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VINCENT AND ELINOR OSTROM: TWO CONFLUENT TRAJECTORIES FOR THE GOVERNANCE OF COMMON PROPERTY RESOURCES

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Introduction

The water crisis and climate events that have been intensified in recent years put into focus the difficulties humans face in managing the commons, or shared resources. In the absence of rules to ensure efficiency and equity in the management of these resources, they tend to be exhausted. Thus, environmental balance can and should be considered as a common resource. The Brazilian Federal Constitution itself admits it in art. 225, when it defines that the ecologically balanced environment is a common-use good.

The main studies related to the governance of common resources in recent history began within a wider literature that discusses the collective action dilemma⁴. Studies conducted by Gordon (1954) and Olson (1965) emphasized the behavioral dilemmas combined to the collective action in the American Social Sciences. Hardin (1968), in turn, encouraged many researchers to step into the field of governance of common resources through the article that was one of the most contested and cited scientific papers in the second half of the twentieth century.

Overall, the three aforementioned authors have pessimistic reading about the possibility of individuals to organize themselves and to overcome the collective action dilemma. They consolidated a line of thought, which dominated the discussions about the governance of common resources for many years. However, it was not the only line of thought defending the individual organizational difficulties in terms of collective relations (SCHAEFER, 1957; DAWES, 1973; DAWES, 1975; LLOYD, 1977).

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4. For more information on collective action and collective action dilemma, see Ostrom (2010).

Alongside these three authors, another line of thought was developed at the University of California - Los Angeles, through studies on water management in the Southern State. Since the beginning, unlike the first line of thought, this one sees the possibility of overcoming the collective action dilemma, especially through institution-induced self-organization. Its greatest representatives are Vincent and Elinor Ostrom. In 1965, these two scholars transferred themselves to the University of Indiana, which is why we will henceforth refer to their positions as the School of Indiana.

Other research lines are in line with the School of Indiana (BROMLEY *et al.*, 1992; BERKES *et al.*, 1989; FEENY *et al.*, 1990; NETTING, 1981; SENGUPTA, 1991; WADE, 1988; LANSING, 1991; BALAND; PLATTEAU, 1996) and they also tend to adhere to a more optimistic positioning regarding the possibility of individuals to organize themselves around the governance of common resources. Although this adherence exists, it seems that the School of Indiana was - and still is - the major contributor to the field of governance of common property resources due to its theoretical, epistemological and methodological constructions.

Thus, the current study aims to demonstrate the importance of Vincent Ostrom in the intellectual history of Elinor Ostrom, especially in studies on the governance of common property resources grounded in the Institutional Analysis and Development (IAD) Framework. Therefore, the research problem consists in understanding in what sense and intensity Vincent influenced Elinor's academic career, especially regarding the settling of three central elements found in the IAD, namely: the concern in pointing out the natural characteristics of resources as a determinant factor in the development of effective institutional arrangements; the proposal of polycentric institutions; and the construction of a rationality model.

The study is divided into four topics, including the introduction and the final considerations. Next, the main features of the School of Indiana will be presented, especially the IAD Framework. Subsequently, we will present a panoramic view on the academic history of Vincent and Elinor Ostrom and analyze the three aforementioned relevant points of Vincent's conceptual contribution to the IAD Framework. Finally, we will pose questions geared to help structuring a research agenda.

The Governance of Common Property Resources: the School of Indiana Model

The current topic will make a brief presentation of the School of Indiana work, from the viewpoint of its most important representative, namely: Elinor Ostrom. In order to do so, elements that contributed to make this school of thought one of the most important references in the field of governance of common resources – an importance confirmed by the Nobel Prize in Economics awarded to the researcher in 2009 - will be revisited. The following elements will be addressed: rational model, common property resources, governance, institutions and IAD Framework. Finally, comments will be made on the contributions as well as criticisms to the School of Indiana.

The ontological basis of the studies conducted by Elinor Ostrom, especially those that sought to understand the collective action possibility, is guided by the *homo econo-*

micus model. Debtor of the neoclassical economic theory and of the game theory, the author believes that the action of the groups should be analyzed from the perspective of individual agents, i.e., from a methodological individualism (OSTROM, 2011). Although Ostrom adopted the neoclassical assumptions in her studies, she is aware of the limits of rationality and advocates for a behavioral theory of individual action that takes into consideration the attention, the limited information, the cognitive process and the context (POTEETE; OSTROM; JANSSEN, 2011).

