Interpretation of Reality in Sustainability Processes: Dialogues in the Framework of Global Warming

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ARTICLE INFO	ABSTRACT
	The environment as a human construction brings us closer to the dialogues between ontologies and epistemologies with which the human being relates and builds a possible interpretation of reality. This document addresses the interpretation of the reality of three people (7, 30, and 75 years old) who live with the consequences of climate change generated by the actions of human beings on planet earth. Each person participated in an interview to analyze their contextualization and interpretation of reality regarding an environmental problem. The results describe ontological, epistemological and the complexity elements in the language of the interviewees. Those elements would come from the mental intentions that configure interpretations of reality (IR) that the participants communicated through language. **Keywords:** interpretation of reality, ontology, epistemology, complexity

INTRODUCTION

The actions of overconsumption that the human being has carried out have led to the planet Earth presenting climatic alterations. Today, we have returned to the primary basis of existence to ask ourselves what is fundamental to human existence and how we relate to other species and objects on Earth. Although the objective today is sustainability, we must bear in mind that we find ourselves immersed in a series of relationships that lead us to ontological and epistemological diversity that, in turn, build the foundations of the interpretation of reality (IR). Thus, every human mental construct about the surrounding world has an ontological origin, which passes to an axiological action to develop an epistemological perspective that will end in a methodological process (Posada, 2014; Searle, 1997; Soto Kiewit, 2020). That is why the ontological and the epistemological can describe IR. For this, it could be possible to affirm that subjects can change their action if they change their ontology and, therefore, their epistemology.

For a few decades, the educational, cultural, political, and economic scenarios have focused on developing an environmentally sustainable human species. However, the physical, chemical and biological processes of planet earth have been affected by the increase in temperature, causing deficits in agriculture and other natural settings. The problem of global warming, in large part, is due to the wrong decisions of human beings regarding the use of natural resources (Zachariou et al., 2020). Banegas and Cordero (2018) indicate that neoliberalism describes soil as an industrial process and not as a way of life. In contrast, original people have developed various interpretations of the ground as life, such as Buen Vivir (Good Living) (Astudillo-Banegas, 2014; Caudillo Félix, 2017; Larrea Maldonado, 2011; Tirzo & Hernández, 2010; Tubino, 2005; Walsh, 2010). UNESCO (2015) draws a plan to stop global warming. According to UNESCO, by the year 2030, global warming will have decreased, and to this end, the expectation is that all countries will have implemented the 17 sustainable development goals.

The Ontological Dimension and Construction of Reality

IR described from the ontological and epistemological perspectives allows us to understand that people, unlike rivers, rocks and planets and the vast majority of other species, can interpret reality through mental dimensions. Human beings have two mental dimensions of interaction: the natural world, which consists of the planet's physical, biological and chemical processes, and the dialogical dimension, which encompasses human facts and actions. These approaches allow us to approach the reflections of Posada (2014), which establishes two types of ontology: objective ontology and subjective ontology. Ontology is the branch of philosophy dedicated to reflecting on things' primary modes of existence. Moreover, each subject or community has an ontology because they have their own possible answers to these essential questions. For the discussion, this study considers the

subjective ontology that describes human thought from language construction that comes from intentional mental states. The mental intention allows the human being to have the capacity to carry out actions that give a value of reality to natural events.

Language and the Construction of Reality

IR is a process by which human beings identify, classify and construct reality from mental intention. Understanding IR from the ontological and epistemological aspects involves language as a channel that allows the human being to develop action from a mental sense. Following Searle (1997), it is possible to identify the transit from language to ontology. Searle (1997) indicates that language fulfils, among other things, the function of doing things with words and that these words come from the thought that emerges from language itself, and clarifies that only through language can public recognition of own thoughts and those of others. This perspective validates the study of what people say about something. Furthermore, that part of the language reflects its ontology and is a possible indicator of its epistemology in practice. Because of this connection between ontology and epistemology (that are the base of IR) and language, this article studies what three people say about global warming in their rural context in Colombia.

