

An Institutional Framework to Analyze Human Behavior

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This work was carried out in collaboration between all authors. Authors IPC and LFM wrote the first draft of the manuscript. Authors CECP and CTM managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Aims: This paper shows the analytical framework used by Elinor Ostrom in her book *Understanding Institutional Diversity*, which provides that institutions underlie the decisions that face the economic individual and develops the proposal by Ostrom of modifying the rules, to make them efficient and insert them into codes or regulations (local, national and international) to make them sustainable over time.

Results: There is a common framework to analyze human behavior. Institutional Analysis Diversity is a method which studies human actions diversity, the purpose established by Ostrom was developed categories and variables to study how individuals were facing to take decisions. If decisions are made several times, i.e., they repeat, it means strategy has worked. The economic idea underlies from repetitive game theory. Thereby, enhancing interaction with people and it becomes prescription. Eventually, it can be changed in a customary norm that, reinforced by the community, is converted in a moral o legal norm.

Conclusion: The results of the Institutional and Analysis Development (IAD) and its recommendations must be evaluated to apply to the analysis of México and its community. An important exercise would be to verify Ostrom's institutional framework and the evolutions of

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standards in indigenous communities, as well as institutions operating in academic, political and other fields. It is a matter of building fairer norms and motivating the intersubjective cooperation of the participants, not the opposite.

Keywords: Institutions; analysis; strategies; community.

1. INTRODUCTION

Elinor Ostrom is without doubt mandatory reference to discuss topics such as: economic governance and shared resources. For her research was awarded in 2009, the Nobel Prize¹ in economics. Also, to be the first woman to receive this award in this field, she has a long academic history in the analysis of the institutions.

To understand the institutions, you need to inquire about the shape of their basic structures, once you are into a higher level of analysis we can know how and to what extent the behavior of agents (those who evolve, learn and have ability to test multiple rules, heuristics or strategies), is affected by the institutions. Institutions are prescriptions in which human beings are organized.

Prescriptions, initially allowed cooperation, resource allocation and efforts for the survival of the human species. Subsequently, the evolution of cognitive ability led to forms of coexistence more elaborate assigning penalties, i. e., requirements were initially strategies that became standards and later rules of conduct (including sanctions).

Ostrom [1] established that is not necessarily rules should be written or recognized through a legal process, but which are underlying the social structure of humanity. Most of the time, we follow the rules without being aware they exist, it's done as a social habit. But to realize its existence, she can explain how they operate, making it possible for the agent modify them deliberately².

¹ To see more about Nobel Prize visit <https://www.nobelprize.org/>

² According to Smith [3], the deliberate of the reason to analyze and determine within a set of possible actions the best, is called rationality constructivist. Thus institutions are deliberately designed by deductive processes aware of the reason to serve the human condition. On the other hand, there is a cultural and biological process that has evolved over the human existence, and it has developed by principles of action are transformed into rules, traditions and moralities that regulate human behavior, this emerging order acting unconsciously (off-line), is called ecological rationality. For further reference on this topic see Porras [7].

The question that arises is why institutional analysis in Ostrom is important? Because the prescriptions (strategies, standards and rules of conduct) define property rights, which allow individuals allocate resources and benefits to each choice made. In the case, established rights of private property in a market economy, the choice of agents aim to ensure greater welfare and efficiency possible.

The work is divided into three sections. The first corresponds to the notion of an agent that Elinor Ostrom has developed, and how it through its conduct gives rise to the institutions, explaining the way they operate. The second section explains the inclusion of the rules in the areas of action elements, characterizing the properties of universal grammar to the institutions, which are divided into strategies, rules and regulations. The third section develops the proposal by Ostrom of modifying the rules, to make them efficient and insert them into codes or regulations (local, national and international) to make them sustainable over time. At the end are presented the conclusions of the paper.