The study on the overcoming of the collective action dilemma is examined by Elinor under the common property regime (OSTROM; COLE, 2012). According to the author, the property of resources is related to two of their natural characteristics, namely: exclusion and subtraction. Exclusion concerns how costly it is to control the users' access to the resource due to its physical nature. Subtraction, in turn, computes how the resource used by a new individual changes the amount of available resource to other individuals who already make use of it (Table 1). Thus, the common property of resources is defined as a resource class for which exclusion is difficult and joint use involves subtraction (OSTROM; GARDNER; WALKER, 1994).

Table 1: Property of Resources

		Subtraction	
		<i>Low</i>	<i>High</i>
Exclusion	<i>Difficult</i>	Public Resources	Common Resources
	<i>Easy</i>	Club Resources	Private Resources

Source: Adapted from Ostrom, Gardner and Walker (1994).

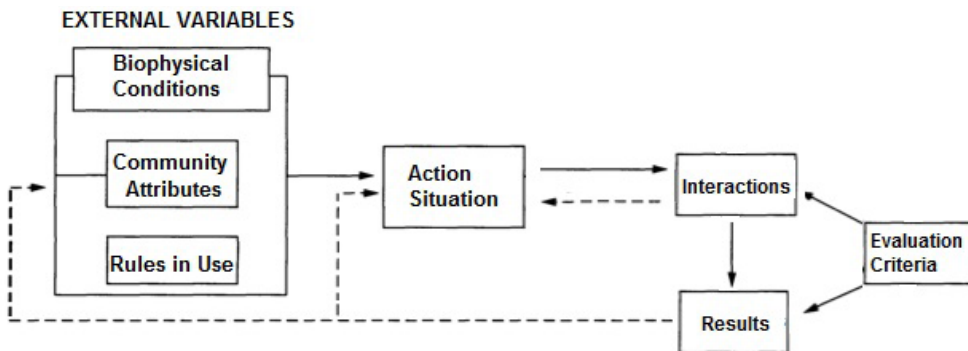
Governance is the background for the resolution of the collective action dilemma (OSTROM, 2003). Overall, the term is related to the process in which the rules and strategies guiding the behavior within a particular domain of interactions are formed, applied, interpreted and reformulated. In addition, according to Elinor Ostrom, governance relates to the self-organization of communities and, to some extent, it goes without, but does not exclude, the interventions by market and State actors. Therefore, according to the School of Indiana, governance is the communities' ability to organize themselves in different places and times in order to manage a common good through conditions that make it more effective, efficient and stable, thus avoiding its scarcity, i.e., ensuring sustainability (McGINNINS, 2011).

Moving forward in the main concepts of the School of Indiana, Elinor highlights the role played by institutions. According to her studies, the institutions are understood as rules in use and defined by a "set of working rules that are used to determine who is eligible to make decisions in some arena, what actions are allowed or constrained, what aggregation rules will be used, what procedures must be followed, and what payoffs will be assigned to individuals" (OSTROM, 2003, p. 51). Thus, the analysis of the institutions within a collective action environment is an effort to understand the rules that are in

operation within a group and used by individuals to justify and explain their actions to others. They work as the main guiding instrument of repetitive and structured interactions among actors (OSTROM, 2003). Therefore, easiness or difficulties in overcoming the collective action dilemma are directly related to the individuals' ability to organize and modify the institutions governing their behaviors.

The action situation is the main influence focus of institutions (Figure 1). This situation is also the core of Elinor Ostrom's analyses and of the framework suggested by her and by associated researchers, which is entitled Institutional Analysis and Development (IAD)¹. The action situation is the locus where the actors are found and where the actors themselves, acting individually or as organization agents, observe the information, select the actions, engage in interaction patterns and perceive the results of their interactions. Briefly, the action situation is the place where "two or more individuals together are faced with actions that have the potential to produce some sort of result" (OSTROM, 2005, p. 32). These are some examples of action situations: buyers and sellers exchanging goods in a market; legislators making legislative decisions; heads of State negotiating an international treaty; and common resource users withdrawing resources such as water, wood, fish, among others. Decision-making processes regarding the use of resources to discharge effluents, with pollutant emissions in the air, water or soil, also fit into this perspective

Figure 1: IAD Framework and Internal Structure of the Action Situation



Source: Adapted from Ostrom (2010b).