Education and the Construction of the Interpretation of Reality

Understanding the environment as a human construction allows us to generate reflections regarding the dialogues between cultures and how other environments emerge from these dialogues. Dialogues between cultures, for this document, will be understood as the mediation that allows us to understand the existence of other epistemologies and the validity of each of them (Tovar-Gálvez & Acher, 2021). The environment as a human construction is born from everyday life, where human beings interact daily with those of their species and with other species or existing objects. Educational scenarios are a fundamental part of constructing these relationships when talking about daily relationships. For this reason, it is vital to design educational curricula from inclusion. The educational curriculum should include various ontological and epistemological thoughts and actions so that its didactic practices reflect the construction of reality based on the relationship between cultures.

The approaches of Tovar-Gálvez and Sedano (2014) concerning the possible epistemological relationships between disciplines allow us to think that the didactic scenarios could be inter-epistemological and build various IR. One theory that addresses school scenarios to develop IR from ontological and epistemological inclusion is the complex environmental formation theory (CEFT) (Tovar-Gálvez, 2020). As this study is not a school one, the framework section does not display the CEFT fully. The CEFT contains a didactic level which includes an assessment dimension with a scale. The scale evaluates the complexity expressed in the IR, which Sedano et al. (2021) used to assess the IR in an environmental education project. As the study was not a school study, the implementation of Author and others is a guide to developing the IR from the non-school perspective.

Theoretical Framework

Subjective ontology and language in the construction of reality

The ontological dimensions emerge from human perceptions. For Posada (2014), the human being builds his version of the world from two ontologies, the objective ontology and the subjective ontology. Objective ontology focuses on interpreting physical, chemical and biological processes on the planet. Subjective ontology focuses on interpreting the existence of humans and their mental capacity to cause actions.

The human being experiences social processes that, in essence, are not physical but mental. Relationships understood as family, politics, education, and economy are institutions established by the mental intention of the human being. The tensions between these institutions are pre-established by human activities and develop from language. Searle (1997) indicates that language is ontological because language comes from a mental intention. Language is how human beings communicate their interpretation of reality with their kind. Approaching Posada (2014) and Searle (1997) allows us to establish subjective ontology as a category to analyse the opinions (language) of those interviewed about global warming.

Understanding IR from the ontological and the epistemological leads to thinking about cultural dialogues. Tovar-Gálvez and Sedano (2014) reflect on the existing relationship between epistemologies from different ontologies (cultures), concluding that there are meeting points where epistemologies converge and generate an inter-epistemological (inter-cultural) dimension. Furthermore, there are other types of knowledge systems described by Tovar-Gálvez (2022): monodisciplinary, multidisciplinary, interdisciplinary, and transdisciplinary. Although the transdisciplinary incorporates all the knowledge systems mentioned above, this research leaned towards inter-epistemology for two reasons:

1. It was desired to observe the construction of the IR of the participants from the inter-epistemological scenarios.
2. The research was not school research, which did not allow the development of the entire axis of transdisciplinarity.

The complex environmental formation theory in the construction of reality

The CEFT (Tovar-Gálvez, 2020) takes up the concept of the self-eco-organization of Morin (1996) and develops it in its ontological, epistemological, pedagogical and didactic aspects for complex environmental education. Tovar-Gálvez (2020) indicates that the self-eco-organization of individuals' thinking leads to the self-eco-organization of knowledge, and this is related to IR because a process of construction of reality emerges from a mental interpretation. The research described in this document does not focus on school experiences but in community. For that reason, the present section does not display the CEFT entirety. Thus, from the CEFT, this study takes the evaluative scale to assess the complexity expressed in the IR. For this assessment system, the IR is one of the six

Table 1. Indicators to evaluate the complexity expressed in the interpretation of reality

Scale	The interpretation of reality is characterized by… (indicators)
Self-eco-organized	It is self-eco-organized because it includes the personal knowledge system and establishes relationships with knowledge systems from other cultures to account for the environment.
Intermediate	It uses the personal knowledge system but does not establish relationships with knowledge systems from other cultures to account for the environment.
Restricted	It uses the personal conceptions to account for the environment as the only truth.

Note. Source: Adapted from Puerto Layton and Tovar-Gálvez (2020)

scenarios in which the communities can identify the complexity reached in environmental education processes. The scale (**Table 1**) is the criterion to assess aspects of the participants' complexity regarding environmental actions from language (their opinions).

