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**SOCIAL, ECONOMIC AND ENVIRONMENTAL PROBLEMS IN THE BRAZILIAN  
NORTHEASTERN REGION, COULD IT BE DIFFERENT?**

Artur Gomes de Oliveira – University of Fortaleza, Brazil;

Monica Mota Tassigny – University of Fortaleza, Brazil;

Odéssia Fernanda Gomes de Assis – University of Fortaleza, Brazil;

Fabiana Pinto de Almeida Bizarria – University of Fortaleza, Brazil;

José Nazareno Gonçalves Ferreira - Sergipe Federal Institute, Brazil.

**Abstract**

In this paper it is discussed if there was a chance to provide a better life for people in the Brazilian Northeastern Region. For that, it is addressed whether, in Brazil, more specifically in the Northeast, which is needed in every sense of the implementation of actions aiming at sustainability, there was, between 1926 and 1937, an attempt to create a community guided by principles of sustainability and to find the reasons it was destroyed. Using Sachs (1993) Sustainable Development model and Sen (2000) Development as Freedom model and evidences on primary and secondary data, it was attempted to relate the *modus vivendi* of the community in question and the theoretical models. The results showed evidences that the community had incorporated all aspects of the adopted models to their practices but, as it was inconvenient for the religious, political and landowning elites of the time, the community was considered dangerous and destroyed. This was the beginning of a process of chaos that is still in progress, so the situation in the region nowadays is the same or even worse than it was almost a century ago. If the dominant elite of that time had taken a different position and used the way of living of the community as a model to the whole region, sustainability would be the guiding principle for all the communities and living the Brazilian Northeastern Region could be different nowadays.

**Keywords:** Sustainability, Sustainable Development, Caldeirão, Freedom, Chaos Theory.

## INTRODUCTION

*On May 11, 1937, a sound in the sky of the Araripe plateau frightened local peasants. Scared, they tried to hide under the trees while flying machines glided through the air of the Cariri region, in the South of the state of Ceará, located in Northeast Brazil. Men, women and children fleeing from something they certainly saw for the first time. The desperation was even greater when the Brazilian Air Force aircrafts began to strafe. Some of them must have whispered the last Our Father. Others may not had time to do so.*

*(ARAÚJO, 2005, p. 1)*

On February, 1st, 1981, the Journal of Brazil, published in Rio de Janeiro, Southeast of Brazil, surprised the locals by publishing a report on "The Slaughter of the Caldeirão de Santa Cruz", about what occurred in Ceará (State in the Northeast of Brazil) in the 1920s and 1930s, when at least (nobody knows exactly how many) 700 people were killed, nobody knew what the journal was referring to, so, it was forgotten.

Newspapers and Brazilian History books do not refer to the fact that occurred with the religious-based peasant community of the Caldeirão de Santa Cruz that was created and led by José Lourenço and provided to their members a better life than the one most Brazilian Northeasterners enjoyed at that time, having to cope with the temporary droughts inflicting most of the region.

The concept of sustainability is still being discussed in the academic circles, so it cannot be said that it has already been deployed, completely, in any country or community, from the first or third world, but there are some models accepted. This study aims to discuss if, in Brazil, more specifically in the Northeast region, which is needed in every sense of the implementation of actions aiming at sustainability and develop conditions to keep people in the region, there was, between 1926 and 1937, an attempt to create a community guided by sustainability principles. Thus, the research questions that guide this work are: Did the way of living of the Caldeirão de Santa Cruz community have characteristics of sustainable development and did it adopt sustainability as freedom? And if that was true and given that, at current time, the problems of the region are still the same or even worse, what has happened?

For the discussion presented here, we start from the assumption that the Caldeirão de Santa Cruz community, deployed a *modus vivendi* based on the guidelines that contained, in its core, the essence of sustainability concept that only in recent decades began to be discussed more in-depth worldwide.

This religious community that had indicators of better social development and freedom, at least in relation to the difficulties faced by most of the Brazilian northeasterners at the time, was completely destroyed with the help of the State and Federal forces, in 1937. The community's defeat

ended an experience that could have resulted in better quality of life for the Northeastern region and Brazil in the years ahead, had it not disturbed the religious, political and landowning elites of the time.

This is a documentary research, that according to Godoy (1995, p.21), constitutes the "examination of materials from different sources, which have not yet received an analytical treatment, or that may be reviewed, seeking new and or complementary interpretations". Also according to the author, it includes newspapers, magazines, journals, literary, scientific and technical articles, letters, memos and reports.

Still based on Godoy's definition (1995, p.25), to achieve the objectives of this work, this research has used the strategy of case study; in the words of the author: "the case study is characterized as a type of research that aims at a unit that is deeply analyzed. It aims to allow a detailed examination of an environment, a subject or a particular situation". In the present article, the objective is an in-depth examination of a particular situation: the *modus vivendi* of the Community of the Caldeirão de Santa Cruz, relating it to the concepts of sustainable development, sustainability and the Chaos Theory.

