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# Environmental Conservation Units – a Pragmatist Analysis of the Organizational Management and Modes of Existence of an Ecological Station

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## Abstract

Protected areas are the main instrument used for protecting and conserving nature (UN, 2018). In Brazil, these areas are called *Unidades de Conservação* (UCs), or Conservation Units in English, and despite their territorial coverage and the complexity of their problems, they have not been properly studied by the area of administration. As a result, in this article we aimed to broaden the understanding about the modes of existence, as well as about the management of a protected area in a particular territory. For this, we took a pragmatist epistemological approach, favoring action above all. The study material derives from ethnographic research using participant observation at a UC managed by the Chico Mendes Institute for Biodiversity (ICMBio). As results, we identified three distinct modes of existence of the organization, namely: environmental education; production of expertise; and protection and inspection of nature. The analysis of these modes of existence enabled a better understanding of how specific organizational configurations emerge that situationally position the actors in different ways, engendering collective action and

its management. Finally, we forge arguments that highlight possible contributions of a pragmatist epistemology to the organizational analysis of UCs.

**Keywords:** conservation units; modes of existence; ICMBio; management; pragmatist analysis of organizations.

## Introduction

*Unidades de Conservação* (UCs), or Conservation Units in English, are the Brazilian denomination for what in the rest of the world are called protected areas. They are the strategy most widely used by countries to protect spaces in accordance with their natural characteristics. Around 26 million km<sup>2</sup> worldwide are configured as such, more specifically the equivalent of 14.9% of the Earth's surface and 7.3% of its oceans (UNEP-WCMC, IUCN, & NGS, 2018).

In Brazil, UCs can exist on public or private lands and are established by municipal, state, and federal powers; this means they are administered under a special regime, in order to ensure an adequate level of protection (Brazilian Ministry of the Environment, 2000). The legislation covers twelve different types of protected areas, divided into two large groups: sustainable use – types that aim to reconcile nature conservation with sustainable natural resource use – and full protection – types that only allow the indirect use of their natural resources.

Data from the National Registry of Conservation Units of the Ministry of the Environment (2020) indicate that Brazil has 2,446 UCs (at all levels), covering an area of 2,506,199 km<sup>2</sup>, which is greater than many Brazilian regions or even countries. Of the 1,004 federal-level protection areas, 334 are managed by the Chico Mendes Institute for Biodiversity (ICMBio), a federal autarchy created in 2007, as the result of the controversial dismantling of the Brazilian Institute for the Environment and Natural Resources (IBAMA). The ICMBio engages in nature conservation in all of the Brazilian biomes, its core objective being to carry out the actions of the National System of Conservation Units (SNUC), proposing, implementing, managing, protecting, inspecting, and monitoring the UCs established by the Union. Besides these functions, it is responsible for supporting and carrying out biodiversity research, protection, preservation, and conservation programs and for executing the power of environmental police to protect the areas.

Protected areas are one example of on-site nature conservation (Watson, Dudley, Segan, & Hockings, 2014). Political materials on the management of these areas indicate a varied and diverse set of activities carried out by these organizations, which are related to choosing implementation sites, political, legal, and regulatory questions, the regulation and management of natural resource use, relationships with local populations, engaging in communications and public relations, collaborations and partnerships, and evaluating the effectiveness of the management and the area itself according to its purposes (MacKinnon & MacKinnon, 1986). Studies indicate the importance of this type of nature conservation (Gray et al., 2016) and draw attention to implementation conditions (Geldmann, Manica, Burgess, Coad, & Balmford, 2019).

The importance of the theme of UCs can be justified in various ways, as previously shown. This context gains even more importance with phenomena such as the Anthropocene, which indicates a new geological era – a movement possibly accelerated by human action – marked by the occurrence of climate change, the carbon cycle, alterations in nitrogen, phosphorus, and sulfur, and modifications in the terrestrial water cycle (Steffen, Grinevald, Crutzen, & McNeill, 2011;

Waters et al., 2016). We should highlight that, in a search in the Scientific Electronic Library Online (SciELO) database, using the descriptors “Conservation Unit management” and “management of protected areas,” we did not find any scientific papers that would dismiss an organizational treatment of protected areas. Even though studies about UCs exist, they only touch on the theme of management, which is not discussed as an object of study per se.

Based on the discovery of that gap, our intention is to systematically undertake scientific studies on UCs, giving priority to action to understand this type of organization, as well as its management. From this perspective, this article can be considered as one of the first steps. We aim to broaden the understanding about the modes of existence, as well as about the management of a protected area in a particular territory. For that, in this study we adopted an organizational theoretical scope and considered the ordinary and territorial dynamics that a public policy device presents. As our scientific interest lies in favoring the action dimension, we chose to base the analysis of the phenomenon in question on the prism of pragmatist sociology, highlighting the nature of administration as an applied social science.