The action situation sensitivity and, therefore, the IAD Framework sensitivity to the local conditions of the analyzed environment is perceived by the importance given to the external factors that influence the action situation, namely: the biophysical conditions, the community attributes and the rules in use. The rules in use intend to specify the standards directly affecting the action situation internal elements. The types of rules provided by the framework regard limit; position; scope; choice; aggregation; information; and payments (OSTROM, 2005; MCGINNINS, 2011).

The suitability of a set of rules in use to the action situation depends on the biophysical conditions of the analyzed ecosystem and on the attributes of the community

handling the ecosystem. The community attributes take into consideration trust, reciprocity, reputation, the sharing of values and goals among members, heterogeneity, social capital, cultural repertoire and group size, among other aspects. Biophysical ecosystem conditions are related to the resource exclusion and subtraction properties identified in Table 1. They also allude to the common resources themselves.

The development of the action situation as well as that of the IAD Framework are the main elements providing a systematic understanding of favorable conditions to overcome the collective action dilemma. Such elements have been recognized not only by the University of Indiana, where Elinor Ostrom developed much of her academic research, but also by the world scientific community.

The IAD Framework often receives criticism and suggestions for improvement. Agrawal (2003), for instance, highlights the need for the framework and other studies on governance of common property resources to pay attention to two points, namely: the importance of external variables to explain governance; and the methodological danger of the existence of quite a large number of causal variables. Several authors make punctual questions to Elinor Ostrom's work (BARDHAN; RAY, 2008; LÉLÉ, 2008; MADISON; COX *et al.*; 2010; FRICHMANN; STRANDBURG, 2010), which seems to reflect the very international consolidation of the School of Indiana approaches.

Although the criticisms to the model took shape in recent years, it is known that the IAD Framework is one of the most important theoretical contributions to the field of governance of common resources and to the analysis of public policies (McGINNINS; WALKER, 2010; KAUNECKIS, 2014). The framework's attempt to face complex dilemmas related to the scarcity of resources through analyses focused on rules, on the biophysical characteristics of the resource, and on the attributes related to the community makes it extremely interesting to the research on common local resources as well as to the study of and coping with global issues such as climate changes, biodiversity and associated traditional knowledge, fishing and food systems, among others. The model is also applicable to several public policies, such as housing, health, public safety and urban mobility. Thus, the multidimensional nature of the framework, aggregating the macro- and micro-situation levels, place it in a prominent position in the field of governance of common resources and in that of public policies in general.

The next topic demonstrates Vincent Ostrom's influences in the IAD Framework, by deepening the analysis of three points, namely: the natural feature of the resource as a determinant factor of regional institutional arrangements; the polycentric institutions and the rationality model. However, we will first develop a brief presentation of the academic history of Vincent and Elinor Ostrom.

Vincent and Elinor Ostrom: histories complementing each other

In this topic, we will develop a historical retrospective of the academic movements of Vincent and Elinor Ostrom in order to show at what time these two histories crossed and complemented each other. Then, we will analyze the major themes introduced by Vincent, which are present within the IAD Framework context, in an attempt to highlight

his career as a researcher and show his importance to the work of the School of Indiana and, especially, to the achievements of his wife, Elinor.

Vincent Ostrom was born on September 25, 1919 in Washington State. He obtained his master's degree and doctorate degree in Political Sciences at the University of California / Los Angeles (UCLA) in 1945 and in 1950, respectively. His doctoral research was entitled "Government and Water: A Study of the Influence of Water upon Governmental Institutions and Practices in the Development of Los Angeles." Vincent, in his academic history, did research on: institutions and economic performance; small citrus fruits producers in a self-organization perspective, water agency of California; water supply for ranchers of the Southern California region; metropolitan government; and federalism and intergovernmental relations, among others.

When Vincent became professor at UCLA in 1950, he participated in an interdisciplinary group at Berkeley, who studied the water industry in California. In the same period, he was a consultant in water projects at the universities of Columbia and Washington and met Elinor Ostrom, who was then his student. In 1963, he was invited to be editor in chief of one of the most important public administration journals – the *Public Administration Review - PAR*, and he worked as such until 1966. In 1965, he was recruited by Indiana University - IU to be a professor at the Department of Government of that institution. Vincent remained for over forty years in the IU, until his death. (JAGGER, 2009).

