The Introduction of Interorganizational Relationships Theory and Method into the Governance of Water Resource[1]

Liu Rong

Business School of Hohai University, Nanjing, Jiangsu Province, China 210098

Management & Human Resource Department, Business School of Hohai University

Email:liurongliu@sina.com

Abstract: Water resource crisis originates from its own public nature and the "Tragedy of the Commons" caused by itself. Although multipower featured self-governance supplied ideas for solving the problem of "Tragedy of the Commons", the problem lies in how to implement. This research introduces IROs into water resource governance so as to address the issue of self-governance for applicable situations. Besides, this research also proposes some ideas and methods of how to describe and measure IORs in water resource governance.

Keywords: IROs, water resource, governance

1. The Essential and Predicament of Water Resource Problems

1.1 The Essential of Water Resource Problems

China's water resources problem is a human issue. On one hand, because water is closely related to people's social lives and behaviors, the emergence of water resource crisis is actually the consequence of human behaviors. On the other hand, the public nature of water resource exploitation and utilization is very prominent so that it almost involves everyone's interests, which thus caused will inevitably have an impact on the governance of water resources; individual users to pursue their own interests will cause damage to the collective interests, making it the issue of water governance showed a typical "collective irrational" [1]. Garrett Hardin (1968) discovered a commonly existing problem all over the world that public resources were overused, which, by his definition, called "Tragedy of the Commons".

Therefore, treating water resource requires taking everything including human and social factors relating to the emergence of water problems into consideration, instead of focusing on water only, otherwise, water governance will be a temporary solution.

In fact, water governance system consists of two subsystems: natural subsystem which deals with relationship between water and humans, and social subsystem which harmonizes human relationships. The traditional water governance of our country mainly focuses on natural subsystem, specializing in the exploitation of drainage area and the engineering and technological management of its governance, which has already reached a rather high level. By contrast, the public nature of water resource has long been ignored and the research of water resource governance is always "monopolized" by engineering technology field, thus the social governance of water resource still remains very weak, which is the main reason for the water resource crisis worsens.

Water resource governance aims to stimulate the sustainable development of water resource. The exploitation and utilization of water resources not only embodies the interests between human and nature relationship, and reflects the relationship between people's interests. Hence, to realize the sustainable development of water resource, the main factor concerning water should be dealt with——the restriction of human's water-related behavior.

1.2 Existing Solutions and Their Limitations

Obviously, water resource crisis resulted from its own public nature and "Tragedy of the Commons" caused by it. Normally, there are two ways to solve the "Tragedy of the Commons" style problems: one is privatization; another is nationalization.

However, there are two starting points for public resource theory: the first one is government's malfunction; the second is market's malfunction. As for government's malfunction, public choice theory has already done a good explanation for it [2]; for market's malfunction, it can also be proved by various former research findings. Therefore, public governance theory believes that neither privatization nor market exchanging nor governmental centralized

This paper is the stage achievement of National Key Discipline (Technological Economy and Management) Construction Project of Hohai University, of the third phase National Key Discipline Construction Project (Technological Economy and Management) of national "211 Project", of Jiangsu province Key Discipline and National Key Discipline Construction Project (Technological Economy and Management), of Jiangsu province key and first-class discipline construction project (Business Administration) and funding project of school level key discipline construction project (Enterprise Management).

management can lead to the maximization of public interests. Instead, containment and cooperation should be applied between government and private departments to achieve such goals. The typical theory is the self-governance theory raised by American Scholar Elinor Ostrom, winner of The Nobel Economics Prize of 2009. The main idea of this theory is that people can, based on mutual care and trust exist in the group, get satisfaction through caring the interest of the others as well as of the group. From this, people may have a desire of cooperation, and it is also possible for them to establish a set of rules, regulations for personal usage as well supervising and punishing mechanisms through their self-regulation behaviors, so as to make the resource's utilization serve for the common and long-term interests of communities (e.g. drainage areas) [3].

Ostrom's theory is strongly supported at present, and is regarded as the best method dealing with "Tragedy of the Commons". However, when applying this model to the governance of China's water resources, its operation is very complex. Liufeng and Sun Xinfeng believe that taking domestic politics into consideration, Ostrom's theory has limitations on several factors to which it can be applied like objects, political systems and self-governance organizations etc. Since there exists numerous intermediate states between privatization and nationalization, as long as the situations match the states, these intermediate states will be effective, or they will be ineffective. The key point is how to determine applicable situations [4].

Besides, polycentric governance theory means that multi-scale organizations co-exist in this model and different public interests can be realized through the competitions, co-operations and conflict solving models among organizations [5]. However, if ruleless unhealthy competitions occur among organizations, not only the maximization of public interest within drainage areas will be hindered, but also the sustainable development of water resource will be affected. Therefore, how to determine an applicable governance situation for a specific drainage area is the key of water resource governance.