The organization chosen to conduct the research is a full protection UC, legally classified as an Ecological Station. The objective of this category is to preserve nature and elaborate scientific research, and public visits are prohibited – except if there is an educational objective, according to its management plan. The UC was established in 1987, it covers 759.33 hectares, and it is located in an important state capital, more specifically in an area considered to be an “upscale neighborhood.” Its surroundings are characterized by the existence of high-end condominiums, thus presenting strong real estate expansion and speculation, a configuration that creates conflicts given the various capitalist interests in play. Next, we will present a general outline of the theoretical framework and methodology employed, in order to then discuss the analysis of the phenomenon.

## **Theoretical framework**

In this section, we will first present a discussion that enables us to treat UCs as an organizational phenomenon. Subsequently, we will bring to the discussion elements that allow us to investigate them through their modes of existence.

### *UCs as an organizational phenomenon*

Around the world, UCs are called protected areas. In Brazil, due to the history of the legal-regulatory framework, another terminology has been adopted (Câmara, 2013; Drummond & Barros-Plataiu, 2006; Drummond, Franco, & Oliveira, 2010). Present in many places in the world, anthropological studies indicate that area protection has been promoted in various ways by a variety of people and communities. In the last century, the concept gained complexity and came to include a variety of initiatives. In North America, Australia, Europe, and Africa, for example, it represented a modern movement of protecting areas with spectacular natural characteristics, the presence of wildlife, and little potential for economic use. In the last quarter of the 20<sup>th</sup> century, concerns focused on environmental degradation and, thus, the importance of on-site conservation (Watson et al., 2014).

The effectiveness of protected areas at conserving nature is a core theme in terms of analyzing this strategy. The studies indicate a greater wealth of species present in protected areas than on non-protected sites (Gray et al., 2016); they also point to the importance of the existence of the necessary conditions for the implementation of new UCs to present results (Geldmann et al., 2019); moreover, they highlight that there is a lack of understanding that combines managerial and ecological aspects regarding effectiveness (Eklund & Cabeza, 2017).

A theoretical-practical combination to support the management of protected areas has been developed based on a spectrum of activities that involves selection, legislation, administration, planning, management, and evaluation of the administration of these spaces (MacKinnon & MacKinnon, 1986). Global targets constituted through multilateral organizations, such as the Aichi Biodiversity targets, influence the implementation of protected areas and management mechanisms (Joppa, Baillie, & Robinson, 2016). In light of this, based on the characteristics of protected areas, various organizations produce expertise regarding the management of these areas. We draw attention, for example, to the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC, UN), which acts in order to assist decision making at a variety of different political levels (UNEP-WCMC & IUCN, 2016), and the International Union for the Conservation of Nature (IUCN) (IUCN, 2019).

Drawing closer to the national context, Law n. 6,938 of 1981 established the National System for the Environment (Sisnama), formed of organs and entities of the Union, of the states, of the Federal District, and of the municipalities. Sisnama is responsible for the protection and recovery of environmental quality in Brazil and is divided into an upper body (Government Council), a consultative and deliberative body (Conama), a central body (Ministry of the Environment), executing bodies (Ibama and ICMBio), sectional bodies (states), and local bodies (municipalities). In this institutional set, the ICMBio has the purpose of executing actions regarding the national policy for nature conservation units and policies relating to the sustainable use of renewable natural resources; supporting and executing biodiversity research, protection, preservation, and conservation programs and environmental education programs; exercising environmental policing power to protect federal UCs; and promoting and executing actions together with the other bodies and entities involved (Law n. 11,516, of August 28<sup>th</sup> of 2007).

In addition, the framework that systematizes and organizes the variety of UC typologies is called the National System of Conservation Units (SNUC), according to Law n. 9,985 of 2000 (Ministry of the Environment, 2000). In it, it is possible to access the means for creating, implementing, and managing a UC. The SNUC divides UCs into two groups: full protection and sustainable use. The former does not allow the direct use of natural resources, while the latter authorizes it, providing it is developed in a sustainable way. In summary, UCs constitute a front-line organizational form of the environmental policies aimed at environmental conservation in a particular territory.

### *Investigation based on modes of existence*

The investigation regarding the modes of existence undertaken in this study was driven by reflections from Gilbert Simondon (2012), particularly because the author presents concepts and arguments that enable us to investigate the question of technique. In this sense, we can also

consider management as a set of techniques used as a framework for collective action in organizations. Considering modes of existence, we believe that entities are constituted through dependence and priority relationships. Bessy and Chateauraynaud (2014) highlight that individuals establish a dialectic relationship with the means that they themselves contribute to creating. Thus, a mode of existence can be considered as a partial and relative solution that takes shape in a system and, consequently, the stabilization processes can be considered as metastable resolutions, that is, they never end (Oliveira, 2015).

In social groups, when analyzing a particular phenomenon, we are faced with an implemented form in a metastable field that produced such configurations (Roux, 2004). The result of this process is something that can be differentiated, that is, individualized, and that should be investigated beyond the dichotomous perspective between interiority and exteriority, that is, based on its relationships (Debaise, 2002). These, in turn, are producers of individuation processes, which means that the associated means are considered; from this perspective, individual and means are configured in a process of permanent mismatch, always open to the possibility of alteration.

