight is substantially relevant, but his argument regarding the necessity for a coercive centralized state requires further consideration. Furthermore, the study reveals that a large organization can generate stronger collective action as a federation of many groups; however, the state's involvement must be fundamentally non-coercive and non-participatory to facilitate user self-governance.

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1. Introduction

At least three distinct insights surrounding the theory of organizations and groups can be identified in the widely cited work by Olson (1965), *The Logic of Collective Action*. First, Olson (1965) argued that larger (smaller) organizations (or groups; I employ the terms 'organization' and 'group' synonymously in this paper) tend to demonstrate weaker (stronger) collective action performance. Second, Olson argued that users are not capable of self-organizing; therefore, coercive intervention by a centralized state is necessary for improved collective action among the users of a resource. Third, if a large organization is divided into a federation of many small groups, then the organization can engage in stronger collective action.

Consistent with the first insight, a large body of studies has developed to examine the relationship between group size and collective action. Scholars (e.g., Chamberlin, 1974; Tillock and Morrison, 1979; Marwell and Ames, 1979; Oliver and Marwell, 1988; Sandell and Stern, 1998; Esteban and Ray, 2001; Agrawal and Goyal, 2001; Poteete and Ostrom, 2004; Yang et al., 2013) have offered mixed opinions as to whether there is an inverse relationship between group size and collective action performance. The second insight has also been thoroughly examined. In particular, Ostrom (1990, 2007, 2010, 2012) challenged this second

insight by clearly showing that users often demonstrate the ability to successfully self-organize to govern the commons (or common-pool resources, 'CPRs') with little or no assistance from a coercive and centralized state. Ostrom (1990) did not belittle the role of the state but aligned the second argument of Olson (1965) with Hardin (1968), who also advanced the idea that because users are unable to self-organize and resolve collective action problems, the central authorities of the state should coerce such users to adhere to external institutional arrangements to address the tragedy of the commons (the destruction of shared natural resources as a result of overuse).

The third insight from Olson (1965), which is the central focus of this study, has garnered little scholarly attention to date. Olson advanced his third insight as follows:

This is the case of a 'federal' group—a group divided into a number of small groups, each of which has a reason to join with the others to form a federation representing the large group as a whole. If the central or federated organization provides some service to the small constituent organizations, they may be induced to use their social incentives to get the individuals belonging to each small group to contribute toward the achievement of the collective goals of the whole group (Olson, 1965, pp. 62–3).

To investigate this third insight, this study considers the example of Japan's large rural organizations of irrigation water users (known as land improvement districts, 'LIDs', which were

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established in the post-war era) that are divided into a number of small federated groups and subgroups to engage in collective action. The Japanese experience supports Olson's third insight but challenges the second. The study finds that a state that is supportive of user self-governance and does not take authoritative ownership of the commons to apply coercion is vital for strengthening the ability of federated groups to generate robust collective action performance. In the case of Japan, the state provides users with financial, technological, statutory, and political support to promote user self-governance but refrains from creating external institutional arrangements for users to follow at the local level.

Ostrom (1990, 2010, 2012) has demonstrated that users can self-govern without the state, but she has also argued that the state can play a valuable role by assisting users in implementing stronger collective action. In this sense, this study also validates Ostrom's proposal regarding the state's involvement (Ostrom, 1990, 2012) and extends her study from a form of user self-governance in which state involvement is minimal to a form of user self-governance in which state involvement is strategically substantial.

Notably, Olson's system of federated groups can be shown to be a specialized case of a broader polycentric governance system, which was initially developed by Vincent Ostrom et al. (1961) and subsequently popularized by Ostrom (1990, 2012). Ostrom's (1990) Design Principle 8 for nested enterprises (to be discussed below) is highly suggestive of polycentric governance. Consequently, we can also conceptualize Olson's insights on federated groups as a conditional, specialized worldview underlying Ostrom's (1990) Design Principle 8. In other words, Ostrom's Design Principle 8 involves the state and the federated organization, but the state is discouraged from regulating the organization's activities by means of strong coercive measures. Olson's federated organization also involves the state, but the command-and-control mechanism is prescriptive in his worldview. With this line of argument, Olson's insight is tantamount to Ostrom's when it is conditional on the state not seeking command and control power over the organization's activities.