Thus, this paper is structured as follows: first it is described the context and creation of the Caldeirão de Santa Cruz community, then the practices of this community is related to the concepts of sustainable development sustained by Sachs (1993 ) and the concepts of development as freedom of Sen (2000); at this point it is addressed the reaction of the ruling elite of the time in relation to the life and way of organization of the community that ends determining its destruction that meant the beginning of a chaos process, so the Chaos Theory is addressed and related to the situation in the region nowadays; finally it is presented the closing remarks.

## **THE CALDEIRÃO DE SANTA CRUZ COMMUNITY**

Brazilian rural workers are a part of the Brazilian society that has been living in precarious conditions. This socio-economic exclusion is the result of the progressive and continuous expropriation of their land and basic rights over time. In response to these unfavorable conditions, a number of social movements have emerged around the country; some of them had religious influences and led to a confrontation among organized rural workers and the State forces. Among these movements, lies the one that emerged at the Caldeirão de Santa Cruz, in the state of Ceará (Northeast of Brazil), between 1926 and 1937, led by José Lourenço (CORDEIRO, 2008).

### **Blessed José Lourenço**

No one knows for sure when and where José Lourenço was born, in 1870 or in 1872, in Paraíba or Alagoas (both states in Brazil's Northeastern region). But it is known that he was the son of the freed slaves Lourenço Gomes da Silva and Maria Tereza da Conceição, and that he left home still as a young boy.

In 1889, when Priest Cicero Romão Batista gave to Maria de Araujo (1862-1914), a 28 years old woman, a host, and it was turned into blood, the fact became known as the 'Miracle of the Host' or 'Miracle of the Blood' (MONTEIRO, 2010). After this event, the town of Juazeiro do Norte, in Ceará, became a center of pilgrimage (CORDEIRO, 2004), and like many other Northeasterners, José Lourenço's parents headed to Juazeiro do Norte.

In 1890, one year after the "Miracle of the Host", in the hope of finding his parents, José Lourenço arrived in Juazeiro and "soon he won the friendship of Priest Cicero, as a result, the priest consecrated and commissioned him as "Blessed" " (GOMES, 2009, p.59). That meant, at the time, the choice for a simple way of life, "guided by the principles of popular religiosity, which may be described as dressing as a friar: a black cotton cassock, with a red cross on his back and a rope tied at the waist, following what Saint Francis used to wear" (ROSA; SILVA, 2010, p 62), as shown on Figure 1.



Figure 1 - Blessed José Lourenço carrying the Holly Cross

Source: Luis Maia, May, 10, 1937.

After being considered Blessed, José Lourenço became chaste, benevolent, with contempt for material goods, and assuming these values he began building a profile of a leader (CORDEIRO, 2004).

As a form of legitimation, it was common for the Blessed ones to carry a copy of the "devoted backcountry people bible", the book, "Missão Abreviada" (Brief Mission). It is very clear about the importance of the missions and the need to expand Christianity more easily and efficiently through the faithful people (SILVA, 2011). In the introduction of the book, one reads: "In any settlement, village or town, there should be a missionary, let me just say, this one should be a good example of a Priest and if this one is not available, any man or woman who can read well and have an exemplary life, with one of these books should do the prayer to people at least during the months of winter (COUTO, 1868, p. 7).

Blessed José Lourenço then, with the endorsement of Priest Cícero, began to build a profile of leader and, as such, to gather followers.

### **The Baixa D'Antas Community: the origin of the Caldeirão community**

Four years after he was considered Blessed, with the help of Priest Cicero, José Lourenço leased a site in the village called Baixa D'Antas, owned by Mr. João Brito. There he settled and began to "accommodate several families, the excluded and the impoverished ones, rejected by the landowning society. Soon the place was filled with orphans and destitute ones. José Lourenço practiced charity and won the sympathy of many people" (GOMES, 2009, p.59).

The land in Baixa D'Antas was arid and unproductive, typical of the caatinga (a typical vegetation of the Brazilian Northeastern bioma). Due to the drought, many flagellates lacking work, food or housing headed to Juazeiro do Norte to get help from Priest Cicero. Most of them were sent to the Baixa D'antas site. José Lourenço organized the workers and led the community. Soon the site was transformed into an orchard, where orange, mango, jackfruit, limes, coconut, lemon, avocado, papaya, banana and coffee trees were grown. The community also cultivated cotton, and vegetables (BRAGA, 2008).

José Lourenço was seen as a counselor by the people that lived at the Baixa D'antas site; they called him "Godfather Lourenço". His charitable spirit and lifestyle attracted more and more pilgrims that went to Juazeiro seeking for the blessing of Priest Cicero (BRAGA, 2008).

The site grew and flourished until 1926, according to the testimony of a contemporary; there were around 2,000 people living in the place and all of them were hard worker. "José Lourenço fed the people and conducted their prayers (...). There were no criteria to be part of the Baixa D'Antas community; if you were willing to have a life guided by faith and work it was enough" (CORDEIRO, 2001, p. 27).

### **The Bull "Mansinho" - José Lourenço gets stronger**

In 1921, Delmiro Gouveia, a businessman from Alagoas (a Brazilian State also in the Northeastern region), gave a breeding bull, named Mansinho, to Priest Cícero; the animal was then given to José Lourenço to take care of and to use it to improve the local flock. Perhaps because the bull was a gift from Priest Cícero, a story soon emerged that the bull did miracles (CORDEIRO, 2008).

