Dialogical Forest Stewardship

Júlia Benfica Senra [I]
Marcos Sorrentino [II]

Abstract: The relation between people and forests contains paradoxes as well as problems. Thus, it requires a complex approach to both forest management and governance. From the investigation of notions about dialogue, we came to the conceptualization of this as an event arising from the encounter between different beings who, by being willing and open, allowed the mixing of their experiences, admired their functioning, adapted responsibly based on the unexpected, and elaborated a new state. Due to its affinity with the functioning of complex adaptive systems, which characterize forests, an approach to dialogical forest management is proposed.

Keywords: Forest; forest governance; forest management; dialogue; dialogic; complex adaptive systems; complexity

[I] *Universidade de São Paulo, Piracicaba, SP, Brazil*

[II] *Universidade de São Paulo, Piracicaba, SP, Brazil*

Introduction

The relation between people and forests has been treated as a problem to be solved. In this dynamic, the forest ecosystem is merely the object to be analyzed. However, when we reflect on this millennia-old and vital relation, which has undergone profound changes in recent centuries, we are faced with a paradox. Therefore, a different approach is needed to deal with it.

For the known forest problems, such as fires or various pathologies, there are procedures to solve them. However, when dealing with the contradiction between forest preservation and the dispute over land for exploitation, urban soil, industrialization or large plantations, there is no solution. Thus, paradoxes can only be dissolved, and this happens when their nullity and absurdity are seen, felt, and understood (BOHM, 2005).

Dissolution is seen as a possible permeability of contradictions, rather than becoming insurmountable walls that prevent common understanding. When subjects are present in a dialogue, it is possible to perceive the needs and differences at stake, and thus build a shared understanding for decision-making.

Contradictions and conflicts are inherent to dialogue. Conflicts arise from a lack of agreement on common objectives related to social and political needs, economic organization, and relationships with oneself and others (CLARK, 2022). The contradiction between opposing conflicts constitutes the engine of the evolution of thoughts and facts, allowing for the emergence of something that is not yet (BRANCO, 1999).

Thus, to manage a forest, it is necessary to consider the inherent contradictions of the process. The forest is a composite being, a complex ecosystem, constituted as a community. It is not reducible to parts and adapts and incorporates the different through relationships that allow multiple dynamic *equilibria* and *disequilibria*, being, therefore, a dialogical being. Understanding dialogism as communication through language, trees in a forest communicate through olfactory, visual, electrical, and sound means (WOHLLEBEN, 2017).

Forest ecosystems make up about 31% of the Earth's surface. The loss of these ecosystems has been growing alarmingly since the 1990s, with degradation and deforestation being the main causes of biodiversity loss. Brazil has about 497 million hectares of forests (the total size of the country is 850 million hectares), which corresponds to 12% of the global percentage. Being the second country with the largest forested area in the world. However, 1.853 million hectares were deforested in 2020 alone, with a 14% increase in the deforested area compared to the previous year (AZEVEDO et al., 2021).

Therefore, we can perceive both the relevance of forests for the constitution of our planet and the importance of Brazil for their permanence. However, this has been neglected in decision-making at the national and international levels. The consequences of accelerated and large-scale deforestation are compromising our existence as a species, as well as the continuity of other companion species.

We live in a time in human history where science has advanced over the years, collecting, working with, and contributing a large amount of information and solutions to

many problems. However, there is a disconnect between much of the available knowledge and the political actions of society as a whole. In addition, fragmented thinking, uncritical processes, denials of planetary reality, and distorted views of how life works prevail in many spaces. Therefore, amidst so many crises, such as the ecological and climate crises, a new paradigm of science that encompasses the sustainability of life is necessary.

The fact that the etymology of the word 'forest' comes from the Latin 'forense' (NASCENTES, 1955) - which means 'outside' - already presupposes a relationship of alterity that is very relevant to dialogical study. We are not witnessing only a lack of information, but communication difficulties and different societal projects in conflict.

The proposal of dialogue, and its construction, is fundamental for the possibility of creativity and innovation in different areas of knowledge and political action. When applied to the forest context, in forest forums or other spaces, it can bring new ideas and reflections capable of promoting transformations and including other knowledge.

Dialogue

The recognition that forests are threatened and degraded underscores the urgency for communication and action arising from a dialogical approach to forests. Thus, democratic and cooperative spaces are necessary and require a commitment to 'doing something together'—one of the meanings of 'to communicate' (BOHM, 2005).

The attempt to elucidate the notion of dialogue stems from the intention of avoiding possible destruction caused by misunderstandings about the use of the word and, at the same time, to differentiate the essence of change, novelty, and encounter, ignored in other uses. However, it also stems from a symbolic dispute over the meaning of the word 'dialogue,' which contains the ideas of 'between' and 'communication'.

It can be observed that the same word can have different conceptualizations. Buber categorizes the uses of the word "dialogue" into three: technical dialogue, driven by the need for objective understanding; disguised monologue, where each individual speaks to themselves; and authentic or genuine dialogue, which, whether spoken or silent, contemplates the presence of the other and their way of being (BUBER, 2014).

We have witnessed the first two abundantly, even in spaces dedicated to discussing sustainability and environmental issues. Perhaps it is precisely the 'genuine' that could guide us along paths where there is a vibrant reciprocity among the diversity of beings?