The concept of polycentric governance was formulated to resolve governance issues in metropolitan areas in the United States, but in recent years, it has garnered substantial scholarly interest in addressing CPR governance issues, such as irrigation, fisheries, and forestry commons throughout the world (e.g., Ostrom, 2001, 2009; Nagendra and Ostrom, 2012; Biggs et al., 2012). A recent study by Mostert (2012) indicated that empirical research demonstrating the significance of polycentric governance in CPR management is growing but still in its early stages.

2. Japan's irrigation commons and federal groups

A significant agrarian reform occurred in Japan between 1946 and 1950; under this reform, the state purchased excess agricultural lands from landlords who cultivated more than three hectares (12 ha in Hokkaido) and distributed them to farmers who were actually engaged in agricultural activities (Kawagoe, 1999; Dore, 2012). The Land Improvement Law, which was enacted in 1949, formally reorganized the pre-war water user associations (WUAs) into single associations (i.e., the LID) covering a designated area and awarded the LIDs concrete statutory recognition for the first time in the history of Japanese irrigation management. An LID thus comprises several pre-war WUAs in a given area.

An LID can be viewed as an orderly, statutorily recognized post-war form of historically evolved, self-governing WUAs, and its members engage in actual farming activities, including irrigated water distribution in a designated common irrigation area (Nagata, 1994; Kono et al., 2012). Social learning experiences and historical backgrounds that are associated with irrigation water management underpin the strong foundation of the LIDs' current form and their

orderly institutional arrangements and functions. Studies (e.g., Pahl-Wostl et al., 2010; Sigmund et al., 2010; Kristjanson et al., 2014) have identified social learning as promoting institutions for sustainable governance and development of shared natural resources, including water commons. In Japan, for example, during the Tokugawa period (1603–1867), fierce disputes over sharing irrigation water ensued when there was a shortage of such water, which resulted in bloodshed in certain instances (Aoki, 1992). Applying the protocol of conflict resolution to the disputes, however, required cooperation, the development of an organization, and agreement about the fair and equitable distribution of water among the conflicting parties (Aoki, 1992). This social learning experience has largely contributed to the foundation of the present-day cooperative provisions found in LID organizations.

Hill (1995) argues that the cultural value systems and informal institutions of modern Japan are largely inherited from its preindustrial past. For example, in large villages during the Tokugawa (Edo) period (1603–1867), Hill notes that many five-man teams composed of the heads of five households were formed to cope with the free-riding problems associated with managing shared resources, including the irrigation commons. Although each team was an independent body, all the teams cooperated and exchanged information while engaging in collective action on a larger organizational scale. This social value system formed the basis of the present-day federated groups of an LID.

An LID improves farmland while constructing, operating, and maintaining irrigation and drainage installations, including diversion weirs and rivers within its boundaries (Sato, 2001; Tanaka and Sato, 2005). The informal and formal rules of an LID are important concerns of this study, but it is notable that land consolidation also played an important role in enhancing the productivity of land, labor, and irrigation water by promoting mechanized agriculture—including the use of modern farm machinery (Mulenga et al., 2003; Kawasaki, 2010; Arimoto, 2010; Dore, 2012)—within the framework of formal and informal institutions that facilitated collective action.

During the pre-war period, irrigators also self-organized to form WUAs in a common area, but the area and self-governance were only informally endorsed by the state authorities and were not statutorily recognized. In addition, the pre-war associations were not federated at the national, prefectural, or local levels.

Japan's irrigation management represents a successful case in Asia (Nagata, 1994; Tanaka and Sato, 2005; Kono et al., 2012), although it addresses challenges associated with irrigation water quality that has deteriorated due to domestic effluents and the aging of irrigation and drainage facilities. At present, irrigation water is supplied to paddy fields at a rate of nearly 100%, and the annual irrigated paddy yield in Japan ranges from seven to eight tons per hectare per season (Okamoto, 2006), which is several times higher than the yield obtained in many other rice-growing countries in Asia.

In Japan, all LIDs are represented by a single federation at the national level, with 47 federations at the prefectural level and 5150 LIDs at local levels; LIDs cover 2.99 million hectares of farming land managed by 4.2 million irrigating farmers as of 2010 (NLICF, 2011). The average LID has 815 farmer members. If an LID is large, then it is divided into numerous branch LIDs; thus, its members are spread across a number of groups. Under the jurisdiction of a branch LID, irrigators are divided into several terminal water user groups (TWUGs), the members of which are also members of the larger LID. Drawing on long-standing traditional customs, the TWUGs self-organize and allocate irrigation water at the lowest level of the irrigation management system where farmland is irrigated.

On a different but relevant note, although an LID organization is usually federated into many smaller groups, there are a few cases in

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