2. THE AGENT AND HIS CONDUCT: INSTITUTIONS

As individuals we are faced with diverse and complex situations, whether in the family, work, the market, the government, etc., but actions as we hope depends on the decisions that we take and also that they take each other, in other words, we have expectations which are associated with a capacity of prediction, but to be able to predict something before we make a choice and is where it is not clear about what guides us to act in a particular situation. Do we have an internal code which is established what decision was taken in every situation to which we are faced, or simply learn to solve such situations based on experience?

To perform the analysis on the diversity of human interactions in Ostrom, it is necessary to

establish the theoretical framework³ Which is based to achieve the goal. The framework allows you to organize and articulate her notion of an agent which can be applied to any relevant theory of human behavior, that's what she calls Institutional and Analysis Development (IAD). Its objective is to identify key variables which can help you to make a systematic and coherent analysis of the structure under which individuals face a situation in which they have to choose, tries to explain "...how rules, the nature of the events evolved, and the community affected the situations over time." [1, p. 9].

The IAD offered by Ostrom, establishes that the core of the economic, social, political and anthropological studies, is human behavior, and that such conduct should be analyzed with the use of common tools to these disciplines such that can serve to display variables, as well as a large number of combinations between them and your organization at multiple levels of analysis that allows us to understand complex social life. For Ostrom [1] there is not a division between an agent micro or macro, but that category is assigned depending on the scope of study, i.e., individual or collective conduct should be discussed with the same theoretical tool, and should only relate to the number of participants who are assigned positions related to determined action [1, p. 33].

We know the conduct of the agent is based on elections, there are multiple factors that affect behavior and choice, and yet have a common underlying structure, this structure (which is the central idea of the IAD) are the institutions.

"Broadly defined, institutions are the prescriptions that humans use to organize all forms of repetitive and structured interactions [...]. Individuals interacting with rule-structured situations face choices regarding the actions and strategies they take, leading to consequences for themselves and for others" [1, p. 3].

If a prescription is a rule of conduct which tells us what do and what not do⁴, then functions as a

³ "The development and use of a framework help to identify the elements (and the relationships between these elements) need to consider the institutional analysis." Frameworks organize diagnostic and prescriptive research. [...] the frameworks provide a language meta-theoretical that it is necessary to talk about theories and that can be used to compare them. "Frameworks try to identify the universal elements of any relevant theory that is necessary to include" [1, p. 25].

⁴ The institutions would indicate the physical world, social and epistemic possibility.

regulator by defining areas of action of the agent, i.e. Ostrom identifies the agent as if it were a behavioral algorithm. The tool used to formalize situations of action of the agents is game theory⁵. The existence of a multiplicity of fields of action and multiple rules acting simultaneously in layers, allows the theory games to receive the assumptions and structure of a situation of relevant action to explain human behavior more simply.

The above leads us to ask: what are they? How to operate and emerging institutions in the situations of action? To answer this must be taken into account that the agent decides under elements such as restrictions (biophysical, cultural), preferences, intentions and expectations.

"Often we are not aware of all rules, standards and strategies we are pursuing (...) individuals are responsible on developing and modify rules... (if we do not) understand how particular combinations of rules affect actions and outcomes in a particular ecological and cultural environment, rules changes may produce unexpected and, at times, disastrous outcomes" [1, p. 3].

If we think that human decisions about preference, opportunities, as well as restrictions which have to adjust the agents, which are affected by the rules or absence of these, then we can say that these decisions can be seen as a complex system⁶ And at the same time as a result of an internal process that begins with a biophysical structure layer after layer leaving behind this structure to become a cognitive structure [1, p. 11]. This cognitive layer is composed of individual structures which are composed of multiple individuals (families, companies, etc.), which are structured in many parties (communities, Nations, etc.) and

⁵ There is a more radical stance of this point of view with Gintis [8, p. 30], who studies neuroscientists show that the mind has a capacity of choice isomorphic to evolutionary game theory. Then the brain functions as a decision-making body centralizing and processing information into dynamic branching strategies under which the agent operates.