As the bull was to be used to improve the quality of the herd and to produce more milk and meat to the community, it was treated differently by the people. That fact gave rise to the rumor that the community was worshiping, making offerings and putting flowers on the animal's horn. It was also said that "the urine of the animal, distributed by the Blessed, was an effective medication to all diseases [...] and that everyone knelt before the bull in adoration" (GOMES, 2009, p. 59).

The press made much the case of the “holy bull” and the belief in these miracles drew the ire of Floro Bartolomeu, a local politician.

Floro Bartolomeu, a religious, political and military leader in Juazeiro do Norte, was then the most important federal member in Ceará State. Floro was also the political wing of Priest Cícero. Floro feared the competition from Mansinho against the worshiping to Juazeiro. In order to preserve Juazeiro, he took an action. He sent José Lourenço to jail for eighteen days and killed the bull; an act that he said was supposed to combat bigotry. The bull was sacrificed in a public square and all the leaders of the movement were forced to eat its meat. “The sacrifice of the bull reinforced the idea of sacred for the local people that refused to eat its meat and drink its blood” (A GAZETA DO CARIRI, January 26, 1922, Apud GOMES 2009, p. 60).

This episode not only strengthened the sacred aspect of the bull, but also brought up other consequences. Under the influence of Priest Cícero, Blessed José Lourenço was released a few days later, but then he actually became seen as a leader.

### **The community of the Caldeirão de Santa Cruz**

Five years after the event with the bull Mansinho, in order to get rid of the Blessed and his followers, the owner sold the Baixa D'Antas site and the new owner drove all religious out of the land. Thus, in 1926, Priest Cícero sent José Lourenço and his followers to one of his farms called Caldeirão de Santa Cruz do Deserto, which had an area of approximately 900 hectares, located at the base of the Araripe plateau (Western Cariri, south of the state of Ceará), distant 20 km from the neighboring Crato town and 540 km from Ceará state capital, Fortaleza.

It is a semiarid region, with irregular rain and scorching sun. The predominant vegetation is the caatinga, formed by low thorny trees and bushes. By the type of vegetation one can infer the quality of the soil: stony, naked and poor ground. The topography of the area is rugged, with many grottoes and depressions.

*“The land at the Caldeirão was unusable, steep and barren until the arrival of the Blessed and his people. It was the human labor of the pilgrims, led by the Blessed, that changed the Caldeirão de Santa Cruz do Deserto (Cauldron of the holy cross of the Desert) in Caldeirão de Santa Cruz (Cauldron of the Holy Cross)” (CORDEIRO, 2008, p.5).*

The term "Caldeirão" designated a geological fault formed by stones which, even during the dry season, accumulated water. In the Cariri region, if the raining season is regular, the rain falls during the first four months of the year, so, the biggest challenge found at the scene was how to irrigate the plants, because the water was not retained in the soil. The “Caldeirão”, shown on Figures 2

and 3, is a perennial well of about 90 ft. in diameter by 24 ft. deep; there it was possible to find fish of the Northeastern region fauna, such as: piós, curimbatás, piabas, mandis, cangatis, traíras<sup>1</sup>, etc.



Figure 2 - The Caldeirão during the drought.

Source: Silva (2009, p.130).



Figure 3 - The Caldeirão during the rain period.

Source: Silva (2009, p.130).

After clearing the land, Blessed José Lourenço and his followers built houses and, as the land was dry, they constructed small dams to ensure water supply. They planted corn, cotton and beans in the highest part of the land and sugar cane and rice at the bottom. They also produced enough brown sugar and molasses to sustain the 1,700 members of the community.

The community adopted a self-management system and community work, in which everything belonged to everyone and there were no different social classes, the economic means of production provided the same rights to everyone and the environment was respected by all the members for they depended on the use and conservation of the natural available resources.

### **SUSTAINABILITY IN THE COMMUNITY**

The concept of sustainability is still not completely defined (BARBIERI ET AL, 2010; CHACON, 2007; CIEGIS et al., 2009; JICKLING, 2000; KEINER, 2006; SACHS, 2008), but it has been further researched and contributions have led to its better comprehension. The most common definition of the concept was given by the United Nations Conference on Environment and Development –UNCED – which defined sustainable development as "a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and the institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations" (UNCED, 1987, p. 46). Figure 4 shows a definition of sustainability signed by Gro Harlem Brundtland former First Minister of Norway that led the UNCED in 1987.

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<sup>1</sup> Brazilian fish

Sustainable development  
meets the needs of the  
present generation without  
compromising the ability  
of future generations to  
meet their needs

W. H. Brundage

Figure 4 – Definition of Sustainable Development

Source: Keiner (2006, p. 2).

Although the concept is still under construction, all available models have a common aim: a balance in the relationships among human kind, nature and economy, providing better conditions for all factors involved.