Elinor Ostrom was born in Los Angeles / CA on August 7, 1933. She obtained her master's degree in Public Administration at UCLA, in the mid-1950s. She joined her doctorate in Political Sciences at the same university in the early 1960s. She defended her doctoral dissertation, which was entitled "Public Entrepreneurship: a case study in ground water basin management", in 1965. In fact, her doctoral dissertation represents her first approach to issues related to collective action, environment, polycentric institutions, and to common property resources. Thus, her doctoral dissertation is configured as the starting point to the studies of the young Elinor, as well as the beginning of a long history of research on common property resourcesⁱⁱ. (OSTROM, 2010c).

Despite the fact that she has not formally received any guidance by Vincent Ostrom, since they were already married in the early 1960s, or that Vincent was not mentioned in her doctoral dissertation, his presence in Elinor's doctoral research was remarkable. Firstly, the subject of her dissertation came from a research seminar coordinated by Vincent, which was entitled "Organization of Local Public Economies", in which she was a student. Secondly, the case study of her doctoral research also came from the same research seminar. The case of the underground basin in Southern California and the existing dilemma between the population growth in the region and the decline of water available for human consumption was a research topic presented and coordinated by Vincent Ostrom (OSTROM, 2010c)

After she defended her doctoral dissertation, Elinor accompanied her husband and moved with him to Bloomington City/Indiana, in January 1965. Once there, she became his informal collaborator in the processes related to articles review and submission to PAR, and she simultaneously started working as a collaborator professor at IU.

One of the greatest legacies of the Ostrom couple was the launching and management of the “*Workshop in Political Theory and Policy Analysis*” in 1973. Focused on empirical researches and on applied policy analysis, the workshop was a prominent event in the American academy at first, and then around the world, due to its characteristic of building and testing hypotheses arising from theories related to the school of public choice and to the political economy tradition. Due to its self-organization feature, the workshop worked as a dialogue between undergraduate and graduate students and the guiding professors of the Political Science Department at IU. It allowed the undergraduate students to be in contact with scientific researches and the graduate students to be tested previously to the qualifying examination. As the couple became increasingly notorious in the field of governance of common resources, the workshop got into an interdisciplinary and very fruitful phase in the 1980s, when researchers from other universities began to attend it, especially Douglas North and Arun Agrawal. Influences of important authors in the field of public choice, bounded rationality and economic institutions became more visible in the presented studies, with emphasis on Herbert Simon, Gordon Tullock and Harold Lasswell. Thus, since the workshop, the studies produced by the Ostrom couple began to gain legitimacy in the academia and beyond.

The intersection in the academic history of Vincent and Elinor Ostrom is strongly related to the recognition of the School of Indiana in the field of governance of common property resources. The aim of the current study, from now on, is to understand Vincent’s intellectual influence in the works developed by the School of Indiana, especially with regard to the IAD framework, which is a model for the institutional analysis of the governance of common resources formulated by Elinor and her partners. We choose what the literature points out as the main themes discussed by Vincent when Elinor was still a young newly-doctor researcher, namely: the natural feature of the resource as a determinant of effective institutional arrangements; the polycentric institutions; and the rationality of the individual. Therefore, three elements among the influences of Vincent Ostrom in the studies popularly known and recognized in the academic community will be herein highlighted, having as main reference the name of Elinor Ostrom. It is worth emphasizing that these three points are the most visible influences of Vincent in the IAD Framework construction, but they are probably not the only ones.

The understanding of efficient institutional arrangements based on the understanding of the physical and natural characteristics of the resources - first point of analysis - may be attributed to Vincent Ostrom in a study published in 1953 (OSTROM, 1953). In this study, the author reports the water supply issue in California and the necessary conditions for the sustainable management of this natural resource. By especially analyzing the US federal issue, Vincent observed management issues related to federal agencies of water use and control. These organizations, which were permeated by a legislative and technical expertise framework covering the entire country, were unable to meet the local development needs. These needs were related to water security, i.e., to the resource scarcity and the economic development impossibility that would be generated by this scarcity. Vincent also added that the State water resource management was not able to organize institutions to manage and avoid water scarcity due to the physical features of

the resource, which usually crossed the borders of the federal entities. Therefore, Vincent argued that the State and the subnational entities operated in institutional and legal disadvantage against the problems and natural features of water resources.