These three types of dialogue can also be interpreted as, respectively: a deposit of one subject's ideas into another, or an exchange of consumable ideas; a polemical discussion without a commitment to the search for truth, but with the imposition of truths; and an existential demand, a path to gaining meanings, a solidary encounter between reflection and action for the transformation of the world (FREIRE, 1987).

Every mode of interaction and communication has its own purpose and possibilities. Genuine dialogue, henceforth simply referred to as dialogue, is necessary and possible when there is a willingness and availability for it and when there is a need to construct

meanings. It is seen as a natural capacity of human beings (GADAMER, 2002) and expresses acceptance and appreciation of alterity. In such a way that the essential difference and independence of each subjectivity remain and are preserved (BUBER, 2014; BUBER; FRIEDMAN, 1965).

The experience of dialogical encounter and its integration into the life of those who participate in it can be seen with at least two purposes: the understanding of consciousness in itself and the investigation of the problematic of relationships and communications (BOHM, 2005). The suspension of presuppositions is a primordial part to achieve such purposes.

By suspending assumptions - prior suppositions - it is possible to observe them instead of identifying with them. In this way, one neither represses nor feeds them, giving them full attention and enabling the perception of things that would not be perceived if they were put into practice (BOHM, 2005).

These assumptions need to be interrupted to allow for reciprocity among the differently equal and acceptance of subjectivities – what one is in the present (BUBER; FRIEDMAN, 1965); and subsequent confirmation of subjectivities – all of their potential, their 'becoming' (FREIRE, 1987).

Attempts to promote dialogue can be highly frustrating (BOHM, 2005), as dealing with multiple opinions generates frustration and anxiety. Moreover, in a dyad or group, attitudes of self-assertion, domination, restraint, and fear are present and cannot be ignored.

Even though it is important to pay attention to what favors the occurrence of dialogue and its own characteristics of occurrence, it is also necessary to pay attention to the obstacles to dialogue. For, between the 'Thou' that gives and the 'I' that accepts, there should be no obstruction (BUBER; ZUBEN, 2017).

Some of the obstacles would be: defensive posture, enslaving appearance, insufficient and inadequate perception, agenda, distractions, lack of faith in the power to do and transform, indirect contact, insincere speech, imposition and indifference (BOHM, 2005; BUBER, 2014; BUBER; FRIEDMAN, 1965; FREIRE, 1987).

Therefore, it is of great value to debunk the notion that dialogue is a panacea. Many people resort to it by idealizing a situation capable of solving all the world's problems. Firstly, as mentioned previously, dialogue is an attitude beyond problem-solving, also enabling the unveiling of paradoxes and, moreover, being a unique occurrence in the intersubjective relationship. Secondly, it does not impose itself; it is an invitation to enter into a situation that is becoming closer. Being limited and a constant search and construction.

To establish a dialogic union, four competencies are essential: communicative intentions (or openness), shared attention (or self-organization), continued experience of perspectives (or heterogeneity), and the ability to construct and share tension (or uncertainty) (MARKOVÁ, 2017).

While dialogue is not a panacea, openness is a prerequisite for its occurrence. Bohm (2005) identifies several events that can foster such openness: problems, surprises,

contradictions, and something not working.

If we start from the basic condition of relational existence, we should question: what negates and obstructs it? If we are dialogical beings, relating to ourselves, to other beings, and to the entire world, what prevents dialogue from happening? Would social structures be constructed for anti-dialogue? Would the hegemonic way of thinking itself be an anti-dialogical structure?

Dialogue is an event arising from the encounter between diverse beings who, through their willingness and openness, have allowed their experiences to intertwine, admired each other's functioning, responsibly adapted to the unexpected, and elaborated a new state. The dialogical approach, enabling dialogue to occur, is a way of revealing the 'between'.

Complexity

The sphere of manifestation of dialogue is embedded in complexity. New scientific discoveries, stemming from thermodynamics and quantum mechanics, have already introduced the notions of disorder, chance, unpredictability, and uncertainty into the universe – both micro and macro (MORIN, 2015a).

Furthermore, chaos theories teach us that it is impossible to know with perfect precision all the interactions of a system, especially when that system is very complex (MORIN, 2015a). Thus, if the forest is a complex being and human beings are too, would not complex thinking be the way to return to dialogism?

Precisely because of the need to understand interrelationships, in contrast to, and in complementarity with, reductionist science, complexity exists. It aims to operate at the limits of another type of thinking, considering the parts within a larger context, at multiple scales of organization, as well as including variability, diversity, continuous change, adaptation, unpredictability, and responses to changes in external conditions (MESSIER; PUETTMANN; COATES, 2013).

As mentioned, there is a conception of dialogue as a meaning that traverses through language. Language, like other complex natural systems, follows the principles of complex adaptive systems, where patterns are dynamic and derived from interactions, interferences cause changes, and there is a search for coherence without linearity, leading to unpredictable emergences. Language can be considered a complex adaptive system that emerges through local interactions between participating agents (LEE, 2003).

The movement of a dialogical process is recursive, with unexpected dynamic deviations (BOHM, 2005). It aligns with both forest and social processes. It is from the unexpected that surprise arises (MORIN, 2002), and it is this surprise that allows for the necessary openness to creative potential and the arrival of the new. The dialogical process is a free flow of meanings between participants, capable of developing shared meanings and undergoing constant transformation. Dialogical potency tells us, then, that not only can relations transform but also the very consciousness that originates them (BOHM, 2005).