#### **Sachs: sustainable development in the community of the Caldeirão**

According to Sachs (1993, pp. 24-27),

*"for the planning of sustainable development, five dimensions should be simultaneously considered: Social Sustainability, Economic Sustainability, Ecological Sustainability; Spatial Sustainability, Cultural Sustainability".*

#### ***Social Sustainability***

Social sustainability is the consolidation of a development process that considers the economic growth and the idea of what is a good society as a base. It aims "to form a civilization of "human beings" in which there is equitable distribution of income and goods produced therein, improving the conditions to provide a better life to the people and lessening the distance between living standards" (SACHS 1993, p. 25).

In this sense, the concept of social sustainability advocated by Sachs (1993) is shown, empirically, in the community of the Caldeirão, when Martins and Vasconcelos (2007, p. 3) claim that "social relations governed by the law of the money or by the profit as a way of living did not exist in that place, given that the agricultural production was divided considering the needs of each family".

Ramos (2000, p. 372-374) adds that there was no one in need; "the society was organized in a way that the worker was not plundered by the landowner. (...) working was the only way to get the



daily bread, because nobody should have to live at the expense of someone else's work. It was a non-capitalist religiosity”.

Those who did not work in food production (farming or raising animals for food) worked for the improvement of material conditions, such as the construction of small dams, fences or craft activities. “All of them worked, finally, for the common good. There was no competition in the sense of someone wanting to own more than the companion” (RAMOS, 1991, p.68).

Highlighting the social relations in the Caldeirão community, Gomes (2009, p. 61) states that during its existence, "there has never been a crime in the village."

### ***Economic Sustainability***

Economic sustainability is the result of efficient management of the available resources.

*"A prerequisite for this is to overcome the external conditions and the adverse terms of trade, the protectionist barriers of the industrialized countries and the limitations of access to science and technology" (SACHS 1993, p. 25).*

Overcoming the adverse conditions around them caused by the drought, the community of the Caldeirão did not only manage to overcome the difficulties posed by the adverse climatic and geographical conditions, but also developed key irrigation technologies.

According to Lima *et al* (2011, p. 6), in this semiarid region there are references of development, where the vertical integration of production was almost complete, “the most extreme example is the community of the Caldeirão de Santa Cruz, in the Araripe plateau, a green economy and community, which produced everything and even in the most acute drought, this community could help neighboring towns supplying food accumulated in periods of plenty”.

Although the Caldeirão community did not have international reach, it is observed with the quote above, that there are indications of economic sustainability, one of the dimensions of sustainable development proposed by Sachs (1993).

### ***Ecological Sustainability***

According to Sachs (1993, pp. 25-26), ecological sustainability can be enhanced by the following factors:

1 - Increased use of the potential resources of the various ecosystems, with minimal damage to life support systems for socially valid purposes;

One might question how Blessed José Lourenço, immersed in an environment with few natural resources to support human life and given his concern about minimizing damage to the ecosystem, could sustain a nearly two thousand people community? "The great merit of the Blessed was exactly this: he knew how to use the resources and the semiarid ecosystems. In addition to the

equality-based *modus vivendi*, the Caldeirão community was an ecological example for the entire northeastern region" (ARAÚJO, 2005, p. 3).

Another important procedure at the Caldeirão was not clearing the "crown of the mountain" - as they called the higher parts of the farm. Normally farmers work with crop rotation, i.e., burn the vegetation to fertilize the soil and then plant for about three years. Afterwards, they leave the area to let the vegetation grow again, to repeat the process after three or five years. The lack of space, however, prevented the community to do rotations, so they just planted below the "crown of the mountain", and only in one segment per year, then moved to another. As the vegetation cover of the crown remained intact when it rained the seeds were scattered up and down. Thus, by using the force of gravity, the area recovered faster than flat ground. "With this farm management, coupled with the creation of fish and cattle, nearly 2000 mouths of the brotherhood felt no lack of food" (ARAÚJO, 2005, p. 3).

2 - Voluntary restraint of material consumption by the rich countries and the privileged social *strata* throughout the world;

Although there was a hierarchy at the Caldeirão community, the access to the goods produced was equal for all individuals. In the community, there was a control of production and consumption, and for this task, Isaías, a kind of minister of planning and economics was in charge. "The products were stored in bulk barns and redistributed according to the needs of each family. There was no money circulating in the community and the social organization was rigid" (ALVES, 1994, p. 4).

Thus, the concept of limiting consumption was consolidated through a model of production and distribution of goods produced based on the needs of members, indicating the existence of the concept proposed by Sachs (1993) in the actions and organization of the community.

3 - More research on clean technologies and more efficient use of the available resources;

At the Caldeirão farm, the few resources had to be sufficient to support the community, so, everyone had simple tools (adapted to the specific site conditions and produced there) that ought to be efficiently and effectively used. So, "always with a hoe in hand, José Lourenço and his companions faced the challenges posed by the stony ground and the drought, and began to cultivate the land. Fruits, grains, cotton and vegetables were planted and harvested in abundance" (GOMES, 2009, p. 60).

The exploitation of the farm had its own system. The irrigation of the soil was practiced using gourds, in a joint effort, the water was taken from the well and was placed at the root of the plants, in a simple and efficient irrigation system. Production was abundant; they practiced horticulture, floriculture and pomiculture. The Caldeirão farm had become an oasis, its green landscape contrasted with the scenario of the abandoned land in the large Brazilian Northeastern *latifundia* (GOMES, 2009).