2. The Introduction of IORs into Water Resource Governance: the Instrumental Significance of IORs

2.1 The Definition and Function of IORs

Interorganizational relationships (IORs) refer to the relationships formed and fixed through the interactions between two or more organizations. This kind of relationships possesses characteristics like subjectivity, validity and structural restriction, which make the interactions between organizations predictable. When it comes to organizational behaviors, Fan Conglin believes that the essential of IORs is embodied in its restriction against organizational decision-making [6]. Thus, the significance of IORs lies in the following aspects: first, an effective method of uniting heterogeneous resources which stimulates or restricts collective and competitive behaviors aiming at getting rare resources (Portes, 1995); second, the utilization of such relationships can effectively exert the comprehensive superiority of resources [7].

Interorganizational network is the most complex but also the most comprehensive relationship in IORs. It is a gather of the interrelationships among a group of organizations. These organizations are in harmony with each under a social system so as to achieve collective and personal goals, or to solve some specific problems existing in the main goal.

The instrumental significance of IORs network can be measured, and the measuring index is a factor which can generate certain relationships in each unit organization of the network. This factor is social capital. Social capital refers to a social relationship network based on certain social relationships, and it is formed through human interactions, with certain culture as its internal regulations and with the collective interests of a group or organization as it goal. It is through the co-operations between actors that social capital achieves the goal of community development and getting benefit. [8]

Interorganizational relationship networks stimulate or restrict collective and competitive behaviors aiming at getting rare resources, while how to systematically distribute and compete for finite resources (e.g. water resources) is just the emphases of public resource governance. This is absolutely the significance of introducing IORs into water resource governance because water resource governance will ultimately be carried out on the bases of human governance where relationship governance cannot be ignored. Consequently, whether people can recognize the social networks of drainage areas or not, whether they can solve the relationships between subjects and objects within such social networks or not are of vital importance to water resource governance in drainage areas.

2.2 The Explanatory Function of IORs Theory

In network analysis, "network" is regard as a series of social links or relationships connecting the actors (Baker, Wayne E. 1986), and their relatively stable models constitute the social structure. This implies that network analysis should consist of two basic factors, namely actor and social relationship. As for the former factor, on one hand it refers to conscious actor; on the other hand his behavior has to be restricted by social networks. While for the latter, it is a linking model accumulated on the bases of interactions that are happened between actors because of some specific relationships.

①The multisubject of water resource governance constitute one factor of IORs network——the actor.

Water resource governance involves several interest subjects, including the State Council as well as its related Ministries and Commissions, drainage area institutions,

provincial governments, Ministry of Water Resource, Ministry of Environmental Protection, local government of boundary areas, related enterprises, longshore residents etc. These subjects are all conscious actors who construct complex relationships in water resource governance activities, and therefore form social networks. Thus, in solving issues of water resource governance such as the distribution of water resources, the prevention and governance of water pollutions as well as flood preventions, each party's interests should be balanced and each subject's behaviors should be restricted by other subjects.

②The social links, which are formed among subjects of water resource governance, make up the second factor——social relationships.

Water resources possess multicharacteristics including natural characteristic, productive characteristic, consumptive characteristic and economic characteristic. As a result, industrial production, agricultural production and social lives carried out by various organizations within drainage areas like local government, central government, individual users as well as other stakeholders, linked together through water resource and thus form various interaction ways and linking models.

Among governance subjects, there exists a transfer of material capital, such as commercial communications between enterprises, distribution of water resources, etc; there also exists an exchange of non-material resources, for example, governmental communications, communications between enterprises and related government or organizations, and information exchanges among subjects. Besides, behavioral interactions also exist among the subjects, for instance, conversations between the subjects, meetings and visits etc. Finally, formal relationships also exist, such as power relationships among governments, government's administrative managements upon enterprises and other water users. These social relationships between the subjects within drainage areas belong to the research field of network analysis.

③The subjects of water resource governance within drainage areas and the social links among them constitute the social network of drainage area governance.

The key problem of water resource governance is the decision-making mechanism, which originates from existing mechanism.

In order to stimulate the positivity of central and local governments and achieve a certain level of balance, Chinese government adopted a mechanism of combining strip and block in the management of resources. Actually, strips and blocks all have their own motives for interests, that is to say there exist several interest subjects. Therefore, interests among different subjects should be adjusted well. In actual management, along with the reform of market economy system, stakeholders are reinforcing their participation and influence in resource management, and public resource management has actually broken through the closed type administrative management system and becomes a joint governance activity in which several subjects participate.

Therefore, it can be argued that IORs truly exist in the governance of drainage areas, and can be analyzed and measured by related theories of social network analysis.