Sedano et al. (2021) used the scale in question, providing background to the evaluation of IR in environmental projects. The researchers' reflections allowed observing how the implementation of the CEFT evaluation scale allows for evaluating people's actions concerning an environmental project. The previous is consistent with the idea that language comes from mental intention, which is externalized from words to generate actions at the environmental level. Thus, this study takes de scale from Sedano et al. (2021) but it adapts the indicators:

METHOD

Methodological Framework

This study is qualitative, interpretive and hermeneutical. The theoretical framework is the criteria to analyze the phenomena experienced and communicated by the participants. The context of the research is a local environmental problem. The problem is a strong winter wave that devastated the farmers' crops, causing economic, food and social problems. The development of this study was in the Municipality of Landázuri in the Department of Santander, Colombia. The people who participated were three, whose ages were 7, 30, and 75 years old. The criterion for selecting the participants is their role in the community (school child, working man, and producer woman). The objective of this research was to analyze the IR of the participants from the environmental problem.

Instruments to Collect Data

All the participants responded to an interview to reveal their interpretation of reality regarding the environmental problems they experienced. The interview was semi-structured. The first approach of the researcher to each interviewee made it clear that the interviews could not be the same for everyone. The participants' area of work, the richness of the language, their communicative fluency, their experiences in the communities and their disposition were the factors for the researcher to carry out the interviews. Therefore, the questions were not the same. The following are the general topics or criteria to interview in each case:

For the 7-year-old boy:

a. his approach to the rain,

b. the perspective of the environment, and

c. the perspective concerning the sun.

For the 30-year-old man:

a. the perspective on global warming,

b. the effects and changes in the farming method, and

c. the origin of global warming.

It is essential to clarify that the child's parents agreed to the interview and accompanied him during the process. For the 75-year-old woman:

a. the perspective on global warming and the origin of the winter wave,

b. the impact and changes in the cultivation method, and

c. the influence of human beings on the development of plants and the affectation that global warming generates in plants.

The last criterion allowed directing the conversation and inducing the topic of interest of the environmental problem (**Table 2**, **Table 3**, and **Table 4**). In general, the interviewees received information about the reasons for the interview, and they agreed to carry it out and for the information to be processed, analyzed and published. The researcher registered the information in a field notebook. These field notes are the data to be analyzed through the research categories proposed in this document.

Categories to Conduct Data Analysis

The analysis categories of this study were established based on the research objective, which focused on analyzing the IR of the participants based on environmental problems. The first category has its origin in Posada (2014), who proposed the classification of ontologies where the criterion for this study is the subjective ontology. A second category comes from Tovar-Gálvez and Sedano (2014), who address the relationship between epistemologies and describe an inter-epistemological space. From the CEFT, Tovar-Gálvez (2020) indicates that the self-eco-organization of individuals' thinking leads to the self-eco-organization of knowledge. From the CEFT, the evaluative scale of the complexity expressed in the interpretation of reality is the third analysis category. The scale categorizes people's environmental actions into self-eco-organized, intermediate, and restricted. Finally, the analysis unit is the language through which the interviewees express their ideas, as Searle (1997) describes language as an ontological setting (**Table 5**).

RESULTS

The results of the interview conducted with each of the participants are described below.

Table 2. Interview format for the 7-year-old child

Criteria that were taken into account to ask the questions
• His approach to rain
• The perspective of the environment
• The perspective on the sun

Questions

1. Do you like rain or shine?
2. Where does the water that falls from the sky come from?
3. Do you think there is a relationship between the water of the rivers, the sea, the oceans and the rain?
4. What is the sun for you?
5. Do you think that the sun harms plants?
6. What is the environment?
7. Are the environment and nature related?
8. Are you part of nature?
9. Do you know what global warming is?
10. Why does garbage pollute?

Table 3. Interview format for the 30-year-old man

Criteria that were taken into account to ask the questions
• The perspective regarding global warming
• The affectation and changes in the cultivating method
• The origin of global warming

Questions

1. What do you think of global warming?
2. What is the environment?
3. Are you part of nature?
4. Why does global warming occur?
5. Do you recycle at home?