Our proposal is to reflect on collective actions, as well as on their management, at an organizational level. In light of this, we corroborate the argument that, at certain times, the existing configurations can no longer sustain themselves. They become incompatible with each other and with their contexts, and the result of that is the emergence of new forms that are crystalized (Roux, 2004). From this angle, the modes of existence of organizations are multiple, singular, and always different processes of a heterogeneous nature and dependent on local conditions; among other perspectives, they promote ranges of alternatives and possibilities for management actions, in a pragmatist view of the situated action. These modes of existence are constant individuations that momentarily singularize them.

In this study, we assume a pragmatist epistemological perspective concerned with action, primarily when developed at critical moments, as the results of the metastability addressed previously. Corrêa and Dias (2016) comment that reality is a continuous flow of stabilities and instabilities. In experiencing that indetermination, the actors are motivated to carry out investigative processes, in the sense employed by John Dewey — one of the founders of the pragmatist philosophy — with the aim of constituting new and provisional stabilities. The author states that “Inquiry is the life-blood of every science and is constantly employed in every art, craft and profession” (Dewey, 1938, p. 4); Dewey extends the inquiry process beyond the scientific environment, considering it as the backbone of collective action.

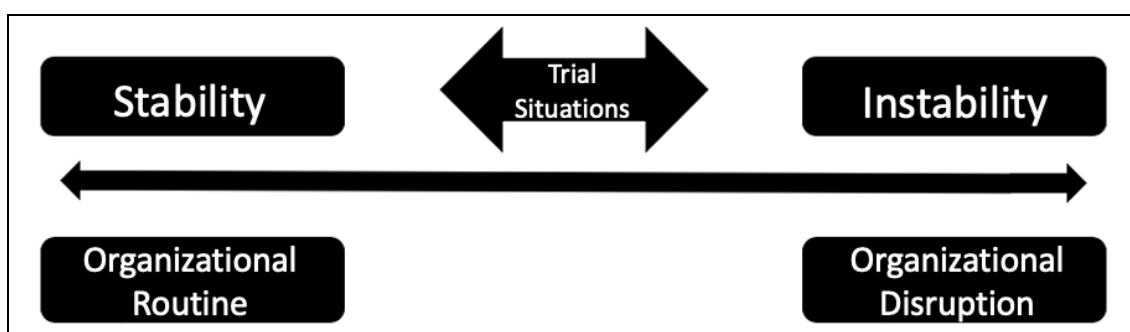
A brief addendum is appropriate at this point, regarding the theoretical lines of thinking that have been categorized as components of pragmatic sociology or French pragmatist. In general, we can consider in the French context of the 1980s the contraposition in relation to the critical sociology developed by Pierre Bourdieu, denoting dissatisfaction with the perspective adopted by that author, though recognizing its importance. At the core of that contraposition, marked itself by a heterogeneity of approaches, viewpoints, and scientific areas, it is possible to identify at least two poles of knowledge production that significantly influenced that movement. The first was implemented by the Centre de Sociologie de l’Innovation (CSI), located at Mines Paris Tech, with papers by Bruno Latour and Michel Callon providing strong production in the area of Science and Technology Studies (STS). And the other was through the developments of the Groupe

de Sociologie Politique et Morale (GSPM), founded by Luc Boltanski and Laurent Thévenot at the École des Hautes Études en Sciences Sociales. Although some care is needed to avoid bringing together different experimentations under the same title as if there were no singularities (Cefaï, 2009), by making reference to pragmatic sociology or, also, pragmatist sociology, it is perceived that there is a vast set of approaches and studies that are inspired by philosophical pragmatism and present some convergent points, such as the primacy of practice and action, the decisive nature of the context, the importance of uncertainty, the temporality of action, and the sociability of normative activity (Ogien, 2014, 2015).

A concept that is employed by several of these lines of studies inspired by pragmatism is that of test situations, whose analysis enables the researcher to deepen the understanding of action at critical moments, experienced by the actors when developing collective action. In particular, concerning the analysis of organizations, this deepening is revealed to be fundamental for advancing the knowledge on the complexity of management.

It is important to consider, in the case of the test situation, the question of translation, as the concept derives from the French term *épreuve*. When carrying out the translation, it is perceivable that there are two meanings that the term can take: the first of these is related to a test or trial, that is, a test as a moment in which certain variables are tested; the second meaning is configured based on the material notion of proof, for example, the material used to elucidate a crime, “the proof of the crime” (Corrêa & Dias, 2016). In general, in the field of contemporary sociological pragmatism, the test situation is constituted of moments in which the entities and forces present are qualified, as well as their relationships being reexamined and often reestablished. There are, therefore, reconfigurations of the relationships between past series and openings for the future. In these situations, the products of the intensifications of the critical tensions can be expressed, which were previously ignored or contained in the practical activities (Chateauraynaud & Debaz, 2017).