When linking these concepts to forest management, it is necessary to incorporate the unexpected into considerations and decisions. This calls for a truly precautionary approach to forest planning. For what can be ordered from the observations of a fragmented science represents only an objectified portion of the forest.

What would then remain for us to manage a forest? To observe, contemplate, and develop an intimate knowledge of it. To listen to it, interpret it, and understand it. It is a complex system (FILOTAS et al., 2014), and therefore, unpredictable. Just like cultural processes (MOURA; GALAN; MACHADO, 2019).

Forest object

An objectified forest is part of the world of the 'It', which is integral to human existence, as only the 'It' can be ordered. Thus, a relationship is established. This attitude towards it is objectifying and founded on experience and use. The contact established is with a manipulable object (BUBER; ZUBEN, 2017). For this reason, to enjoy the goods provided by forests, one resorts to the relationship that allows for the optimization of processes for its use.

Consequently, modern scientific ordering of nature requires the repression, observation, and utilization of the forest to feed its realm of causality (BUBER; ZUBEN, 2017). For instance, the current denominations of natural and forest resources, and ecosystem services inherently contain the dominion of the 'It', as they carry the connotation of something to be enjoyed.

The exclusive 'I-It' relationship, which enables the measurement of environmental costs and the valuation of natural resources in an objective and quantitative manner, is insufficient and unsustainable. It is necessary to include a relation capable of encompassing intrinsic, ecological, cultural, and communal values, as well as other social interests in relation to forests (LEFF, 2009).

Distance, predominant in positivist science, is the presupposition for the relation, preceding stances towards the world. The 'I-It' intention widens and deepens distance, and therefore the objectification of the other, which can paradoxically, at times, become a path back to the relation between subjects or obstruct the return. This increase in distance leads us to consider other beings solely as observable and exploitable objects (BUBER; FRIEDMAN, 1965).

To contemplate the historical use of forests would be impossible without a stabilizing element that established an organization. On the other hand, if we remain solely within order, there is no innovation, creation, or evolution (MORIN, 2015b). Within Western thought, from Romanticism onwards, nature has also been seen beyond the order of a decorative element, and its disorder in properties as substance, as well as its beneficial influence on human beings, has been recognized (BRANCO, 1999).

An environmental ethic that helps us deal with the complementarity of the object-subject relationship with the forest aims to show that exclusively human-centered goals are unable to justify environmental policies. Thus, the intrinsic value of natural entities

can be used to limit or map the appropriate scope of instrumental values. A plurality of practical values, such as diversity and beauty, contributes to the proper functioning of an ecosystem (KATZ, 1997).

It is necessary to confront a subjectivity, in the flow of reciprocal action, so that conflicts arising from the encounter and their creative syntheses from differences occur. Human beings cannot live without the 'It', distance provides this situation, but those who live only in this posture are not human (BUBER; FRIEDMAN, 1965; BUBER; ZUBEN, 2017).

The possibility of the forest as a subject goes through the idea that incompleteness without awareness of it engenders training and cultivation (FREIRE, 1995). Thus, would not the lack of awareness of the incompleteness of a forest ecosystem be in the human mind molded by the modern Western paradigm?

Forest subject

When another is referred to as a forest, earth-forest, mother-earth, one can recognize their essential otherness, insofar as this other remains irreducible to an object susceptible to determinations and experimentations. In the world of the 'Thou', there is presence, reciprocity, totality, immediacy, fugacity, subjectification, and incoherence in space and time (BUBER; ZUBEN, 2017).

A 'Thou Forest' is a totality beyond its parts, much like a melody cannot be fully understood by analyzing its individual notes, or a poem by examining its individual words. The unity of such a forest cannot be broken down into a mere collection of parts without resorting to fragmentation or dissection (BUBER; ZUBEN, 2017).

Recent studies have contradicted the long-held belief in Western society that plants cannot react to our actions upon them, and thus cannot reciprocate (BUBER; ZUBEN, 2017). As plants are capable of understanding themselves and their environment, communicating with each other and translating information into movements, as well as recognizing other organisms such as bacteria, fungi, and animals, including humans (MANCUSO; VOLKMANN, 2006).

All existing life occurs in the encounter and, consequently, in the confrontation with another living and active being. It is by bumping into this independent and opposite being that a world exists (BUBER; FRIEDMAN, 1965; BUBER; ZUBEN, 2017). Therefore, the more diversity in contact, the more universes can emerge, as well as limits and conflicts.

It can already be stated that the forest is a complex adaptive system. Being a dynamic and non-linear system, with complex properties, transient dynamics, and uncertainty about its future behavior (MESSIER; PUETTMANN; COATES, 2013), it leads us to characterize it not only as an object to be analyzed but also as a subject to be understood.

How could a forest be a subject, a 'Thou'? Its subjectivity emerges when self-organization, individuality, autonomy, complexity, uncertainty, and ambiguity become its own characteristics (MORIN, 2015b).

A subject exhibits a behavior, a way of acting; similarly, a forest behaves as a complex adaptive system. Systems theory provides foundational concepts such as interaction, which implies reciprocity and modification; wholeness, where the whole is not reducible to its parts and allows for the emergence of qualities; organization, which arranges relations and generates a new unity; and complexity, which involves a variety of relations and components (BRANCO, 1999).

Recognizing forests as complex systems allows us to accept that they can adapt and self-organize in response to new conditions created by human actions, according to the characteristics of Table 1. However, it is important to note that a forest's ability to adapt and persist as such is contingent upon environmental conditions necessary for its resilience. Exceeding the so-called "tipping point" compromises these characteristics and can lead to an ecosystem shift.