⁶ Ostrom [1] does not define a complex system, however, the definition of Holland [2, p. 25] of a complex system seems to coincide implicitly with the vision of Ostrom, in Holland a complex system is "the compound by interacting agents described in terms of rules." These agents are adapted to changing its rules when they accumulate experience. "Most of the environment of any adaptive agent is constituted by Adaptive agents so that a portion of the efforts of adaptation of any agent is used to adapt to other adaptive agents." Ostrom agent is an agent that learns and can be adapted.

belonging to an upper structure. To determine the influence of the rules in our behavior, we can review the decisions in levels making use of the IAD and more specifically of the Holon. Which is a complete in a single level system consists of many other parts on another level?

The agent faces situations, in which you should choose and the election-solution dependent mental models to do about how reality operates, this can develop it from two perspectives. First, mental models are affected by at least two basic sources: feedback from the world and the shared system of culture or beliefs that individuals are immersed. Individuals need to find a model that is appropriate to the situation they face through repeated interactions or which have a similar structure.

The agent is initially based on mental models (as if...so...), that is formed on particular situation to calculate expected results of certain actions, however, that each agent learns about its outcome and from other actors, can stimulate him to review his mental model and know if you were in an inconsistency or lack of satisfaction. The agent learns to share mental models, that learning is accelerated when situations are repeated. The role played by learning is important, and in Holland [2] can be found learning is the ability of an agent to anticipate⁷.

It is based on this ability of anticipation that we can see the intent of others, allowing us to create our expectations about the behavior that will have others to us in a given situation. In other words, can think the behavior of the agent is based partially on intrinsic preferences related to how I would rather lead me and what I hope others, as well as to the kind of results I would like to obtain for me and another.

If we say that the institutions are mental models that have prevailed at the time because they are successful, then the agent is taken as given, i.e., as if they were external variables affecting decisions. Smith [3, p. 364] takes as a result of certain "ecological rationality", and the agent evokes them in an unconscious way. This way of looking at the institutions has been strengthened under sanction mechanisms (and if not...) and is a complementary form of this concept. An explanation of the institutions seen as standards is developed by Hauser [4, p. 26], who noted that

⁷ This capacity of anticipation can also be studied using the concept of intentionality that handles Hauser [4] and which has been a reading of the mind.

we have an innate capacity⁸ to decision-makers acting in our psychology of moral as if it were an instinct.

This vision of Hauser [4] do not contrast to Ostrom [1], nor to the Holland [2, pp. 58-106]⁹On "building blocks" which allow explaining how they become rules (as such) standards through performance, allocation of credit and discovery of rules system, so that agents take institutions as precepts (instructions) in its fields of action. This view is corroborated by Smith [3, pp. 33-34], arguing that the decision-making process in which the agent calls for rules "unseen" is due to an *ecological rationality* which acts in a way *off-line*, whose rules are emerging products that appeal to the collective experience, as if they were a collective unconscious that has co-evolved under a biological and cultural process and, that has been passed from generation to generation through the language. This trend highlights the learning of rules using the reciprocity and which may include rules of punishment or cooperation.

The second way of analyzing the emergence of the institutions is as heuristic decisions. When there is no rule on the basis of which the agent can make a choice, opt for a mechanism for heuristic decision, which for some operates initially as a constructivist rationality to the solution, but to go through certain mechanisms successful and adaptive (experience) become institutions, although the solution of the problem requires some Cartesian rationality, the mechanism of operation of these heuristic solutions is also due to an evolutionary grant process. This explains the origin of the institutions. Here the experience plays an

⁸ This innate ability to see moral norms is taken from Chomsky [5, p. 156], who revolutionized the notion of grammar by ensuring that: "...the central nervous system and the cerebral cortex are biologically programmed [as an innate capacity] not only for the physiological aspects of speech but also for the Organization of the same language." "The ability to organize your words is inherent [as part of our genetic material]." Also specified that: "... [It] exists a universal grammar that is part of the genetic heritage of human beings, that we are born with a basic linguistic plan that will fit all... own the species-specific languages human".