Table 4. Interview format for the 75-year-old woman

Criteria that were taken into account to ask the questions
• The perspective regarding global warming and the origin of the winter wave
• The affectation and changes in the cultivating method
• The influence of the human being in the development of plants and the affectation that global warming generates in plants

Questions

1. What has generated the strong winter wave?
2. Did the winter wave lower the yield of your crops?
3. Did the winter wave change your way of farming?
4. Are fertilizers good for crops?
5. Are we part of the growth of plants?
6. Should we help all plants or just the ones we grow?
7. Do you know what global warming is?

Table 5. Categories system

Category	Subcategory	Description
Ontology (Posada, 2014)	Subjective ontology	The development of actions from a mental intention
Inter-epistemology (Tovar-Gálvez & Sedano, 2014)	There is inter-epistemology	The meeting of the epistemologies from different cultures that allows the relationship of inclusion
	There is no inter-epistemology	
The CEFT (Tovar-Gálvez, 2020)	Evaluation of the complexity expressed in the interpretation of reality	Self-eco-organized
		Intermediate
		Restricted

7-Year-Old Boy

Question 1: Do you like rain or shine?

Answer 1: I like both climates.

Question 2: Where does the water that falls from the sky come from?

Answer 2: The clouds come together, and there are flakes that come together and melt and rain is generated there.

Question 3: Do you think there is a relationship between the water of the rivers, the sea, the oceans and the rain?

Answer 3: I do not know that, because it has never been explained to me.

Question 4: What is the sun for you?

Answer 4: The sun is a solar system; the sun is cool that helps me relax.

Question 5: Do you think that the sun harms plants?

Answer 5: No, the sun helps trees grow long. The sun generates light and since the light is hot it helps the growth of trees. And the rain helps them grow more.

Question 6: What is the environment?

Answer 6: Nothing comes to mind.

Question 7: Are the environment and nature related?

Answer 7: Yes, because when I play, nature gives me a calm and cool environment and gives me life.

Question 8: Are you part of nature?

Answer 8: Yes, nature gives us the air to live.

Question 9: Do you know what global warming is?

Answer 9: I do not know, but I imagine it has to do with the warmth of the trees.

Question 10: Why does garbage pollute?

Answer 10: Because they generate dirt (dirty is pollution).

30-Year-Old Man

Question 1: What do you think of global warming?

Answer 1: That it is harmful for the planet.

Question 2: What is the environment?

Answer 2: It is nature.

Question 3: Are you part of nature?

Answer 3: No, nature is trees, crops and land. That is why it is called nature.

Question 4: Why does global warming occur?

Answer 4: Because of contamination.

Question 5: Do you recycle at home?

Answer 5: No, the ones who should recycle are the neighbours because I spend all my time working in the fields.

75-Year-Old Woman

Question 1: What has generated the strong winter wave?

Answer 1: I do not know, but it is bad for us.

Question 2: Did the winter wave lower the yield of your crops?

Answer 2: Yes, it finished the crops. They were totally rotten.

Question 3: Did the winter wave change your way of farming?

Answer 3: Yes, it reminded me of the time when my grandparents taught me to work the land in winter. The problem is that this way of working only produces for the house, but not for selling.

Question 4: Are fertilizers good for crops?

Answer 4: It depends. One must know how to use the compost. There are crops that receive the fertilizer and there are others that do not. It is because the ground is currently much decalcified, like us grandparents.

Question 5: Are we part of the growth of plants?

Answer 5: Yes, you have to help them because otherwise the crops do not produce.

Question 6: Should we help all plants or just the ones we grow?

Answer 6: Only crop plants, the rest of the plants God gives them the power to grow.

Question 7: Do you know what global warming is?

Answer 7: No, the truth is that I have not heard of that topic.

DISCUSSION

The responses generated by the 7-year-old boy revealed the following aspects:

1. The boy does not see the rain as a problem. On the contrary, it relates it to something good.
2. Describes the origin of rain but does not establish a connection with rivers, seas and oceans.
3. Although there is no idea of the concept of environment, he recognizes the union between human beings and nature and associates nature with the source of life.