According to Vincent Ostrom, the water governance in the American West pervaded the organization of several types and levels of local and regional actors involved in the resource appropriation, use and distribution. In addition, his proposal consisted in drawing the attention to the physical and natural features of water resources in the west of the country and to the way these features suggested the organization of local and regional institutions, which exceeded the legislative powers formalized in the Country, as well as the organization of other federal entities. Therefore, he argued that the physical and natural features of a resource tend to determine the most efficient and effective way to manage it. By pointing out that the state laws of the American West had little adherence to the physical and natural attributes of the resources, Vincent stated that “the major problems of resource administration require regional solution that transcend state boundaries” (OSTROM, 1953, p. 492). Thus, it generated increased competition between the states and the actors who appropriated water resources, thus leading the resource to rapidly reach the scarcity level (OSTROM, 1953). Other recent studies conducted by the author are directed to the same line of reasoning (OSTROM, 1972a; 1973).

In order to better see the influence of this first viewpoint of Vincent Ostrom in the IAD Framework, we must return to Figure 1. As it was previously stated, the framework is very sensitive to the external context, especially in three points: the biophysical context, the rules in use and the community features. Therefore, the attempt to characterize the biophysical context in the framework is relevant in order to adapt the institutions, which are understood as the rules in use, to the action situation. It means that the institutional arrangement that will better promote the governance of a common property resource will also depend on the exclusion and subtraction features of the resource.

Similar to the studies conducted by Vincent Ostrom in the 1950s, the IAD Framework understands that the physical patterns of the resources are essential to organize more effective institutional formats. Then, it is evident the first conceptual contribution by Vincent to the model for the governance of common property resources of the School of Indiana.

The idea of polycentrism may be seen as another contribution by Vincent to the IAD Framework. Although the research supporting the previous argument (OSTROM, 1953) that the biophysical characteristics of the resource influence the institutional arrangements have suggested that several actors should work in the construction of more efficient organizational forms in order to address the water issue in the American West, it was only a decade later, with Ostrom et al. (1961), that the concept of polycentrism became better elaborated.

According to OSTROM et al. (1961), polycentrism concerns the interaction between authority centers with a view to determining the conditions in which those authorities as well as the citizens subordinated to them will be authorized to act or prevented from operating. The polycentricity may be applied to the organization of several political processes and, in the case of the processes related to common property resources, the

authority centers are the very individuals and actors that influence the resource and that independently adjust to each other in order to organize their relationships with each other in the context of a general system of rules. A polycentric structure is usually related to the following performance features: the diversity of actors, the diversity levels, the diversity of sectors and the diversity of functions (OSTROM et al, 1961; MCGINNINS 2011.)

According to Ostrom *et al.* (1961), the duplication of government functions, the overlapping of laws when the public policies do not have a predetermined and valid limit, the costs related to the distance between a decision-maker unit and the local problems, as well as the conflict of interests make it necessary for the State to articulate with other decision-maker centers in order to produce and coordinate more effective and efficient policies. Thus, the presence of regional agencies, community organizations, local cooperatives, industries and companies constitutes a polycentric set, which is essential to the achievement of positive results in the production and coordination of water policies (and of other public policies).

The proposed polycentrism is defined from the understanding that the public management must operate in adherence to the private management model. Thus, Ostrom (1972b) and Ostrom et al. (1961) identify the idea of polycentrism as something close to a “market model”, in which, besides the participation of several independent partners contributing to the production of public services and policies, it is necessary to take into account the factors involving cost and benefit, political efficiency and maximization of resources. In addition, the polycentric systems are not naturally efficient. They need to equate the operating conditions to the previously specified conditions in a movement that permeates the correspondence among various governmental scales, the development of cooperation agreements between governmental units and society, the resolution of conflicts arising from competition between various actors and federal entities, and the promotion of cooperation between these actors.

According to Ostrom et al. (1961), when it comes to specific situations, the State needs to review its performance in the production of public policies and play a role directed to the provision of public policies rather than to their production. In other words, the State, through its budgetary capacity, could mainly act as the financier of public policies and control processes related to the quantity and quality in the provision of these policies. However, the production would be a specific task for the closest actors to the place where the public policy is needed. In this case, polycentricity would be configured in the extent that the diversity of actors, the diversity levels, the diversity of sectors and the diversity of functions of these actors were present in the figure of individualized authority centers (OSTROM et al., 1961).

The idea of polycentrism was settled by Vincent in his later works (OSTROM, 1983; 1985; 2009). Thus, the influence of Vincent’s polycentrism appears at different times in the common property resources literature of the School of Indiana. For example, there is close relationship between polycentrism and the concept of governance defended by the School. As it was previously mentioned, the governance proposal refers to the society’s ability to organize itself around a common resource by having the State participation as a secondary factor, although not expendable, as in the polycentrism proposal. Indeed,

according to studies conducted by Elinor, governance is configured from the participation of several autonomous and interrelated actors who make decisions to overcome the collective action dilemma within common property environments. It means that Elinor understands that the actors and agencies at the local level are more likely to produce institutional arrangements that contribute to the overcoming of the collective dilemma, similarly to the idea underlying Vincent's conceptual construction of polycentrism.