4 - Set the rules for adequate environmental protection, design of the institutional mechanisms and choice of the economic, legal and administrative instruments necessary to ensure compliance with these rules;

The former Brazilian Minister of the Environment, Rubens Ricupero, said that Priest Cicero “preached in the northeastern hinterland the words that, only today’s environmental awareness, the harder way, begins to enroll in our worldview, long before the First International Conference on the Environment, in Stockholm in 1972” (O GLOBO, 1994).

It is important to highlight that Priest Cícero left no published work. Professor Daniel Walker, an expert in the history of Juazeiro do Norte and Priest Cícero, explains that the “The Ten Ecological Precepts of Priest Cicero” were organized by the Brazilian ecologist Dr. Vasconcelos Sobrinho (Professor, agronomist and one of the founders of the Pernambuco Rural Federal University), based on the advices that Priest Cícero gave to the backcountry people through his letters. Walker also claims that some of these advices, according to oral sources, were also given during the daily talkings that the priest used to have with the pilgrims in front of his house (SILVA, 2013).

The words from Priest Cícero, transmitted by Blessed José Lourenço, were the law for the community of the Caldeirão de Santa Cruz, so “The Ten Ecological Precepts of Priest Cicero” (SILVA, 2013, p. 197), became the law to be obeyed. Although these precepts are attributed to Priest Cicero, there is a growing discussion that this may not be true, what is not a big issue over here.

#### The Ten Ecological Precepts of Priest Cícero

- 1) Do not deforest the caatinga, not even a simple tree;
- 2) Do not put fire on the plantation or on the caatinga;
- 3) Do not hunt over, let the animals live;
- 4) Do not let cattle or goats loose, make fences and let the pasture resting to recover;
- 5) Do not plant on the hills or on too upright slopes; let the bushes protecting the soil so the water will not drag its wealth;
- 6) Make a cistern on the side of your house to store the water from the rain;
- 7) Dam streams every hundred meters, even if it is with loose stones;
- 8) Each day plant at least one mesquite, cashew, sabiá or any other tree until all the backcountry becomes a forest;
- 9) Learn how to take advantage of the plants of the caatinga as the maniçoba, favela and jurema; they can help to cope with the drought;
- 10) If the backcountry people obey these precepts, the drought will slowly come to an end, the cattle will be improved and the people will have food but, if they do not obey, in a short time, all the backlands will turn into a desert.

Once there were rules, linked to the obedience to Priest Cicero, defining how to deal with the environment, one can easily identify, in the Caldeirão community, an appropriate interaction with the environment and a control system that ensured that all members would fulfill the established standards.

5 - Reduce the volume of waste and pollution through conservation and recycling of energy and resources.

It was not found in the researched literature any data that indicated the recycling of waste, however, the conservation of resources is observed by the way the community members worked on the land and the use of the available resources, especially water.

### ***Spatial Sustainability***

According to Sachs (1993), the spatial sustainability must be turned to a more balanced rural-urban configuration and a better territorial distribution of human settlements and economic activities with emphasis on the following issues:

1- Excessive concentration in metropolitan areas (SACHS, 1993, p 26);

At the Caldeirão farm, the

*"houses were built according to the order of arrival at the farm, forming semicircles directed to the central area where there was a church with a graveyard behind and a large courtyard in front" (CORDEIRO, 2008, p.5). "Each new family that got there was welcome, and those who were already living there built a new house, soon many houses could be seen by the base of the hill, gradually forming a belt around the small plain where the first plantations flourished" (ALVES, 1994, p. 5).*

This organization indicates a balance in the distribution of the space. Figure 5 shows the distribution of the space in the Caldeirão community.