Table 1 – Characteristics of the forest as a complex adaptive system.

Complex adaptive system	Forest
Openness	Affected by the outside world
Diversity	Diversity influences functioning and response
Structure	Elements interact at different scales and levels
Memory	Influence of what was there and what was done there
Self-organization	Seeks to be more efficient in processing energy
Uncertainty	Multiple possible futures
Emergency	Unexpected answers
Adaptation	Maintains desired services including disturbances in a dynamic and changeable manner

Font: adapted by the authors (FILOTAS et al., 2014; MESSIER; PUETTMANN; COATES, 2013).

Our current understanding of forests has been strongly influenced by previous research using reductionist approaches to describe them, and much can be gained by viewing forests as complex adaptive systems (MESSIER; PUETTMANN; COATES, 2013).

The transition and intercalation of objectified 'I-It' relationships with the forest to subjective 'I-Thou' relation are fundamental for the maintenance of healthy forests. This is particularly crucial for the continued existence of the human species, which is interdependent on forest ecosystems.

Some cultures not considered Western due to their lifestyles can be interpreted as

precursors to the 'I-Thou' relation with forests. An example can be given by the cosmology of the Yanomami people. If we look at their descriptions of the forest, we can translate them into the vocabulary of complex adaptive systems. As Kopenawa and Albert (2019) state, the forest is alive, and that is where its beauty comes from.

When it is mentioned that the forest is a being that laments, feels pain, groans, cries, and breathes, we can interpret this as the complex characteristic of openness. When seen as possessing a spirit and skin, we can identify its heterogeneity. Likewise, when it is mentioned that the forest is cared for, its alterity is recognized, and thus its diversity. The fertile humidity and respect for animals indicate the structure present in interrelations. When it is mentioned that cleared land loses the perfume of the forest, the memory of the place is recognized. The fear that the beings inhabiting the forest have of being eliminated by the immensity and instability of the sky characterizes uncertainty. The work of the forest spirits to prevent the forest from returning to chaos portrays its self-organization. The value of active fertility reveals the possibility of new emergences. Likewise, when it is said that the forest always renews itself, adaptation is recognized (KOPENAWA, DAVI; ALBERT, 2019).

Indigenous peoples are recognized as guardians and managers of forests. The interpretation of their relationship with this ecosystem as complex can be a clue for scientists on how to research it, and to incorporate into their technical recommendations more appropriate ways to manage it.

Just as the 'I-Thou' relation is interdependent on the 'I-It' relationship, we can consider complex science interdependent on reductionist science. Consequently, we must expand our understanding of the relation between people and forests in an alternating manner so that we can achieve a dialogical forest management capable of responding to present and future challenges.

Considering the forest also as a 'Thou' in forest management is an applied approach derived from ethics. When we talk about an ethical and scientific forest management, which intersperses an objective and subjective view of the forest, we need to base ourselves on the duty of environmental preservation simply because it is the *sine qua non* condition of human life on Earth, its guarantee of physical and emotional base, while at the same time, through knowledge of ecological processes, we avoid damage to the physical and biological connections of the natural world (KATZ, 1997).

In the face of these arguments, we encounter a conflict between long-term systemic support and short-term use of natural goods. Dialogue is a way to allow this conflict to emerge and to expand interpretation beyond an anthropocentric and instrumental rational.

Thus, to shift the management perspective from a regulatory to an emancipatory one, we need to include the intrinsic value of more-than-human beings and the values attributed by other humans. This entails moral duties towards the natural environment, such as the preservation of ecosystems for their own sake. Our obligations will be directed towards all environments and their inhabitants and not merely towards costs, benefits, and equity for humans and their institutions. This creates a more complex situation for deliberations and resolutions, but we only act morally when we resist our habitual incli-

Ambiente Soc • São Paulo. Vol. 27, 2024 • Original Article

9 de 20

nations (KATZ, 1997).

The dilemma of producing and preserving simultaneously relates to justice in terms of human benefits. On the one hand, benefits such as biodiversity and reduced carbon dioxide emissions are sought; on the other hand, the increase of wealth. In this case, we are trying to decide which instrumental value is greater or more just. When we include the intrinsic value of the forest and its due respect in this equation, such a dilemma may begin to dissolve (KATZ, 1997).

The urgency of dialogical spaces as a strategy to address the environmental crisis we are facing stems from their ability to clarify the meanings and implications of our basic ideals concerning the natural world. Prior to this, it is a crisis of moral values in relation to nature (KATZ, 1997).

The possibility of examining underlying assumptions allows for the observation of fundamental beliefs about the relation between people and forests. This is the first step towards constructing better solutions and dissolutions for current problems and paradoxes.

The relationship between Dialogue and Complex Adaptive System

A complex approach that may be able to mediate the relation between people and forests as an economic-political articulator in forest management tends to be dialogical. The characteristics of complex adaptive systems are seen as mirrors of dialogical characteristics and allow for the subjectivization of the forest in the management dynamic.

Considering the exposed characteristics of complex adaptive systems, which forests share, dialogue is the joint manifestation of these characteristics (Table 2) and dialogic is the way to enable it. The entire and recurrent event that articulates the characteristics of a complex adaptive system can be called dialogue.

Table 2 – Relationship between dialogic characteristics and complex adaptive systems.