⁹ He develops the ability to represent an agent-rule, under certain procedures. And it will be developed in three stages: the first is that he must find a way represent different classes of agent skills without taking into account the adjustment; This is called performance system, later used the success or failure of officials to allocate awards or penalties, and this process is called allocation of credit; and the last is related to changes in the skills of officials to replace with new options the parties which are assigned to these loans, this procedure is called discovery of rules.

important role, as there are no internal models that you prescribe to the agent to do, but that "find" a solution by trial and error. Experience increases and ensures the claim that agents use heuristic solutions, i.e., that it is experience that gives you some degree of validity to the heuristic decision¹⁰.

Ostrom [1, p. 144] identified eight heuristic solutions, which are quick fixes brain makes automatically and under pressure, establishing himself as immediate decisions. The most commonly used heuristics is the lexicographical (for his initials LEX) strategy, which selects the option with the value higher on that point the highest validation. If two or more alternatives have the same value, there will be some who will have more value, and that will be chosen. This heuristic strategy LEX is the general form of "choose the best". Heuristics, in general, reduce the information comparing an "optimally" strategies in decision making. To learn what the assessment effect of heuristic decisions about the results obtained, should assess whether the heuristic is efficient, which is achieved by establishing how many agents have used it over a period. It will increase its use if it has generated "good results" and decreases its use if it leads to "poor performance" (for good or bad results should be understood that there is a correspondence between the allocation of the results and intentions).

3. THE GRAMMAR OF THE INSTITUTIONS

Once explained the determinants under which chooses the agent, it is necessary to analyze the behavior of agents using as fundamental level of study "the Holon" called *field of action*, which in turn includes two holons, in his analysis the participants and the situation of action, these, in turn, are affected by variables exogenous which generates interactions that generate results. Agents based on an evaluative criterion to judge the performance of the system by examining the patterns of interaction and results. These results feedback the scope of action as well as the exogenous variables and can affect them and transform them to the passage of time.

The image 1 shows elements involved in a field of action; we know that within it are in operation two holons, the situation of action and the

participants. Elements that allow to articulate these two holons are: the first is (1) *participants* as a whole, it refers to the entities assigned to positions and that they can select an action from an alternative set requires, in addition, some attributes such as number, their collective status of participation and some individual attributes (age, education, gender, etc.); the second element are (2) the *positions* which must be filled by the participants, some examples are: players, voters, buyers sellers, etc., refers to the "tags" under which the participants moving; the third element is the (3) *potential results*, generally refer to the costs and benefits assigned to outcomes (for payments), which can be divided into three [1, p. 43]: physical results, the material rewards or costs allocated to the actions and the outcome of the payments and the evaluation placed on the combination of the participants and their positions. Fourth element (4) are the *actions* that participants must choose according to their positions that are established in a specific stage of the decision-making process. The specific action selected by a participant from a set of actions is called choice. Specific movements under which the participant can move is called strategy; the fifth element is the (5) *linkage between outcomes and actions*, we say that there is a control variable when there is a link of that variable with its results, and it is possible that this variable causes the result, disappear and change their degree. Sixth (6), it should be taken into account the analysis of *information*, the results differ according to scenarios with certainty, risk and uncertainty; seventh element (7) are the *costs and benefits*, actions and results are driven by the costs and benefits that the participant Act, will depend on the path taken to achieve specific results which are assigned at the end of the movement of trajectory. There are two types of ratings to the rewards: internal and external; the first is you relate with physical elements, while the latter relates to the degree of "utility" or net value can cause, this is associated with their internal models of its objectives and rewards.

We now come to examine how it is affecting the exogenous variables into a sphere of action. Firstly, rules are used by participants to order their relations; if we assume that the institutions evolve in the same way that changing our brains, then these institutions will be affected by the manner in which those rules are understood, implemented modified or ignored. Other exogenous variables are the attributes of community; these affect the scope of action

¹⁰ Ostrom [1, p. 114] cites a study by Gigerenzer and Selten [6], for this type of solutions under which the agent chooses: calling them "fast and frugal heuristics".

through generally accepted behavior in the community, as well as the common understanding that leads to cooperation or not the participants. When we say that the biophysical conditions and materials affect the scope of action, we refer to the same set of rules can produce different results depending on the events in the world on which active participants.