In addition, the action situation, which is the core of the IAD Framework, is designed on the basis of a wide range of actors who contribute to the construction of institutions able to cooperate and organize the management of common property resources. The fact that the action situation enables the analysis of different actors indicates adherence to the proposed polycentrism. Although this argument does not support the entire polycentrism concept, it shows that the IAD Framework indulges an institutional analysis model in which the presence of several actors is essential to form the desired institutional results for the efficient governance of common property resources. If the IAD Framework vision had a direct approach to the monocentric vision of governance, the action situation would probably not be internally drawn the way it is presented in the School of Indiana works.

The last point to be discussed regards the rationality model that pervades the School of Indiana and that, to some extent, is constructed from the judgments arising from Vincent Ostrom and from his approach to the neoclassical economics. Back to Vincent's academic career, the beginning of the 1960s marked his participation in the meeting that founded the group called Public Choiceⁱⁱⁱ in conjunction with researchers such as Riker, Buchanan and Tullock. Between 1967 and 1969, Vincent became president of the Public Choice Society, and expressed his support to the assumptions defended by the group.

According to this group, rationality was understood as the individual's ability to classify, in a transitive way, all the available and known alternatives. For example, the rational individual would be able to prefer A to B, B to C and, therefore, A to C, thus demarcating the transfer. In addition, the rationality proposal present in the Public Choice group was based on the following assumptions: (1) methodological individualism, understanding that the individual is the most appropriate unit of analysis for the development of scientific researches; (2) self-interest, assuming that individuals have their own preferences and that these preferences affect the group decision-making, since they take on different characteristics from one individual to another; (3) maximization of strategies, which implies choosing the alternative among many that will bring greater net benefit in relation to the individual's preference; and (4) perfect information processing, which concerns the information processing level and capacity by individuals at the decision-making time. (OSTROM; OSTROM, 1971).

This rationality model, which is quite consistent with the *homo economicus* proposal, grounded the first studies by Vincent, especially those related to the polycentrism proposal in public administration. Somehow, Elinor also adhered to this rationality proposal used by the Public Choice Society, given her position as president of the group between 1982 and 1984 and her publications defending the rationality assumptions described in the preceding paragraph (OSTROM, 1965; OSTROM, 1968; OSTROM; OSTROM, 1971;

OSTROM, 1986). However, over the studies on common property resources, the Ostrom couple started a migration process from the rationality model inserted into the Public Choice Society to the proposal by Herbert Simon (1985) and his writings on bounded rationality. For those who defended the bounded rationality paradigm, the limitations of cognitive capacities, the adaptive inefficiencies, the multidimensionality and multiple contexts associated with the arising issues, as well as the different conceptual frameworks of the actors should be taken into consideration in order to make a consistent analysis of the processes related to public policies (ARAÚJO, 2013).

More recently, Elinor Ostrom (2007) pinpointed the need for a second-generation of rationality models and, therefore, for collective actions. According to the author, the overcoming of the collective action dilemma is better analyzed when collective action, reputation, trust and reciprocity among individuals are included as key elements. Similarly to a virtuous cycle, as long as the individual actions are aimed at cooperation, the individuals will learn to trust each other and the reciprocal actions may be more easily adopted. As more individuals use reciprocity, having the corollary of trust as reputation would lead to benefits to the group.

In addition, according to the Ostrom couple, admitting that individuals would have complete information about the structure they are inserted in as well as about the preferences of other actors, by using the most traditional form of *homo economicus*, did not seem consistent with governance and polycentricity in the common property resource environment. The maintenance of this form of rationality would not take into account the micro-situational structure and the broader contexts involving the group. Therefore, we would fall in a state of “hyper-rationality” of the individual, in which the elimination of uncertainties and the need for evaluating the best action in each situation exclude from the results uncertainty situations, which could contain the overcoming of the collective action dilemma, among other elements (OSTROM, 1991).

Within this rationality frame, by moving away from the ideal of *homo economicus*, the Indiana group underlies the IAD Framework and sees the possibility of overcoming the collective action dilemma among the common property resources.