Social network analyzing instrument can be used to describe the social networks formed by subjects concerning water resource and to analyze the relationship, density of each node. The point is to find the weak relationship and structural gap between the nodes. Based on this, people can figure out the network structure of drainage area governance and design a governance mechanism for drainage areas.

Chart1 is a relationship among existing management system, IORs and governance decision-making mechanism

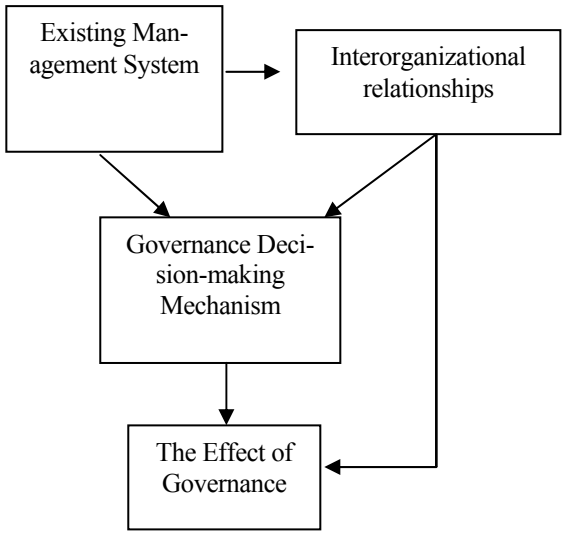

Chart1 The logical relationship between IORs and water resource governance

2.3 The Construction of Theoretical Model

The logical starting point of water resource governance is that governance subjects act collectively around water resource governance to form a network of interests, and the network in which the subjects participate will influence their decision-making behaviors. The behavioral model of Governance subjects lies in the characteristics of their self-interest and the relationships among them, namely interorganizational relationships.

Because the actors (mainly are various levels of administrative management departments and private economic departments) of water resource management are organization featured, water resource management can be regarded as a system involving many organizations and with organizational behavior and IORs as its characteristics. The overall effect (i.e. collective interest level) of water resource management system can be regarded as the output of this system. However, this output is determined by organizational behaviors and economic and technological

conditions, while organizational behaviors are determined by organizations' self-interest and IORs. If an actor has no relationship with other organizations, his behavior will be determined by the characteristic of his self-interest. But if IORs exist in the existing system, they will inevitably exert a great impact on the actors. If a trusting relationship exists among organizations, for example, one party is confident of other party's reliability and fidelity [9], and each party is sure about that none of the parties will use the others' weakness to get interest [10], then the relationships among organizations will be strengthened and cooperation will come into being. Hausman (2001), too, believes that the three important dimensionalities which constitute strength level of relationships are commitment, mutual trust and bilateral relationship [11]. Their logicrelationships are as follows: see chart2

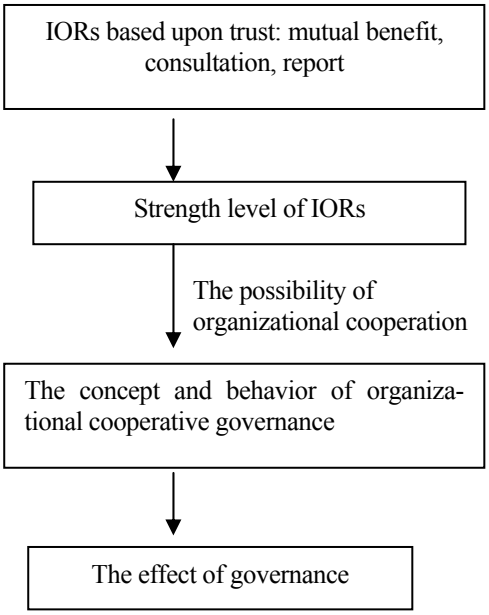

Chart2 Theoretical Model: the influence of IORs on water resource governance

3. The Measurement of IORs in Water Resource Governance

3.1 The Formation of IORs in Water Resource Governance

As for the actors in water resource management, the IORs mainly focus on report, consultation, and mutual benefit relationships, among which report relationship refers to that one actor should report to another actor and receive instructions. Report relationship is the most authoritative relationship, including the subjection relationship between administrative organizations and economic subjects as well as the management relationship between them. Consultation relationship means that one actor can get favored information and suggestions from another one. Consultation relationship is a kind of unilateral obligation, and one party doesn't need to cost anything to consult. However, mutual benefit relationship is a kind of resource exchange relationship, which belongs to bilateral relationship. Consultation relationship and mutual benefit relationship are informal relationships, but they sometimes have an even greater influence on interests than formal report relationship does.

There are a lot of other actors who have report, consultation and mutual benefit relationships with a certain actor. To what extent the actors' relationships can influence their behaviors lies in the strength level of such relationships.