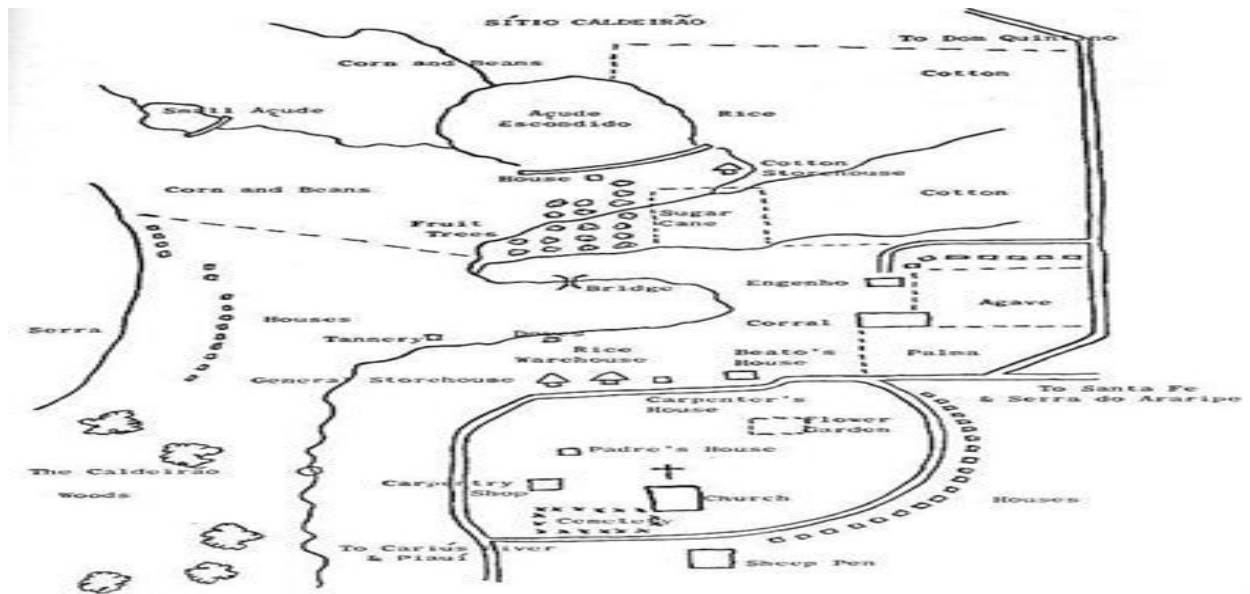


Figure 5 – Distribution of the Space in the Caldeirão Farm.

Source: Anderson (1970, p. 88).

2- Protection of fragile ecosystems; proceed regenerative agriculture and agroforestry operated by small farmers; establish a network of natural reserves and biosphere to protect biodiversity (SACHS, 1993, p 26).

The "Ten Ecological Precepts of Priest Cícero" suggest that the semi-arid is a fragile system and must be protected. By recommending to stop hunting over the animals, to plant trees and not to put fire in the bushes, it is suggested the establishment of biosphere reserves and the protection of the natural ecosystem. Finally, by suggesting planting typical local trees, it implies a gradual reforestation of the northeastern semiarid using plants and trees from the local ecosystem, protecting the biosphere and biodiversity.

### ***Cultural Sustainability***

The consolidated changes in the social environment aiming to achieve sustainability should consider “a plurality of particular solutions that respect the specificities of each ecosystem, from every culture and every place” (SACHS, 1993, p. 27).

The actions of the Blessed José Lourenço, in the Caldeirão community, promoted development respecting and reinforcing their customs and traditions. Pompa (2009, p. 72) states that “in the testimonies that I have, it seems that the Blessed José Lourenço did not invite people to the Caldeirão farm, he just tried to encourage the backcountry people to continue strengthening the religious customs: celebrations, prayers, novenas, penitences”.

Lopes (2006) also confirms the emphasis on the respect and strengthening of the traditions and customs when he says that Blessed José Lourenço, guided his followers, promoted novenas, litanies and processions and was responsible for all religious manifestations in the holy days and Sundays.

### **Sen: Freedom in the Caldeirão Community**

According to Sen (2000 p 298), "the development is actually a tremendous commitment to the possibilities of freedom", so he defines sustainable development as a result of the Political Freedoms; Economic Facilities, Social Facilities, Transparency Guarantees and Protective Security. It is important to highlight that these dimensions are interlinked and complement each other.

#### ***Political Freedom***

Refers to participation in political life at all levels and to decide about the principles and who should govern, the ability to monitor and criticize authorities, freedom of political expression, an uncensored press and freedom to choose from different political parties (SEN, 2000).

The Caldeirão community was an alternative to landlordism, the exploitation of the worker and to the class differentiation. Equality was the law there and everyone accepted the leadership of Blessed José Lourenço with all its principles, as soon as they became part of the community. Thus, life in the Caldeirão community was summarized in community work and pray; there were no differences or reasons to complain about this or that party or leader.

According to the testimony of Antonio Inácio da Silva, a remaining of the Caldeirão Community, everyone was free to go or join the community, to accept or reject the principles that guided the actions of the community, "the Blessed forced nobody, he said that penitence serves only if made with the heart, our God does not require those who have no contrition, then those that wanted to stay, stayed and those who did not..., but everyone wanted to stay" (TV ASSEMBLÉIA, 2012).

Members were free to leave the community and decide whether to continue under the orders of the Blessed or not, or even if they wanted to accept the principles dictated by him. The domination used by the Blessed followed the charismatic type, since his authority was legitimized by his charisma and natural gifts, which tended not to be questioned or criticized. The freedom of the community members was based only on deciding to go or to stay. So it was a limited political freedom, probably the acceptance was based on the many advantages that life in the community could offer in relation to the life in other places. Charismatic authority is considered one of the biggest revolutionary forces, however, in its totally pure form, assumes, most of the times, an authoritarian and dominant character (WEBER, 1999).

Thus, it is possible to consider that political freedom existed in the Caldeirão community, but it had a well-defined limit.

#### ***Economic Facilities***

Sen (2000) argues that economic facilities refer to the opportunities that people have to use the economic resources for the purpose of consumption, production or exchange.

During the existence of the Caldeirão community, Brazilian Northeastern region suffered due to droughts and under this condition, people that could at least feed themselves and survive, were in a better condition than most of the Northeasterners.

According to Maria de Lourdes Sales, another remaining of the community of the Caldeirão: "The people worked together, the land to plant belonged to everybody and in the evenings, we still prayed" (TV ASSEMBLÉIA, 2012).