From Posada (2014), the evidence leads to identifying a subjective ontological construction. The mental intention of the child describes a harmonious environment where the word "problem" does not imply any action. In addition, it is possible to perceive the inter-epistemological dimension (Tovar-Gálvez & Sedano, 2014)) of the child when he involves ancestral epistemology to establish nature as the origin of life (Pachamama) and the Western epistemology to explain the origin of rain. The aspects of inclusion described above allow interpreting a self-eco-organized IR, where personal aspects are involved and those of other cultures.

The responses of the 30-year-old man revealed the following aspects:

1. Global warming is a problem for the planet that is a product of human overconsumption.

2. The man clarifies that the neighbors do not recycle, but he indicates that he does not recycle when asked about his recycling process.

3. Concerning nature and the human being, he finds no relationship.

For him, nature is trees and nothing else. The interviewee expresses his subjective ontological construction from the previous descriptions, which describes a world contaminated by humans, where he is not part of the problem. His mental intention focuses on observing others for him to communicate verbally the negative changes generated by people's actions. Therefore, it is impossible to perceive epistemological inclusion through its language from an inter-epistemological perspective. Furthermore, in conclusion, the IR is at a restricted level.

The responses of the 75-year-old woman made it possible to highlight the following aspects:

1. She does not recognize the winter wave's origin but highlights the crop's damage.

2. She recognized that environmental problems have led to remembering the traditional knowledge of his grandparents. For them, the cultivation of the land was to feed the home and not to market the products.

3. Her construction is an environment based on faith where God takes charge of nature.

Her subjective ontology focuses on recognizing his cultivation method and the problems that can affect cultivation. Her language describes an epistemology based on religion, where she recognizes that God participates in the processes of nature. It is also evident that she has a construction of farmer epistemology inherited from her grandparents. For them, people must cultivate the soil for self-consumption and not commodification. For those reasons, the complexity of her IR is on a self-eco-organized level.

For Searle (1997), language is an ontological process. In addition, it is possible to say that language builds relational ontological codes built from cultural encounters. An ontological code is a package of information that collects the mental intentions of an individual to share them with individuals with the same interest. In the interview, it is evident that the participants established several ontological codes. Each of the participants used a very particular language:

1. the boy focused on the game and the harmonization of the environment,

2. for the 30-year-old man, the focus was the observation and problematization of the environment, and

3. finally, the 75-year-old woman focused on solving the food supply for her home.

They are three different languages that describe the ontological transformation of each of the participants based on their IR.

On the other hand, it is relevant to address the relationships the child makes in contrast to those that the woman and the man proposed. The boy attends school while the man and woman could not finish the school, which reaffirms that education helps citizens build IR and actions more consistent with climate change. In the same way, the man's isolated language confirms that a part of the population requires an education that helps them modify their ontologies and epistemologies towards more complex ones. Lastly, although the woman did not manage to finish her studies, she connects different ontologies-epistemologies, which allows her to have a more complex IR and action. This phenomenon is a sign of the importance of inter-epistemology.

The results obtained were related to other theoretical frameworks, finding similarities. For example, Terrón Amigo (2004) describes in her research that citizens build social representations to relate to the environment but that the lack of complexity limits these constructions. As a result, the environment is not understood as a whole but as a surrounding. What was concluded by Terrón Amigo (2004) is also evident in the 30-year-old man's results at the time of communicating his IR. He isolates himself from environmental processes and describes himself as an observer of his neighbors' problems.

CONCLUSIONS

The results of the interviews show that the ontological construction of the participants focused on a diverse linguistic scenario, where each one described a different reality and that this difference came from the diversity of mental intentions that emerged from the participants' IR. Likewise, the inclusive language made inter-epistemological constructions evident. Even the interview was inclusive (without being its objective) since it did not establish a question structure but allowed the participants to express their version of reality. From the point of view of complexity, the participants built different IR, although the environmental problem was the same.

The reflections generated from the research reveal that IR leads to the construction of societies mediated by an ontological process that manifests itself from the linguistic relationship that generates cultural interests. This ontological interest is the ontological code. Last but not least, tackling IR allows raising some issues outside this document's scope, which would be of great help in discussions involving IR. For example, how might age influence people's IR? How can the education curriculum address ontological and epistemological scenarios to develop inclusive didactics? What IR criteria allow a natural process to be described as an environmental problem?

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