In order to make clearer how we will operationalize the concept of test situations, we have developed Figure 1.



**Figure 1.** Test situation in organizations

Source: Elaborated by the authors based on Corrêa and Dias (2016, p. 81).

With Figure 1, we would like to demonstrate that a test situation always occurs in a situation of metastability and requires the existence of an acceptable fact in order to close it, so

that a momentary agreement is reached. These situations are not only constituted of conjunctures and pretensions, but also of bodies and materials whose properties are not self-evident (Chateauraynaud & Debaz, 2017; Chateauraynaud & Torny, 2011). Thus, if a test becomes acceptable in a particular situation, this agreement tends towards stability, represented by the organizational routines. Otherwise, the tendency is for instability, which can result in the rupture of the organizational form that exists at that moment. It is important for the reader to visualize the figure as a continuum.

The constitution of an acceptable test is a fundamental dimension for a dispute to cease, to interpret events, or constitute a minimum agreement about what is viable. With this, “given a requirement for truth, or for the minimum verification, the protagonists face the problem of the test, developing a practical epistemology adapted to the situations they find” (Chateauraynaud, 2011, pp. 251-252, our translation). From this perspective, we can talk about “factuality operators,” that is, of the “set of acts that people, groups, or institutions employ to establish the facts, elaborate the tests, and satisfy the needs for tangibility tests” (Chateauraynaud & Debaz, 2017, p. 603, our translation).

## Methodological approach

This study is of a qualitative nature and was operationalized using the ethnographic method. Cefai (2010) argues that the method is the object of misunderstandings concerning the lack of representativeness and little practical utility. Therefore, the author suggests a minimum definition for ethnography: a research approach related with prolonged observation of a particular means or situations. This method is linked to the procedures used to access the field, taking extensive notes and possible audio and/or video records of the sequences of events. The researcher’s experience is the main means of research, in which the field is constituted as a space in which the supports are present for conducting the research. Ethnography is characterized by some authors, such as Woods (1990) and Ardoino (1983), as more than a method: as a position of the researcher in relation to the research object and context. This position is qualified by Cefai (2010) as “ethnographic engagement.” In fact, the ethnographic *démarche* goes beyond technique, and its construction is made *in loco*, based on the meeting of and the relationship between the researcher and the research subject. Thus, ethnography establishes relationships that enable a better understanding of the complexity of certain social phenomena and it is a way via which the researcher enters into contact with those being researched and can share a horizon with them (Magnani, 2009).

The ethnographic research this study is based on was conducted in an urban full protection UC in the city of Florianópolis, in Santa Catarina. We formed part of a volunteer program in the organization. The observation involved monitoring the organizational practices, workshops, interorganizational actions, and visits to certain institutions together with the workers. This resulted in roughly 550 hours of participant observation (Spradley, 1980) recorded in a logbook that supported the construction of a field notebook, which was written up after the observations.

In addition to observation, semi-structured interviewees of an ethnographic nature were conducted (Spradley, 1979) with the UC’s workers and other actors involved in the actions of the organization, such as the president of the residents’ association of the neighboring community and

fishermen's leaderships that engage in extractivism nearby. While the monitoring of the actions and notetaking generated interpretations about the dynamic of the interactions and management of the organization, the interviews provided the verification and validation of these interpretations directly with the authors. With this, we were able to ensure that the data were triangulated, as well as checking the information.

During the organization of the data, we used the legislation – SNUC – as the basis for understanding the development of the organizational activities. Each one of the categories of UC presents corresponding objectives, which establishes some general benchmarks for the organizational actions. As an Ecological Station, the core objectives of the unit studied are to preserve nature and conduct scientific research. Based on these general aims, we started the field research.

For the data analysis, we focused primarily on observing the actions of the UC's workers, complemented by the interviews conducted, thus constituting the sources for identifying the modes of existence of the organization and management. This analytical procedure is consistent with the situational epistemology of pragmatism, as it gives preference to what emerges from the field research, instead of employing preconceived analysis models.

## Analyses

UCs are an organizational type aimed at conserving nature. They can present a diversity of objectives that are guided by their legal categories (Ministry of the Environment, 2000). In global terms, there is a perceivable concern about ensuring a certain level of uniformity in the categories adopted by various countries (Watson et al., 2014), especially because it is based on these that it is possible to verify the perspectives related to implementation (Geldmann et al., 2019) and effectiveness in relation to their objectives (Eklund & Cabeza, 2017). This multiscale and dimensional characteristic of the management of a UC leads us to questions that stimulate the present research. The variety of locally adopted models and values drove us to build an analysis that does not ignore this normative dimension. That is, we positioned ourselves based on the possibility of continually opening up questions and varieties of local experiences (Chateauraynaud & Debaz, 2017).