Complex adaptive system	Dialogue
Openness	Affectation; Disposition; Presence
Diversity	Otherness; Diversity of Subjects; Consideration
Structure	Interactions; Encounter; Different Social Roles; Responsibility
Memory	Experiences; Assumptions; Listening; Values; Observation
Self-organization	Spontaneity; No Agenda; Purpose
Uncertainty	Suspension of Assumptions; Contemplation
Emergency	Meaning Creation; Understanding
Adaptation	Conflicts; Transformation

Font: prepared by the authors, 2024.

The possibilities of life are infinite, just as those contained within seeds. However, the world has its limits, shaped by the forces that govern it, and therefore, of so many possibilities and seeds, only a few germinate when they encounter reality. From the dialogic relation between people and forests, we can find reality. A multiple and momentary reality that is shaped with each encounter, in the dance of dynamic imbalance.

This encounter with reality can be achieved through stewardship. Here, stewardship is understood with the dual meaning of management and governance. On the management side, we recall the origin of forest management with the implication of directing, controlling, and planning the use of forests for a specific purpose. With the utilitarian and anthropocentric ethical basis that it should be in such a way as to generate benefits for present and future humanity (KATZ, 1997).

Conversely, governance constitutes the process through which the ensemble of rules, norms, and strategies that govern behavior within a specific sphere of political interactions is constituted, implemented, interpreted, and reconstituted (MCGINNIS, 2011).

The challenge for dialogical management lies in recognizing that one purpose will remain an 'I-It' relationship, while simultaneously fostering an 'I-Thou' relation in which the forest is considered a complex subject with intrinsic value.

Dialogical forest stewardship

A dialogical forest stewardship envisions interconnections in both management and governance. It is an integrative approach that considers local, subjective, and linguistic conditions, as well as social, personal, and historical constraints (CARBAUGH, 2013, 2014). Therefore, the four interpretive dimensions—humanization of the fact, histori-

Ambiente Soc • São Paulo. Vol. 27, 2024 • Original Article

11 de 20

cal roots, context, prognoses and diagnoses (MEDINA, 2003)—may be a good way to understand a dialogical encounter.

Dialogic management and governance need to communicate with and beyond speech, including listening to nature, paying attention to the diversity of voices and communicative agents, such as more-than-human beings. It is more based on listening, in a contextualized way and includes non-verbal ways, and this process guides the appropriate subsequent actions. Also, in the integrity of each subject, in an empathic understanding of the other, an engagement for mutual benefit and a lasting commitment to future actions can happen (CARBAUGH, 2013, 2014).

The experiences brought by each participant in a dialogical encounter carry presuppositions that need to be attentively listened to in order to be observed. It is this memory that connects the past, with the shared present, and the possible futures.

Effective governance must stem from multiple perspectives. A shared purpose in dialogical governance and management enables each participant to develop a deep perspective through the sharing of goals, values, and life experiences. A representative thought of reality can be unveiled when an issue is viewed from a variety of perspectives and experiences (YANKELOVICH, 1999).

Self-organization, in both management and governance, can occur through an ability to monitor environmental conditions and initiate necessary changes to maintain a desired state or ensure that levels of a critical variable remain within acceptable limits. Feedback mechanisms and temporal adjustments are necessary to deal with internal and external pressures (YOUNG, 2017).

The dialogic characteristic of spontaneity facilitates the capacity for self-organization within an encounter as it is surrounded by the absence of agendas, while simultaneously guided by a shared purpose.

A dialogic space that deals with forestry issues through stakeholders seeks coexistence. When facing complex conservation issues, people tend to focus on 'natural' connections, avoiding social ones due to their political nature, and ignoring cultural connections as they are ideological and difficult to deal with (GAO; CLARK, 2023). However, to achieve the goal of preserved and productive forests, all these aspects need to be considered.

The suspension of presuppositions can allow for their contemplation, so that political and cultural aspects may also be considered. The resolution of the unpredictability and chaotic uncertainty inherent to the future resides in the capacity for making and fulfilling promises. (ARENDT, 2008). It is from the presence of others that the moral code of the faculty of promising is formed. The promise becomes a responsible commitment between the parties present.

For complex forest management, it is necessary to broaden the scope of evaluation, considering how practices affect all properties of complex adaptive systems. For example, by looking at multiple scales, interactions, non-linear responses, and planning for uncertainty. It is also necessary to include social and political issues. Moving away

from generic prescriptions and guidelines to the inclusion of practices that reflect local conditions (MESSIER; PUETTMANN; COATES, 2013).

The recognition that precise predictions of future forest states are impossible enables the development of management approaches to enhance forest resilience and adaptive capacity in uncertain times. This acknowledges that variability and uncertainty are the norm in forest ecosystem conditions and dynamics (FILOTAS et al., 2014).

When the forest is viewed as a complex adaptive system, it can be conceptualized as an open system with functions driven by social and ecological factors, transforming the dichotomy between economic and ecological perspectives into a duality (FILOTAS et al., 2014).

The starting point for the emergence of the 'between' in forest management is the transformation of the mind that operates primarily in a subject-object posture to include a subject-subject relation. This allows for a momentary adaptation according to the collective reality experienced.

To this end, the following indicators can be used to observe the 'embodiment of the dialogical word' (BUBER, 2014) in forest stewardship. Each indicator allows for the identification of what was experienced in dialogical terms during the encounter.