Moreover, Antônio Inácio da Silva, another remaining from the community says that "nobody received money there, there was abundance and we could eat and nobody went hungry, you found nobody naked, all we had to do was just to work and make penitences" (TV ASSEMBLÉIA, 2012).

It should be noted that in the community all the material necessary to the survival of its members was produced and consumed by members and whatever was left was sold or exchanged for other goods with other communities.

The testimonies of the remainings of the community attest that there was equality in relation to accessing not only to the productive assets, but also to what was produced, indicating that the concept of economic facilities, advocated by Sen (2000), existed in the community.

### ***Social Facilities***

Social opportunities refer to access to education, health services and sanitation, providing a better life for people. The availability of these factors is important not only for private life, but also for a more effective participation in the economic and political activities.

*"For example, illiteracy may be a strong barrier to participation in the economic activities that require production according to specifications or require strict quality control" (SEN, 2000, p. 56).*

According to Brandão (2006), the social group transmits its wisdom not only through classes and students are all those who learn; the knowledge is transmitted through exchanges among people, occurring during the daily interaction. In the Caldeirão community, the teaching-learning process did not occur only at school, but also in everyday life. When each member of the community performed a certain task, it was at that moment that something was taught or learned (SOUSA; CARVALHO, 2009).

Blessed José Lourenço, though illiterate, understood that the community lacked someone to teach everyone to read and write. His fame attracted a teacher to the community, Marina Gurgel, a 21 years old girl came from Rio Grande do Norte (a state in the Northeastern region) to fulfill a mission: literate the children and adults of the community. The school did not resemble the common ones, their classrooms were the shades of the trees, adults and children studied during the time they were resting (MAIA, 1992).

The literacy of the community appears in the words of Maria de Lourdes, a remaining of the community, she says that "classes were held under the trees and also in the chapel. According to the testimony of Mr. Pedrinho, another remaining of the community, the teacher had some leadership in the community and helped Isaías, in the organization of the place" (SOUSA; CARVALHO, 2009, p 8.).

Using the few resources available, the teacher, under the shade of the trees, taught the children, in the evening, and in the chapel after a prayer, classes were held with adults (SOUSA; CARVALHO, 2009).

There was not a formal school in the community; however, this was a reality in the Brazilian Northeastern region at that time, "when they found someone who knew a bit of reading, this one became a lay teacher, who, despite of not having a methodology according to the dominant patterns, was empowered on the teaching task. It was exactly like this in the community" (SOUSA; CARVALHO, 2009, p 8.).

The presence of actions aiming at the extinction of illiteracy, either through learning with the teacher or with other members of the community, indicates that there were concerns with the development of opportunities and social growth of the group.

### ***Transparency Guarantees***

For a harmonious life in a society it is needed a foundation of trust that lets individuals know what is available to them and what they can expect to get. According to Sen (2000, p 56), the transparency guarantees "refer to the needs of sincerity that people can expect: the freedom to deal with one another under guarantees of transparency and clarity".

The transparency in the relationships that prevailed in the Caldeirão community may be attested when we observe the speech of Pedro Alexandrino Neto, a remaining of the community: "The children only accompanied the prayers and did not work, but after 12 years old, they were considered over aged, then they had to do the same work the others did; working was for everyone" (TV ASSEMBLÉIA 2012).

Cordeiro (2008, p. 5) reinforces what could be expected in the Caldeirão community when he states that "the community had a system of production and distribution of basic goods with characteristics of self-management. The remainings say that everything belonged to everyone and there was no distinction between leaders and performers of the production process".

Therefore, the rules of coexistence in the community were simple and clear, everyone had to work, pray and contribute to the common welfare; doing that, they could be sure that they would not be treated differently from the others.



### ***Protective Security***

According to Sen (2000, p. 57), "safety is required to provide a social safety net, preventing that the population is exposed to a condition of misery and, in some cases, even to hunger and death".

With regard to this condition of development proposed by Sen (2000), it is emphasized that the survival conditions of the community were different from those faced by most Northeasterners facing the drought.

Thus, it can be observed that social and economic organization of the community formed a sharp contrast with the situation of the workers of the *latifundia*. There was abundance due to the intense work of thousands of people, filling up the barns. It was the fantastic organization of the work, aiming the full satisfaction of the basic needs of the community, that turned the place into an island of plenty amidst the poverty that was everywhere in the hinterland at that time. "It was a poor community, but physically and spiritually well fed. The popular religiosity that permeated all daily acts of the community made bearable the penitence of the work and life easier" (ALVES, 1994 p.5).

The contrast between the members of the Caldeirão community (shown on Figures 6 and 7) and other Northeasterners is also highlighted by Facó (1986, p. 208) when he comments that "the photographs of José Lourenço community show faces of well-fed and better-looking people than those from the backcountry of the Northeastern region and faces of beautiful women may be distinguished. Evidently, they did not starve".



The people from the Caldeirão community.

Figure 6: Public domain.



Remainings of the Caldeirão community

Figure 7: Public domain.

It should be emphasized that the Blessed opened the doors of the community to 500 people that were fleeing from the drought (ALVES, 1994), and that "even in the most acute drought, this community helped neighboring cities providing supplies accumulated during the periods of plenty" (LIMA et al., 2011, p. 6), which highlights the concern of the Caldeirão community with safety and protection measures, not only inside it, but also in other communities.