The subsequent analyses are based on identifying the coexistence of various regimes of action, whether matching or entering into conflict. Each mode of existence analyzed here is sustained by distinct conventional points of support that, in depth, work as references for the action (Dodier, 1993), since the management of protected areas appears to go against what common sense or even some lines of study in management sustain, that is, the idea that there is a set of sanctioned orders that are applied by the actors almost militarily. Protected areas are produced by a system that ensures the construction of metastable commitments, characterized as devices for regulating and conciliating particular interests with general ones. A protected area is, therefore, a structure of adjustment of interests that is supported by two core characteristics: normativity and regulation. It is supported by normativity because that system designates what should or should not be protected, and it determines specific powers for action. It is supported by regulation because it establishes specific processes for qualifying situations and adjusting interests, almost always problematically. Therefore, instead of figuring the representation of a



spokesperson organization with uniform and abstract legality, on the contrary there is the presence of multiple actors with various functions, who resolve their action dilemmas through dynamic alliances. These processes result in a “semi-legal” and “semi-material” rationality, exercising legalities linked to the variable geometry of the configurations of the local actors (Lascoumes, 1995, 2012).

The field notes indicate that, through their day-to-day actions, the workers draw on their histories and the construction of common meanings, and by doing this collectively, they ensure certain organizational performances that characterize and shape the modes of existence of the UC in the territory in which it is present. Therefore, the modes of existence can be considered as forms through which the UC exists in the territory or territories in which it acts. We adopted this perspective through verifying that there is not an identical reproduction of these forms of existence. Each organizational action is seen and should be analyzed individually. This concerns a multiple, singular, and always different process; in it, means and individuals relate to each other in a dialectic process (Bessy & Chateauraynaud, 2014; Simondon, 2012). However, from analyzing the data collected, we perceived that no matter how singular the modes of existence are, they present certain similar characteristics that repeat, and it is by using these that we will carry out the analyses.

In light of these considerations, the objects became an important source of information about the organizational actions, as part of the conventional supports that the subjects use to act (Dodier, 1993). Analyzed based on a longitudinal perspective with repetition of their employment, the objects were considered as components of the modes of existence. In this sense, as hybrid results of a multiplicity of technical records (Akrich, 2016) and acting in the test situations, they give them tangibility (Bessy & Chateauraynaud, 2014).

These considerations enable an investigation of the nature conservation carried out on-site (Watson et al., 2014), which raises questions about previous categorizations of the positions of the actors in specific situations. In our records, we verified that the same actor can either be seen as an ally of the causes considered by the UC, or as an element of instability and questioner of its very existence. By taking into account the relationships present in our research, we identified that the ecological station studied is presented in the territory via three modes of existence, namely: as an organization that promotes environmental education, as one that produces expertise, and as one that protects and inspects nature.

In each one of the modes of existence, we found frameworks of specific actions. As an organization for environmental education, the framework was shown to have a certain level of stability, that is, the actions developed have a greater probability of repeating, without requiring much from other sectors of the organization. As an organization for the production of expertise, the framework of action presented greater instability, greatly due to the complexity of the situations and the need to bring together various fields of knowledge regarding the same phenomenon. As an organization for protecting and inspecting nature, we found both types: the more stable actions can be exemplified by the protection programs, often guided by a previous action plan. The more unstable actions, in turn, were related with organizational responses to complaints, which require more work from the workers and swift organization.

Next, we will analyze each one of these modes of existence, considering them based on the characteristics that repeated during the investigations of this research and presented in the scientific literature.

### *Organization for environmental education*

Environmental education is an action that involves its own regulatory framework, the National Policy for Environmental Education (Law n. 9,795 of Abril 27<sup>th</sup> of 1999). The SNUC (Ministry of the Environment, 2000) determines that, at ecological stations, public visitation can occur when there is an educational objective, as well as highlighting the role of scientific research. Beyond the legal question, relationships with schools and education services are addressed in specific literature on UC management (MacKinnon & MacKinnon, 1986). During our research, we identified that environmental education was involved in the conducting of visits through explanations of the various sociobiological processes present. The content was adapted according to the objectives of the visit and the characteristics of the group of visitors.

When analyzing the field data, we perceived that environmental education actions are often used as operators of organizational legitimacy. One representative situation occurred with the elaboration of a management report with data on the year of the UC. In conversations with the worker, he portrayed the importance of presenting the quantity of visits received and research conducted. By resorting to the notion of test situation (Chateauraynaud & Debaz, 2017; Corrêa & Dias, 2016), we perceived that it was one element within the repertoire of possible justifications and, by extension, legitimacy.

Existing in the territory as an organization that promotes environmental education, we verified the constitution of various partnerships with teaching institutions, social organizations, and research institutes, which provides the character of acting in a network. A certain level of stability (Oliveira, 2015) is ensured, supported by actions based on management techniques. In light of this, we perceived, through our notes, a search to institutionalize and formalize partnerships in order to compose environmental education programs. These partnerships are developed at various levels, for example, through the training of teachers and internship and scientific initiative programs. These actions become more perennial as people from the external organizations constitute links with the UC's workers. As this concerns a theme with plans and standards in various dimensions, such as the local, regional, and even global ones, the UC as an organization that promotes environmental education works in order to bring together actors and causes. This institutional coordination requires bringing together the elements of organizational and environmental management (Eklund & Cabeza, 2017).