Considering a management space, if the indicators are revisited at the end of each meeting, they will likely be gradually incorporated into each participant's perceptions over the next meetings. This alone can generate a transformational process, which can both allow for more frequent dialogue and be the result of it, in a constant feedback loop.

The indicators are based on four dimensions. Since this is a management carried out by humans, the first dimension considers the spoken word composed of three categories based on the modes of being of language. The mode of potential possession refers to what has already been said, the language that can be included, and is linked to the dynamic facticity of language. The mode of actual occurrence refers to the word that is spoken, is related to the will to communicate, and is linked to the 'turning towards one another'. The mode of present continuation refers to everything that can be said, in a place of 'being-with-the-other' that is linked to the shared context (BUBER; FRIEDMAN, 1965).

A connection between the past, present, and future can be perceived. The continuum that shapes the possibilities of language is formed by the meanings received, which generate momentary communication and anchor the common 'becoming'.

The second dimension of the indicators pertains to the dialogical event and the phenomena that occur: psychic (within us), physical (with us), and singular (between us) (BUBER; FRIEDMAN, 1965). Each presence needs to become present to itself so that it can perceive, be treated, and treat the other as a subject (BUBER, 2014). In this dimension, we can extrapolate to the reflection of the socio-environmental relation articulated dialogically by the economy and politics.

The third dimension relates to perception: observing, contemplating, and becoming intimately acquainted (BUBER, 2014). Here, we find the postural decisions of each being that allow for distance and relationship, objectification and subjectification. These

are a prerequisite for the next dimension.

The fourth dimension refers to the dual movement of the principle of human life, in which the first is a prerequisite for the second. Generating a space for it to happen - without temporal succession. There are attitudes of distancing, to perceive alterity, and the relationship itself. The movements then share: reaction, mutual interaction, and cooperation (BUBER; FRIEDMAN, 1965). Allowing the duality of perceiving the forest as a unit, which I manage, and a totality, of which human beings are a part.

From the dimensions elucidated, it is possible to perceive the interconnection between language, articulation, posture, and movement necessary for a dialogical forest stewardship process (Table 3). It is possible to imagine a dialogical spectrum to assist in the interpretation of encounters in governance and management spaces, and to improve the characteristics necessary for dialogue to occur.

Table 3 – Parameters for observing the embodiment of the dialogic word.

Question	Spoken word	Phenomena	Perception	Movement
How would you characterize your presence at this encounter?	• It was (past mention) • It is (present mention) • May (future mention)	• In (you) • With (you) • Between (participants)	• I observe • I contemplate • I understand	• I react • I interact • I cooperate
How do you characterize the presence of the forest in this encounter?	• It was (past mention) • It is (present mention) • May (future mention)	• In (you) • With (you) • Between (you)	• I observe • I contemplate • I understand	• I react • I interact • I cooperate

Font: prepared by the authors, 2024.

Parameters for observing the embodiment of dialogic discourse can be addressed at the conclusion of an encounter. Through questioning, one can investigate the presence of each participant and the chosen forest in accordance with the shared purpose.

Other questions that can be posed to participants at the end of an encounter, related to its complex and dialogical characteristics, are:

- Openness – How open were you to being present and being affected?
- Diversity – How diverse was the group, and how was each alterity considered?
- Structure – Was there interaction in the encounter between the different social roles and consideration of the individual responsibilities involved?
- Memory – Was there space to listen to experiences, values, and other underlying assumptions?
- Self-organization – How did the processing of the agreed-upon purpose occur? Was it spontaneous?
- Uncertainty – How were assumptions suspended and considered?
- Emergence – What meanings were created together?
- Adaptation – Based on the conflicts, what transformed?

Final considerations

In forest management, planetary boundaries and the relationship with other beings must be on the agenda. Instead of the vision of endless growth and accumulation of capital, be it natural or monetary. The incorporation of ecological conditions into production processes is what enables the dissolution of socio-environmental externalities, from the establishment of real limits and potentialities (LEFF, 2009).

The new productive rationality required for sustainability must be based on ecological potential and other civilizational senses. A compass of sustainability in which the political economy is circumscribed by the limits of expansion that ensure the reproduction of ecological conditions. For sustainable forest production dependent on ecosystem regeneration, flexibility and malleability are necessary to deal with the uncertainties and adaptations required (LEFF, 2009).

Sustainability faces the challenge of considering local particularities and integrating differences with their incommensurability, relativity, and uncertainty. It requires a politics of difference, which goes through the ontological foundation of being and alterity. The transition process towards sustainability implies confronting distinct, and even opposite, values and interests (LEFF, 2009). It is not possible to exclude values from political decisions, lest we deceive ourselves (YANKELOVICH, 1999).

Dialogical approach as a complex approach to forest stewardship is a possibility to mobilize social participation in decision-making that affects the conditions of existence. In addition to triggering energy and creativity for a new economic-political culture with multiple productive organizations (LEFF, 2009).

For a new culture to emerge, it is necessary to understand the existing one. This can be seen as composed of a superficial part (conventions present in everyday events) and a deep, functional part (containing communication styles, notions, concepts, attitudes, approaches, and foundational questions) (CLARK, 2021). The investigation of cultural dimensions is inherent to the dialogical process.

The power of action, which emerges when one is affected, is something expected after a dialogical encounter. This is because the creation of shared meanings generates strength and adaptability to work together. The management space needs to accommodate the investigation of assumptions, including the identification of individual potential, talents, and abilities, and information from the surfacing of conflicts, in order to generate transformative political action (ALVES et al., 2010).