At the time of studying multiple fields of action, it is necessary to distinguish between its layers, Ostrom [1, p. 43] lays down three basic levels of rules affecting the actions taken and results achieved in specific environment or atmosphere. The first affects the decisions of each day of the participants in any environment, they can change very quickly, and are called operational rules; the latter are the rules of collective choice, that affect operational activities and their results by specific rules that change the operational rules (for example, the rules that establish who will be assigned to the positions of monitors); and finally the rules of constitutional choice, affecting election activities are of collective choice, determines who is eligible within the participants and that rules can be used to develop/modify the rules of collective choice.

The rules are, the result of the explicit or implicit to achieve order and forecasting among the participants, who received positions and by which have permitted, required or forbidden to perform a certain action, facing the possibility of being monitored or punished. These rules do not need to be written to act as such, i.e., there is no need to have emerged from a legal procedure, institutional rules are created on many occasions in a way self-conscious by individuals to change the structure of repetitive situations they face in an attempt to improve the results achieved, in other words, that individuals can consciously

decide to take a different rule, thus making a change in the way they choose [1, pp. 16-18]. She refers to the sense that it denotes a rule is very important, all the rules are formulated in human language, language accelerates cultural transmission, it carries the information specific-situation as well as general conceptual and policy information, why Ostrom develops a universal grammar (Syntax) that allows us to illustrate the differences and similarities between strategies-standards and rules followed by agents. The IAD provides a syntax called AIDICO, which acquired its name for integral parts. These components are: [attribute], [DEONTIC], [AIM], [conditions], [OR ELSE].

By *attribute* identifies the person who heads the statement, answers the question who? By specifying the essential attributes that bind the positions, both participants and actions, if you do not specify specific attributes by default are understood all participants as a whole that we are talking about.

By *Deontic* refers to the modal operators that appear in a prescription and establishes its sense, which is: *allowed*, *prohibited* and *forced*. By default, that is not prohibited is permitted for the agent. Now must observe about forced and banned, because there are internal elements in bound (subjective, such as shame, penalty, etc.) requiring doing something, while forbidden appears more to an external element that links action, could be a sanction (internal).

The component AIM, which describes particular actions or results in the situation of action to which is assigned the deontic, i.e. refers to the intention or not (accidentally) that the agent had to choose the action. If it is not specified, it is

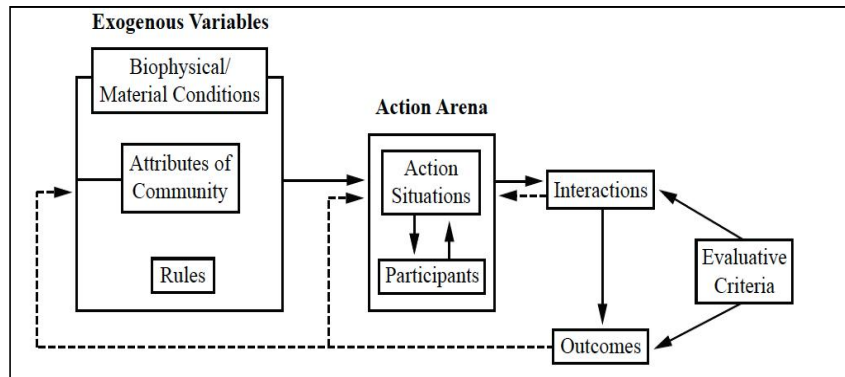


Fig. 1. A framework for institutional analysis

Source: Ostrom, 2005, 15.