This mode of existence presents a certain level of stability, as it is developed through a flow of actions that does not involve employing other workers, besides those meant for that function. We also noted that there is a high level of autonomy among those responsible, who decide on the best ways to act. We perceived that the formation of networks is a strategy that is reinforced for the development of these activities. Our notes and interviews highlight that this formation forms part of the set of strategies in order to ensure a tendency for stability in test situations (Corrêa & Dias, 2016), that is, to ensure conditions for action and implementation (Geldmann et al., 2019), which are fundamental for overcoming the perspective of a "UC on paper" – an expression

employed by the actors to refer to units that only exist in legal terms, but without effective implementation actions. In light of this context, we identified the existence of a type of argumentative strategy that divulges the environmental education actions as one of the social utilities provided by the organization. These utilities compose a list of functions accessed in test situations (Chateauraynaud & Debaz, 2017; Corrêa & Dias, 2016), which often imply legitimization processes in the territory, supported by actions in a network with other organizations and collectives.

This mode of existence presents its performances in the territory, primarily through the workers and partners who act as conductors of the visits. In the field notebook we recorded visits by children, which caused a certain amount of chaos and noise in the office. Subsequently, in conversations with workers, they highlighted the importance of the profile for conducting such activities. In developing these actions, the UC performs as a pedagogical space that provides teaching and learning relationships regarding the importance of nature conservation. The materiality present in this configuration is primarily linked to nature itself, which is experienced at the time of the action. Moreover, the gear seized during the inspections and the materials of biological origin are employed in the form of pedagogical instruments. To exemplify, the nets, seized because they are used illegally, are used as elements to explain the functioning of predatory fishing, which does not respect the defense period for species. Materials of biological origin, in turn, found on the visitors' trails, were used to explain biological processes that occur in the mangrove forest, an ecosystem in which the UC is located.

### *Organization for the production of expertise*

This mode of existence is linked to the actors' ability to elaborate adequate devices – between the material and cognitive elements – in the course of their actions, reducing situations of doubt. Expertise enables the processes of judging and validating actions (Bessy & Chateauraynaud, 2014; Chateauraynaud & Debaz, 2017). By adopting this theoretical perspective concerning our object of study, we verified that the UC produces elements that are used in the test situations in order to reduce doubts and steer agreements.

During our participant observation, we monitored the production of scientific articles, technical reports, and pedagogical and informative materials. These documents are not only used internally, but they reverberate and are employed in a large variety of situations and organizations. This is therefore configured as a way in which the UC carries out the communication process with various publics (MacKinnon & MacKinnon, 1986).

We perceived that this characteristic is not only linked to the UC as an organization, but that the workers, in turn, also figure as qualified to “speak on behalf of the environment.” We identified that this status is fundamentally guaranteed as a result of the professional engagement – with the UC – of those subjects. However, it warrants mentioning that this capacity may be questioned, more so in the conflicting relationships. In these cases, we noted that perspectives such as that of the birth of the territory and time working in it were mobilized.

According to our systematization of the data, we can conclude that the UC acts in the production of documents that are configured as elements of expertise. They usually result from various motives, which can be categorized in three ways: scientific, legal, and social. A scientific

document emerges as the UC presents research programs, whether conducted by the analysts themselves or by partner organizations. The protected area thus becomes an empirical field for different studies carried out by universities and other related institutions. It is possible to verify, on the UC's social media page, the sharing of scientific articles and other documents produced in these circumstances. A legal document is often the product of the agency of the legal area (lawsuits, petitions, denouncements, reports, etc.). Such agency can require or even oblige the expression of a technical position via the UC. In the field notebook we noted situations in which the group of workers met to build shared arguments in order to support documents of this type, based on each one's areas of training. Finally, a document emerges through social agencies, when certain collectives require reports to address causes that are in some way linked to the environmental question. In these situations, one point that stands out is that, potentially, even without the legal obligation of a public position from the UC, social pressure can influence the decision to issue that position. Some of our notes cover pressures originating from social media.

The technical documents therefore enable the building of arguments and discussions in the public arena in a context of multiplicity of professional training. The studies on UC management indicate this context of a variety of know-how (Eklund & Cabeza, 2017; Joppa et al., 2016; MacKinnon & MacKinnon, 1986; Watson et al., 2014). Thus, one of the fundamental characteristics of the production of expertise is that the argumentative logics processed in the documents are understood by the various professional configurations. This means a set of data and concepts shared among the actors, providing the formulation of current interpretations, which will be addressed as "calculation space" (Bessy & Chateauraynaud, 2014; Chateauraynaud, 2011; Chateauraynaud & Debaz, 2017). One element that enables exemplification of calculation space is the Degraded Area Recovery Plan (PRAD), requested in cases of licensing activities involving potential environmental degradation or after administrative punishment for causing environmental degradation. In this document, there occurs the technical expression of a set of actors with a variety of training and from different organizations. Therefore, in a PRAD, the understanding of the arguments occurs through the shared calculation space.