Thus, it is clear that Vincent Ostrom directs the School of Indiana studies to a path that addresses the debates proposed by the neoclassical economics, especially the methodological individualism and the rationality of the individual, as basic elements for building institutional arrangements conducive to overcoming the collective action dilemma. Due to the progress in his research as well as in Elinor’s research, the understanding of the most suitable rationality model used to overcome the collective action dilemma will be complemented by other elements, which are not common to the neoclassical economics. However, the belief in the methodological individualism and in the existence of a rationality that allows overcoming the collective action dilemma permeates the entire academic history of both researchers. In fact, what is paramount is the demarcation of an academic history shrouded by the need to provide answers to a collective dilemma by analyzing the individual’s rationality, having the second most recognized member of the School of Indiana, i.e., Vincent Ostrom, as the precursor of this perspective within the School.

Additional considerations and Research Challenges

The current study sought to show conceptual elements developed by Vincent Ostrom, which are essential to understand the IAD Framework. In fact, we presented Vincent Ostrom as the research mentor of key concepts presented by the School of Indiana in researches on common property resources. The study did not intend to exhaust Vincent Ostrom's contributions or to diminish the efforts employed by his wife Elinor. It aimed to show, through the academic history of the Ostrom couple, that the field of governance of common property resources of the School of Indiana has a lesser-known researcher, but who is co-responsible for the recognition that Elinor gained over time, as well as for the recognition that has been given to the School of Indiana, especially after the Nobel Prize in Economics.

The arguments used to achieve the aim of the current study were based on three elements, namely: the concern in pointing out the natural features of resources as a determinant factor for the development of institutional arrangements; the polycentrism proposal; and the construction of a rationality model. These points do not exhaust Vincent Ostrom's contributions, but they help reflecting on features found in the IAD Framework, which were already being developed in the period prior to the formulations of the School of Indiana and to Elinor Ostrom maturity as a researcher in the field of common property resource.

Due to the panoramic nature of the study, it was not possible to deepen the discussion by contextualizing the three conceptual elements discussed throughout the text within specific arenas and public policies. It does not mean that Vincent's contributions to the IAD Framework and the IAD itself are away from contemporary facts and events.

In order to briefly complement this perspective, it is worth emphasizing that the assumption of the natural feature of resources as a determinant factor for the development of institutional arrangements is strongly intertwined with the idea of water management from the basin committees, which goes beyond the territorial limits of the federal entities and approaches the molding of the action situations as well as of the polycentrism. As for the Brazilian case, according to the School of Indiana, the river basin is legally defined as the basic unit for the implementation of the National Water Resources Policy and for the action of the National Water Resources Management System. In addition, the management of water resources should be decentralized and include the participation of the Public Power, the users and the communities. However, it is consensus that the implementation of such legislation is still at a level well below the necessary, fact that accounts at least in part for the current difficulties in the field. The water crisis is influenced by weather events, but it is also a governance crisis (BICUDO et al., 2014)

On the other hand, the rationality model developed in the IAD may be seen in the negotiation rounds and in the presentation of national documents surrounding the global climate agreement. As it could be recently seen, Brazil goes to COP-21 in Paris with proposals that go beyond the country's duties, although they are below the national potential. The country proposed to: reduce emissions by 37% by 2025 in comparison to 2005, with an indicative target of 43% for 2030; and eliminate illegal deforestation in the

Amazon alone by 2025, which implies tolerating lawlessness for over a decade and reflects the lack of commitment to the protection of other national biomes (OBSERVATÓRIO DO CLIMA, 2015). It is evident that, beyond the concern about climate changes, there is concern about the proposals presented by other countries, which turn the negotiations into a rational game in which the individualized interests of the countries often outnumber the global interests. The formal and informal institutions so far established in this field have not been enough to ensure the cooperation advocated by Elinor Ostrom (1990; 2005; 2007; 2008; 2009). Maybe the world needs to face an even greater crisis that really makes the multiple actors involved in this action situation change their behavior.