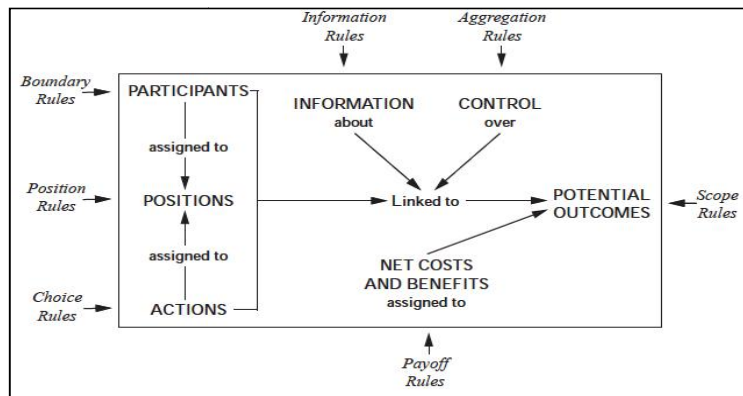


Fig. 2. Rules as exogenous variables directly affecting the elements of an action situation
 Source: Ostrom, 2005, 187.

accidental, is understood by default that is intentional.

By *conditions* indicates the set of variables that define when and where an institution (strategy, standard and rule) applies. If not specified the time and place, is understood by default which is true for all time and space.

Or-Else means the consequence that an institutional declaration being ignored, i.e., the punishment must be an agent if a rule is not followed. Three conditions of existence are attributed to this component: (1) must be the result of collective action; (2) it must have an element of support, i.e., a threat that deterred the behavior of the agent; and (3) there must be an efficient monitoring capable of dealing with opportunistic behavior of offending agents. This last component is what gives to rule their character as such.

The rules operate at all levels, reason by which a classification of them should help us form a "...set of concepts to facilitate the construction of a theoretical and empirical body that allows us to study human behavior and their results in different situations" [1, p. 187]. In the second imagen, we can see how rules, treated as exogenous variables directly, affect the components of a state of action. If we understand the elements that interact in a field of action and its rules, then it will be possible to improve them with reforms or changes in such a way that we get better results.

4. THE AMENDMENT OF THE RULES

According to the previous section, Ostrom [1] is optimistic to establish the rules may be modified, regardless of the level in question. Namely, that if we are aware of the elements of the situations of action and its relations with the rules, we can then modify them to improve the performance of the results. She considers that it is not creating "recipes" generals who do not take into account the variety of problems that faces the agent in its multiple layers or levels of performance, in the design of principles should be considered ecological thresholds under which operates the problem that it of address.

Ostrom demonstrates that institutions are relevant in that they help us to explain the diversity of results in social dilemmas¹¹, this is an important issue to follow if we assume that humans can develop, communicate and learn standards of trust, integrity, reciprocity and equality. When he mentions that the generic rules are common to the markets, hierarchies, etc., it also makes mention of systems of governance of common resources, notes that these evolutionary capabilities of the rules have existed in the management of resources in common use and that can capture your performance.

It emphasizes identifying some principles that characterize the robustness of common property institutions. If we apply these principles when designing the rules and taking into account the particularities of the communities and areas of action, then we could move that success to other

¹¹ Friel [9] state a similar problematic in the academic field.

forms of property, such as private for example. These principles are:

1. The limits should be defined clearly, specifying the class of agent who must have access to resources (quantity, quality, etc.);
2. There must be a proportional equivalence between benefits and costs, by specifying the number of resources allocated to its work;
3. Arrangements must be a collective choice, any arrangement that is carried out in the community should have included those workers affected in their assignments, and they are also entitled to participate at the time of making or modifying its rules;
4. There must be an auditor who meets biophysical and moral attributes such that allows the efficient monitoring of agents, imitating their behavior with specific rules of action;
5. There must be a mechanism of sanctions, and these must necessarily be gradual or proportional to behaviors. The agent learns, and as a result, the sanctions are gradual;
6. A mechanism for conflict resolution that is fast and operates at low cost, if a failure in any of these elements lead to the emergence of *free-riders* who undermine the agreements must be;
7. There must be a minimum recognition of rights to organize, ensuring the design of rules in a lower layer as the operational situation. The authorities must not invade this field of action because they would limit heuristic solutions;
8. Grouping of niches, in which similar behaviors of appropriation information allow better organization within each niche, which lead to taking advantage of this approach. Ostrom referred to as "nested enterprises".