We should emphasize that the expertise processes are not the exclusive result of intellectual work – there is a whole materiality that relates with the subjects' sensorial aspects. We can signal the link with nature, that is, the sensorial contact with the environment, which is fundamental for those workers to carry out their professional activities. In order to guarantee that these sensorial aspects gain common horizons, we identified technical supports (Akrich, 2016; Dodier, 1993) for the actions. Our notes indicate the employment of technical objects such as photographic, geolocation, georeferencing equipment etc. that ultimately aims to guarantee standards for the actions and arguments. The latter are mostly the result of collective work, developed in meetings between the various workers. We identified situations in which there was the presence of members from outside the UC – experts – who contributed by arguing in the sense of establishing agreements regarding the horizons assumed by the UC in the documents.

By becoming public and open to scrutiny by various social actors, the documents are pieces of the test situations (Corrêa & Dias, 2016), and they themselves can be put to the test. Thus, there is the implicit need to sustain these technical documents produced by the analysts; which means that there is horizontalized work, combining analysts from different professional fields. In

light of this, the technical documents are hybrids, that is, they provide technical records derived from various fields of knowledge (Akrich, 2016).

Communication as a fundamental element of the development and legitimacy of protected areas (MacKinnon & MacKinnon, 1986) occurred, in the case studied, through the traditional media (newspapers), social media, and public events. Especially regarding the latter, the head of the UC was the person who represented the organization and, for that reason, presented the technical positions built through the organization's expertise processes. We identified that this question occurred this way largely because of the role of leader that the worker occupied, with a paid salary and greater legal and bureaucratic responsibilities.

Another phenomenon that we identified from the technical documents is the attributed notions of responsibility (Chateauraynaud & Torny, 2011), which we differentiated into three: presence and attention, contractual, and questioning, as it concerns the formalization of the UC's position in the territory and, therefore, a form of engagement of the organization. The acts of presence and attention, which occur simultaneously, understand the document as a way for the UC to show its presence in the territory and draw attention to a phenomenon that is potentially damaging to the environment. Moreover, the contractual notion shows a sort of organizational obligation on the part of the UC, as it is part of its creation objective. The third notion, of responsibility, relates to the possibility of questioning the policy or the management adopted by some organization through the document.

Up until here we have presented how technical documents, as acts of expertise, perform various forms of action of the UC in the territory, especially as they can be characterized in the future as instruments of investigation. For example, if the technical document has been overlooked for any reason by the competent authorities, and in the future the activity or venture presents problems for society, it is possible that those responsible will be investigated for malfeasance, as the technical document previously recorded the fact (Chateauraynaud & Torny, 2011).

Our data indicate that the creation of expertise about the territory by the UC is developed through actions by the organization itself or in partnership with external ones. In this context, laboratories and research centers contribute to create "good devices" (Bessy & Chateauraynaud, 2014), which support the organization with arguments and elements for the construction of its positions. Besides these formal organizational structures, other organizations are generators of knowledge about the territory, such as collectives for environmental causes, traditional communities, and small-scale fishermen. In this sense, sociotechnical networks are composed of technical equipment, institutions, non-humans, and humans that come together and interact under agencies promoted by the management activities.

In terms of day-to-day and administrative actions, the generation of expertise can be analyzed at two points in time: the first is in the field trips; and the other is during the building and formalization of the documents. We identified that, in the field trips, the analysts collect a variety of data – photographs, videos, biological material samples etc. – that will constitute the argumentative line employed in the elaboration of the documents. The process of developing and formalizing the documents, in turn, is carried out after the meetings in which the technical horizons are defined for supporting the positions assumed by the protected area. These moments

make the organization focus on those actions. For this, there is the agency of most of the workers and a variety of technical equipment, mobile structures (vehicles, boats, among others), and static structures (installations and laboratories etc.). The work is commonly done in a horizontalized way, and the organizational resources are employed as required by the situations. In this dynamic, the coordination of these activities, that is, the management, is carried out in way that employs the resources and workers (with their specific knowledge) according to the contingencies of each situation. For example, an environmental analyst specialized in chemical analyses will be employed at the time of needing to produce that knowledge, together with the structure that is available in the protected area and/or in the network of organizations with which it interacts.

In summary, the generation of expertise is not a process carried out in a structured way that repeats in patterns, which leads us to consider the framework of this type of action as heterogeneous and even unstable. Our argument for this interpretation is due to the finding of uncertainty around the situations, since the expertise is the result of different agencies of nature itself (such as environmental alterations that become objects of controversies), including here the social actors that compose the scenario in which the UC acts.