It is understood that the content of the current study helps developing a set of questions that tend to work as positive agenda for future researches in the field of governance of common resources, such as: Are there other relevant contributions by Vincent Ostrom to Elinor Ostrom's studies and to the School of Indiana? What are these contributions? To what extent are the analyses prepared by Vincent and incorporated into the IAD Framework useful to a governance model that emphasizes the political openness to the participation of popular movements and actors in the co-production of public policies or, on the other hand, support liberalizing demands for reducing the role played by the State as provider of public policies? To what extent is it necessary to build concepts and inter- and transdisciplinary reflections in order to understand the governance of common property resources (that pervade political science, economics, public administration, environmental management, etc.)? How to properly frame the polycentricity proposal in the environmental policy in a political moment in Brazil, in which there is tendency to the political emptying of organizations that represent the society, such as the National Environmental Council (CONAMA - Conselho Nacional de Meio Ambiente) and similar collegiate bodies within the state sphere? What is the most appropriate rationality model to deal with issues related to the interaction between environment and society? Finally, and more broadly, how can the model for the governance of common property resources be well used to deal with contemporary issues related to the interaction between environment and society, such as water crisis, environmental risks, deforestation, management of protected areas, infrastructure projects in sensitive areas, metropolitan dynamics, urban mobility, as well as federative renegotiation involving such matters?

Notes

- i "The IAD Framework encapsulates the conceptual and analytical efforts by Vincent and Elinor Ostrom as well as by the schools affiliated to the Workshop in Political Theory and Policy Analysis to understand the ways in which institutions operate and change over time. The IAD framework assigns all relevant explanatory factors and variables to categories and locates these categories within a foundational structure of logical relationships" (McGINNES, 2011, p. 169).
- ii However, her studies have changed between 1965 and 1975, ranging between research on common property resources and public property. In this initial period as a professor in the IU, she distanced herself from the studies on commons and focused her efforts on the field of collective action in public goods environment (OSTROM, 1971; 1972; 1973). This distance from the studies on common property goods took place within less than a decade, since she participated in the discussions and publications concerning the debate initiated by Hardin (1968; 1977) about the tragedy of the commons. She also helped building the concept of common property goods (OSTROM; OSTROM, 1977).
- iii What we herein call the Public Choice is defined in Mitchell (1988).

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VINCENT AND ELINOR OSTROM: TWO CONFLUENT TRAJECTORIES FOR THE GOVERNANCE OF COMMON PROPERTY RESOURCES

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Abstract: The aim of the current theoretical article is to demonstrate the importance of Vincent Ostrom in the intellectual history of his wife Elinor Ostrom, especially in studies on the governance of common property resources grounded in the Institutional Analysis and Development Framework (IAD). Three elements that demonstrate Vincent's importance to this perspective are herein highlighted and analyzed, namely: the concern in pointing out the natural characteristics of resources as a determining factor in the development of effective institutional arrangements; the proposal of polycentric institutions; and the construction of a rationality model. Lastly, the paper listed some questions that may help structuring a positive research agenda in this field, with repercussions on contemporary themes and on important public policies.

Keywords: Vincent Ostrom; Elinor Ostrom; Governance; Common Resources; IAD Framework.

Resumo: O objetivo deste ensaio teórico é demonstrar a importância de Vincent Ostrom na história intelectual de sua esposa Elinor Ostrom, em especial nos estudos da governança de recursos de propriedade comum embasados no *Institutional Analysis and Development Framework (IAD)*. São destacados e analisados três elementos que evidenciam a relevância do referido pesquisador nessa perspectiva: a preocupação em apontar as características naturais dos recursos como fator determinante para elaboração de arranjos institucionais eficientes; a proposta de instituições policêntricas; e a construção de um modelo de racionalidade. Ao final, são elencadas algumas questões que podem contribuir para estruturar uma agenda positiva de pesquisa nesse campo, com repercussões em temas contemporâneos e políticas públicas importantes.

Palavras-Chave: Vincent Ostrom; Elinor Ostrom; Governança; Recursos Comuns; IAD Framework.

Resumen: El objetivo de este ensayo teórico es demostrar la importancia de Vicente Ostrom en la historia intelectual de su esposa Elinor Ostrom, especialmente en los estudios de

gobernanza de los recursos de propiedad común conectados a Institutional Analysis and Development Framework (IAD). Se destacan y analizan tres elementos que señalan la importancia de Vincent en esta perspectiva: una preocupación para señalar las características naturales de los recursos como un factor determinante para el desarrollo de mecanismos institucionales eficaces; la propuesta de las instituciones policéntricas; y la construcción de un modelo de racionalidad. Por último, el documento enumera algunas preguntas que pueden ayudar a estructurar una agenda positiva de la investigación en este campo, con repercusiones sobre temas contemporáneos y las políticas públicas importantes.

Palabras Clave: Vincent Ostrom; Elinor Ostrom; Gobernanza; Recursos Común; IAD Framework.