3.2 The Description of IORs

Report relationships. Influential factors include:

①Compulsion level——whether report is needed or not (a certain level of freedom is allowed or report is needed according to specific requirements)

②The veto power of the reportee——the possibility for the veto of report.

③Report frequency (daily, weekly, quarterly, yearly or irregularly)

④The detail level and complexity level of report (abnormity report, one certain function report, or full function report)

For the above factors, a simple gauge can be designed to give each factor a weight and finally get the strength level of report relationship from the aggregation of all four factors.

Consultation relationship and mutual benefit relationship. Compared with report relationship, consultation relationship and mutual benefit relationship belong to weak relationships and have no compulsive characteristic. However, if the information or suggestion one actor got is very important to his self-interest, then this kind of consultation relationship will surpass relatively weak report relationship, which is the embodiment of the maximization of organizations' (no matter it is administrative management department or private economic department) self-interest.

Factor indexes used to describe strength and weakness:

①Bilateralness——whether actors need to pay the cost or not（if they need, then it is a mutual benefit relationship, or it is a consultation relationship）

②Necessity——the information, suggestion and exchanged resources actors got are unsubstitutable for the increase of their self-interests.

③Beneficial level——the amount of interest increase actors can get from this kind of relationship.

A gauge can be designed for the above factors. High bilateralness, necessity and beneficial levels mean a high strength level of relationships. Different weights are set upon the three factors, and an aggregated strength level of consultation relationship and mutual benefit relationship will be generated respectively.

Comparison among report relationship, consultation relationship and mutual benefit relationship.

978-1-935068-16-7 © 2010 SciRes.

After getting the strength levels of actors' report relationship, consultation relationship and mutual benefit relationship, a comparative work will be done for these levels and finally determine all the IORs that are related to actors, figuring out which are strong relationships and which are weak relationships. For organizations, strong relationships will exert greater influence upon their behaviors than weak relationships.

This research mainly focuses on the types of the relationships among actors and the strength levels of these relationships. The aim of choosing the relationship types as the research object lies in that relationship types are a factor indicating the strength level of relationships, but also the cause of the formation of actors' relationship networks and the basis of their evolvement. While the aim of choosing relationship strength level as the research object is that how much the actors' behaviors can be influenced by the relationships is closely related the strength level of the relationships. Meanwhile, that a network as a whole consists of strong relationships means an interest group with common interest, which is of great significance to the present research.

4. The Prospect of the Application of This Research

Public resource governance has long been a tough problem, and "Tragedy of the Commons" has become an inevitable end of public resource governance. For example, excessive deforestation, over grazing, excessive air pollution, over-exploitation of ground water and river pollution, these problems emerge endlessly. Ostrom's research provided new methods for public resource governance, while the introduction of IORs theory and methods make Ostrom's model more applicable.

In fact, the introduction of IORs analysis will help to find solutions and governance mechanisms not only for public resource governance, but also for other fields involved in collective activities, such as price negotiation for iron ore, large-scale engineering project like south-to-North water diversion and migrant settlement problems etc.

References

[1] Mancur Olson.The Logic of Action:Public Goods and The Theory of Groups[M].Shanghai:Shanghai sanlian Bookstore,1995. P 2.

[2] James Mcgill Buchanan、Liberty、Market、and State—Political Economy in the 1980s[M].Shanghai:Shanghai sanlian Bookstore,1989 .

[3] Elinor Ostrom.Governing the Common:The Evolution of Institutions for Collective Action [M].Shanghai:Shanghai sanlian Bookstore,2000.

[4] [5] LiuFeng and kongXinfeng.Enlightenment and alerts about Multi-center governance theory[J]. Administration Reform.2010(01).

[6] Fan Conglin.The essential of IORs:A selection of organizational decision-making.Jianhai Academic Journal:The 13th World Management Forum and the Eastern Management Forum,Jianghai Academic Journal,2009, P 202-206.

[7] A.Pouloudi and E.A.Whitley.Stakeholder identification in inter-organizational systems:gaining insights for drug use management systems. European Journal of Information Systems ,1997(6), P 1–14.

[8] J. Knoben and L.A.G. Oerlemans.Proximity and inter-organizational collaboration: A literature review International[J]. Journal of Management Reviews. Volume 8 Issue 2 , P 71–89.

[9] Morgan R,Hunt S D.The commitment trust theory of relationship marketing[J].Journal of Marketing,1994, P 58:202-238.

[10] Sabel C.Studied trust: building new forms of co-operationin a volatile economy[A].In:F,and Sengenberger W,(Eds).,Industrial Districts and Local Economic Regeneration[C].Geneva: International Institute for Labor Studies,1992, P 215-250.

[11] Hausman,Angela.Variations in Relationship Strength and Its Impact on Performance and Satisfaction in Business Relationships[J].Journal of Business &Industrial Marketing,2001,16(7) , P 600-616.