### *Organization for the protection and inspection of nature*

Inspection and protection of nature is an intrinsic characteristic of the organizational existence of UCs. The whole legal-regulatory framework points in this direction, for example, Law n. 9,605, of February 12<sup>th</sup> of 1998, which addresses the criminal and administrative sanctions resulting from behavior and activities that are damaging to the environment; the National System of Conservation Units (Ministry of the Environment, 2000); and Decree n. 6,514, of July 22<sup>nd</sup> of 2008, which discusses infractions and administrative sanctions for the environment, establishing a federal administrative process for determining sanctions.

This framework gives policing power to the ICMBio in UC areas and their surroundings. This means the organization acts as a form of watch in the territory, in order to ensure on-site conservation. As we already showed, although there are various discussions about the topic, on-site conservation is analyzed positively (Watson et al., 2014), providing the necessary conditions are ensured for its implementation, which should enable discussions regarding effectiveness (Geldmann et al., 2019). Given the history of Brazilian environmental policy (Drummond & Barros-Plataiu, 2006) and, more specifically, of UCs (Drummond et al., 2010), policing power is quite an important and core factor for this organizational type.

The systematization of our notes shows that the use of arms, one of the factors that compose policing power, is an element of organizational identity and even controversies. We should highlight that our research was conducted at a UC located in an urban area, and this contributes to the ostensive use of arms being questioned. Besides this question, whether the protected area is full protection or sustainable use is also an important element to be discussed. In general, we identified that what the group of workers understand to be the purpose of the organization is a fundamental element for the stabilization of its mode of existence; always taking into account that we analyzed a metastable field (Oliveira, 2015; Roux, 2004), which means perceiving that, depending on the configurations, the resolution performed can alter. We perceived that this diversity is warranted by the multiplicity of representations regarding what

constitutes the function and purpose of the protected area. In ontological terms, these performances are supported by particular references that can produce different grammars of action.

A core factor that stands out is conflict. We understood that this centrality is due to the complexity of the regulatory and intervention functions carried out by this organizational type. Our notes infer that conflict is part of the organizational day-to-day and plays an essential role in the structure of the relationships that exist between the actors and the protected area. Therefore, conflict is a producer of relationships, knowledge, and representations. Several UCs are surrounded by the historical mark of conflicts related to ownership interests and use of their natural resources, for example. In this research, we observed strong real estate speculation, as the protected area is located in one of the most important cities in the country and, more specifically, in a region of luxury condominiums. This creates pressures originating from interest for investments with a high and attractive expected return, a situation that makes managing the unit even more challenging.

We perceived that, when planning a particular action, the workers are influenced by the previously experienced conflicts, which means they reflect on the possible situations to be faced. The data analyzed indicate a macroinstitutional effort of the ICMBio with the aim of homogenizing the behaviors of UCs in the territories. For example, during the participant observation, a meeting occurred between the heads of UCs, attorneys from the institute, and regional coordinators to discuss the procedures for judging infraction notices. However, we verified that various situational aspects have an influence in the sense of making them highly unique, thus engendering various forms of coordination that are highlighted in modes of existence. As a result, the spaces of discretionary power, as well as the margins for maneuver, are sensitively present in the carrying out of actions.

## Concluding remarks

We will begin the concluding remarks of this paper by highlighting the unfortunate and unacceptable gap in the studies in administration regarding UC management, especially in Brazil. The importance of conducting such studies is linked to the sheer magnitude of protected areas in a country such as Brazil, since if we add up the extension of these areas, we would have, for example, a territory bigger than many European countries. This continental dimension is administered through public policy instruments that interrelate several levels of power, multiple forms of engagement, and various actors. This scenario means it is necessary to reflect on their management based on different theoretical-epistemological matrices, which help in understanding the phenomena linked to the forms of protecting and conserving nature.

Using a pragmatist epistemology as its basis, this study presents as its core perspective the concern about contributing to understanding the "*mise en oeuvre*" of public policies fundamentally based on action, by understanding that administration is an applied social science, and considering the managers and other members of UCs (practitioners) as core actors. In a second dimension, this study forms part of the sphere of concerns that emerge concerning the concept of Anthropocene and, consequently, the position of researchers in administration in relation to the complexification of the environmental problem: increasingly hybrid, composed of

heterogeneous phenomena, with various spokespeople and protagonists that interact with organizations (of varying structures) mixing discursive, material, and axiological plans under never-before-seen forms.

Finally, we highlight the significant complexity of managing a UC, amplified by the economic and political conflicts of interest that are almost always present in their surroundings, as well as by the permanent condition of scarcity of human, material, and organizational resources that their managers face, as found in the course of the field work. We thus perceive the enormous challenges linked to UC management in Brazil, and the scientific field of administration can no longer remain ommissive and unconcerned about these challenges. Within this context, we believe that studies like the one we present here can contribute to improving the organizational practices, highlighting these organizations and the different related actors in spaces of scientific, political, and action-related discussion related to the great questions of our time.

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The authors declare there are no conflicts of interests.

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