Within the Organization of the rules according to these principles, should take into account that the rules (as mentioned) also work as threats, they help to strengthen the mechanism under which reinforcing and are of a nature more binding with agents. Some theoretical speculation about threats should be taken into account, Ostrom reveals that (1) must adapt to rapid exogenous changes (such as technology, the growth of the population, the use of resources, etc.); (2) there should be no faults of transmission from one generation to another,

from the principles and punishment on the basis of which operates the community; (3) that in support on projects and easy access to funds, programmers take account of the specific Community characteristics, if they fail it is due to the lack of consideration of those features that can impact or not actors; (4) the threats should avoid opportunistic agents and corruption form, if the monitor or the sanctioning does not follow the established rules and allowed to collude with opportunistic agents, the strategies of others may vary and even disintegrate the community; and (5) lack of institutional arrangements for large scale related to the collection of information, aggregation and dissemination could lead to solutions if they do not operate with efficiency, i.e. the lack of academic assistance or social organizations could lead to the depletion of some resource, is why workers should be informed and the costs of such organizations (including government levels) should be very low so that they can operate.

Ostrom [1] also establishes that the rules can be improved considering that the Government of a layer above can help strengthen the ecological community institutions provided that they take into account the particularities of each community, also help resolve problems that arise in the use of common resources promoting the equivalence in the allocation of resources (in the case of tyranny) spreading information (technique in the case of non-renewable resources), etc. This way of organizing it is called polycentric system. Systems of governance of common resources involve social dilemmas, his problems involve both biophysical variables as the material world, the communities involved, and the rules that combine to affect the structure of ownership situations, patterns of interactions between the owners of the funds of common resources, and the results obtained. Ostrom demonstrates with her empirical studies that opposed to what we believe, these owners of common pool resources can establish viable institutional mechanisms to keep their resources over time.

5. CONCLUSIONS

There is a common framework to analyze human behavior. Institutional Analysis Diversity is a method which studies human actions diversity, the purpose established by Ostrom [1] was developed categories and variables to study how individuals are facing to take decisions. If decisions are made several times, i.e., they

repeat, it means strategy has worked. The economic idea underlies from repetitive game theory. Thereby, enhancing interaction with people and it becomes prescription. Eventually, it can be changed in a customary norm that, reinforced by the community, is converted in a moral or legal norm.

Clearly, Ostrom focuses on study norms selectivity; it means how exogenous variables as bio-physics conditions, cultural identities (community attributes), and other rules, interact on action arenas and produce outcomes, due to well-being and properties criterions, norms standings, they transform or disappear. The norm trajectory is sawed like moral inheritance or legal that must be modified according to exogenous variable and evaluation criteria changing. To know these interrelations, the evaluation criteria and award assignment perform stability norms and its obeying.

Ostrom develops a general grammar (syntax) to compare similarities and differences in strategies become norms, we have to remember purpose on study norms that remained on time, and we expect to be fair. It is created ADICO, which identifies some attributes must have persons who occupy positions, introducing deontic operators serve as actions delimiters, AIM element attributes accident or intentionality to behaviors, conditions are attributed to well-defined properties which norms are compared, finally behavior consequences are introduced by if prescriptions are ignored.

There is so many application literatures on studying behavior from the economic analysis [1, pp. 69-98], see for example Lee and Jan [10] and Odobo et al [11], but this framework is different. The results of this framework (IAD) and its recommendations must be evaluated to apply to the analysis of México and its community. An important exercise would be to verify Ostrom's institutional framework and the evolutions of standards in indigenous communities, as well as institutions operating in academic, political and other fields. It is a matter of building fairer norms

and motivating the intersubjective cooperation of the participants, not the opposite.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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