The environmental debate extensively discusses the survival of the human species. However, there is little talk about how human existence occurs within a collective, as a 'We' (BUBER; FRIEDMAN, 1965). True existence as a 'We' is not possible in an independent cosmos, but only in a constantly renewed relation with that which is against us. The occurrence of dialogue allows for the joint construction of shared meaning – a common world through language (BUBER; FRIEDMAN, 1965). Within this, lies the potential for other futures.

The shared world is constructed through shared discourse with meaning. Therefore, the importance of dialogue for the management of the common good and for good living is evident. It is up to each individual to become aware of the other, in such a way that they assume a behavior towards them. To consider them as a partner in a life event. Governance spaces are conducive to allowing the construction of a shared existence, to understand and build the world, for the basic structure of otherness is the public thing (*res publica*) (BUBER, 2014).

The role of dialogue as an economic-political articulator in forest stewardship is precisely to assist in the dissolution of paradoxes and the construction of paradigms. Dialogue about and with forests is an ethical-political stance to allow for planetary coexistence. Considering politics as relative to permanence (ARENDT, 2008), and therefore to sustainability.

Perhaps the reason for the antagonistic, rather than agonistic, stances in the conservation debate is the lack of explicitness of each person's theoretical premises when entering this sphere (BÜSCHER; FLETCHER, 2020), and this prevents dialogue from occurring. A dialogical space should be able to allow adversaries to expose, suspend, and observe their own and others' judgments, so that joint decisions can be made in favor of biodiversity, without avoiding fundamental questions.

Assumptions, when not observed collectively, generate misunderstandings and errors in collective judgments. The dialogical approach is a mode of communication that allows subjects to present them so that they can be effectively admired and confronted (YANKELOVICH, 1999).

The challenges are embedded with historical, political, social, and psychological traits (CLARK, 2021). By sharing words, gestures, indicators, and worldviews, it is possible to create hope and practical procedures to move forward together. The many dimensions of dialogue being a way to walk in diverse directions (CARBAUGH, 2017). In search of integration, coexistence, and ethics (CLARK, 2021).

However urgent the demands for solutions may be and however much one may believe in the importance of knowledge, wisdom goes beyond the information brought

by the data that nourishes knowledge; it adds values. Behaviors go beyond facts; it is necessary to combine them with perspectives on values (YANKELOVICH, 1999). Only then can we jointly deal with the challenges that life presents. Dialogue can be a way to manage wisely.

Acknowledgments

References

ALVES, D. M. G., ANDRADE, D. F, BARBOSA, C. R., BIASOLI, S. A., BIDINOTO, V. M., BRIANEZI, T., CARRARA, M., COATI, A. P, COSTA-PINTO, A. B., FERREIRA, L. E. C., LUCA, A. Q., MACHADO, J. T., NAVARRO, S. M., PORTUGAL, S., RAIMO, A. A., SACCONI, L. V., SIM, E. F. C., SORRENTINO, M. Em busca da sustentabilidade educadora ambientalista. **ambientalMENTEsustentable**, v. I, n. I, p. 7–35, 2010.

ARENDT, H. **A condição humana**. Rio de Janeiro: Forense Universitária, 2008.

AZEVEDO, T., ROSA, M. R., SHIMBO, J. Z., OLIVEIRA, M. G. de. **Relatório Anual Do Desmatamento No Brasil 2020**. São Paulo: [s.n.], 2021. Disponível em: <http://alerta.mapbiomas.org>.

BOHM, D. **Diálogo:** comunicação e redes de convivência. São Paulo: Palas Athena, 2005.

BRANCO, S. M. **Ecossistêmica:** uma abordagem integrada dos problemas do meio ambiente. São Paulo: Blucher, 1999.

BUBER, M. **Do diálogo e do dialógico**. São Paulo: Perspectiva, 2014.

BUBER, M.; FRIEDMAN, M. **The Knowledge of Man.** A Philosophy of the Interhuman. New York: Harper Torchbooks, 1965.

BUBER, M.; ZUBEN, N. A. VON. **Eu e tu**. 10. ed. São Paulo: Centauro, 2017.

BÜSCHER, B.; FLETCHER, R. **The Conservation Revolution:** Radical Ideas for Saving Nature beyond the Anthropocene. London; New York: Verso, 2020.

CARBAUGH, D. On Dialogue Studies. **Journal of Dialogue Studies**, v. 1, p. 9–28, 2013.

CARBAUGH, D. Response Essay: Environmental Voices Including Dialogue with Nature, within and beyond Language. In: **Voice and Environmental Communication**. New York: Palgrave Macmillan, 2014.

CARBAUGH, D. Three Dimensions for Reflective Dialogue. In: **Peacebuilding in a Fractious World:** On hoping against all hope. Eugene: Pickwick Publications, 2017. p. 17–29.

CLARK, S. An Inquiry into "Convention"as a Problem and what we Might do About it? **Global Journal of Science Frontier Research** (H), v. 22, n. 5, 2022.

CLARK, S. G. **Yellowstone's Survival.** A Call to Action for a New Conservation Story. New York: Anthem Press, 2021.

FILOTAS, E., PARROTT, L., BURTON, P. J., CHAZDON, R. L., COATES, K. D., COLL, L., HAEUSSLER, S., MARTIN, K., NOCENTINI, S., PUETTMANN, K. J., PUTZ, F. E., SIMARD, S. W., MESSIER, C. Viewing forests through the lens of complex systems science. **Ecosphere**, v. 5, n. 1, p. 1–23, 2014.

FREIRE, P. **Pedagogia do oprimido**. 17a ed. Rio de Janeiro: Paz e Terra, 1987.

FREIRE, P. **A sombra desta mangueira**. São Paulo: Olho D'agua, 1995.

GADAMER, H.-G. **Verdade e método II:** complementos e índice. Petrópolis: Vozes, 2002.

GAO, Y.; CLARK, S. G. An interdisciplinary conception of human-wildlife coexistence. **Journal for Nature Conservation**, v. 73, n. February, p. 126370, 2023.

KATZ, E. **Nature as subject:** human obligation and the natural community. Maryland: Rowman & Littlefield, 1997.

KOPENAWA, DAVI; ALBERT, B. **A queda do céu:** palavras de um xamã yanomami. São Paulo: Companhia das Letras, 2019.

LEE, N. **Emergence of languages as complex adaptive systems**. [s.l.] University of California, 2003.

LEFF, E. **Ecologia, capital e cultura:** a territorialização da racionalidade ambiental. Petrópolis: Vozes, 2009.

MANCUSO, S.; VOLKMANN, D. **Communication in Plants**. [s.l.] Springer Berlin, Heidelberg, 2006.

MARKOVÁ, I. A mente dialógica nas práticas profissionais. In: **Mente dialógica:** senso comum e ética. Curitiba: PUCPRESS, 2017. p. 316.

MCGINNIS, M. D. **An Introduction to IAD and the Language of the Ostrom Workshop:** A Simple Guide to a Complex Framework. v. 39, n. 1, p. 169–183, 2011.

MEDINA, C. **A arte de tecer o presente:** narrativa e cotidiano. São Paulo: Summus, 2003.

MESSIER, C.; PUETTMANN, K. J.; COATES, K. D. **Managing forests as complex adaptative systems:** building resilience to the challenge of global change. Oxon/Abingdon: Routledge, 2013.

MORIN, E. **Os sete saberes necessários à educação do futuro**. São Paulo: Cortez, 2002.

MORIN, E. **Ensinar a viver:** manifesto para mudar a educação. Porto Alegre: Sulina, 2015a.

MORIN, E. **Introdução ao pensamento complexo**. 5. ed. Porto Alegre: Sulina, 2015b.

MOURA, A. G.; GALAN, D.; MACHADO, L. Sobre questões de imprevisibilidade na cultura: o legado de Lótman para a compreensão dos mecanismos e trabalhos de semioses culturais. **Bakhtiniana: Revista de Estudos do Discurso**, v. 14, n. 4, p. 211–231, 14 nov. 2019.

NASCENTES, A. **Dicionário Etimológico da Língua Portuguesa**. Rio de Janeiro: Academia Brasileira de Letras, 1955.

WOHLLEBEN, P. **A vida secreta das árvores**. Rio de Janeiro: Sextante, 2017.

YANKELOVICH, D. **The magic of dialogue:** transforming conflict into cooperation. New York: Simon & Schuster, 1999.

YOUNG, O. R. Introduction: The Age of Complexity. In: **Governing Complex Systems:** Social Capital for the Anthropocene. Cambridge, Massachusetts: The MIT Press, 2017.

Júlia Benfica Senra

✉ juliabenficas@gmail.com

ORCiD: https://orcid.org/0000-0002-4032-0311

Marcos Sorrentino

✉ sorrentino.ea@gmail.com

ORCiD: https://orcid.org/0000-0003-4394-1655

20 de 20

Ambiente Soc • São Paulo. Vol. 27, 2024 • Original Article

Gestão Florestal Dialógica

Júlia Benfica Senra
Marcos Sorrentino

Resumo: A relação entre pessoas e florestas contém paradoxos para além de problemas. Assim, necessita de uma abordagem complexa tanto para o manejo quanto para a governança florestal. A partir da investigação das noções sobre diálogo chegou-se à conceitualização deste como sendo um acontecimento advindo do encontro entre seres diversos que por estarem dispostos e abertos permitiram a mistura de suas vivências, admiraram seus funcionamentos, adaptaram responsavelmente a partir do inesperado, e elaboraram um novo estado. Em decorrência de sua afinidade com o funcionamento de sistemas complexos adaptativos, os quais caracterizam as florestas, é proposta uma abordagem para a gestão florestal dialógica.

Palavras-chave: Floresta; gestão florestal; diálogo; dialógica; sistemas complexos adaptativos; complexidade

Gestión Forestal Dialógica

Júlia Benfica Senra
Marcos Sorrentino

Resumen: La relación entre las personas y los bosques contiene paradojas y problemas. Por lo tanto, requiere un enfoque complejo tanto para el manejo como para la gobernanza forestal. A partir de la investigación de nociones sobre el diálogo, llegamos a la conceptualización de este como un evento surgido del encuentro entre diferentes seres que, al estar dispuestos y abiertos, permitieron mezclar sus experiencias, admiraron su funcionamiento, se adaptaron responsablemente a partir de lo inesperado, y se elaboró un nuevo estado. Debido a su afinidad con el funcionamiento de sistemas adaptativos complejos, que caracterizan a los bosques, se propone un enfoque de manejo forestal dialógico.

Palabras-clave: Bosque; gestión de bosques; diálogo; dialógica; sistemas adaptativos complejos; complejidad