The extremely hard drought in the Brazilian Northeastern region, in 1932, demonstrated the level of autonomy and self-sustaining conquered by the Caldeirão community. "While the Ceará State Government installed barriers that resembled concentration and death camps at the entrance of many

cities in an attempt to prevent flagellates to migrate to the capital as it had occurred during the drought of 1915, the Caldeirão community offered assistance to a crowd of starving people who needed help” (SILVA; ALENCAR, 2009, p 132).

The different way the community of the Caldeirão lived and acted did not depend on the State, the landowning elite or the “Colonels” (owners of the latifundia) that had the power. The community success was also attracting the attention of many people so, to a certain extent, it endangered the ability to control the people who lived completely under the orders, will and wishes of the commanding elite.

### THE CHAOS THEORY

The Chaos Theory to physics and mathematics explains how dynamic and complex systems work, i.e., over time, unstable results may vary depending on the parameters used. Thus, certain results are caused by the action and interaction of its elements randomly.

One of the first scientists to comment on chaos was Henri Poincaré (1854–1912), a late-nineteenth century French mathematician who extensively studied topology and dynamic systems. He left writings hinting at the same unpredictability in systems that Edward Lorenz would study more than half a century later. Poincaré explained, "It may happen that small differences in the initial conditions produce very great ones in the final phenomena. A small error in the former will produce an enormous error in the latter. Prediction becomes impossible" (MASON, 2014, p. 1). These studies were forgotten for a long time.

In the 1950s, when performing a calculation, a meteorologist of the Massachusetts Institute of Technology, Edward Lorenz, noted that some of the numbers he had entered in his computer, after some time, had been rounded and, after a longer time, the original numbers had suffered a significative modification.

*He innocently entered .506 instead of the full numeric value of .506127, and the result was a completely different weather prediction. In a 1963 paper, Lorenz commented that if the theory were correct, “one flap of a seagull’s wings could change the course of weather forever.” He later changed that metaphor to a butterfly, and now the phenomenon is widely labeled the “butterfly effect” – where seemingly little events can lead to more significant changes to the larger system (LASSITER, 2011, p.1).*

For a short period, the differences were insignificant, but over time, these changes produced completely different patterns. To this, he called Chaos. "A chaotic system is one in which small

differences, at the initial state, leads, over time, to the greatest possible differences" (LORENZ, 1993, p.197, RUELLE; ECKMANN, 1985, p 618.).

Ruelle (1993) defined the concept of "strange attractors" as a graphical representation of the states of a system. In this representation, a point 'P', near the origin 'O', starts a circular trajectory in both directions. According to Ruelle (1993), the trajectory tends to be circular, forming "wings" on both sides. The figure formed resembles a butterfly (see Figure 8), hence the probable reason for the event's famous metaphor of the butterfly effect. The "nickname" also associates the fragility of the insect in face of the potential events that can occur as a result of its "flapping of wings".

*If the initial position P near O was tiny modified, the details of the figure would be completely changed. The overall appearance would remain the same, but the number of successive right and left turns would be completely different. This is due to the fact that the temporal evolution of the figure depends hyper sensitively on the initial conditions. The number of turns to the left and right is therefore erratic, seemingly random and hard to predict (RUELLE, 1993, p 86).*

When observing a particle with velocity 'V', along time, this speed (due to friction or absence of acceleration, etc...) tends to zero, in other words, its attractor is zero, the breakeven point. Why is it that, when we change the starting position, the movement effected by 'P' is different than expected? The answer lies in the fact that the point 'O' does not constitute a common attractor, as Lorenz attractor does not have such features. Thus, these attractors, called "strangers", make the trajectory converges toward them, but never effectively reach them (RUELLE, 1993).

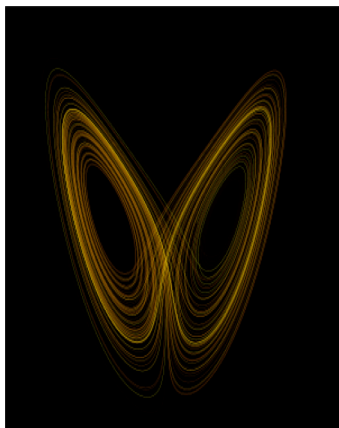


Figure 8 – Butterfly Effect - Lorenz' Strange Attractors.  
Source: [www.atrfb.org.br](http://www.atrfb.org.br)

*The use of the term "chaos", traditionally associated with the disorder, is actually tricky. Chaos in science, is not disorder, "is a masked order of randomness" (Lorenz) [...] Prigogine, studying nonlinear chemical systems, found that small random perturbations can be quickly amplified, leading the system to greater instability up to a limit called "split point" from this point on the structure of the system is broken ("broken symmetry"). After this point, the system behavior becomes erratic for some time, but tends to stabilize at a new equilibrium - only qualitatively distinct from the original. The system now features new modes of organization, structurally more complex - it evolved (BAUER, 1998 p.5).*

It is important to highlight that Theory of Chaos states that the trend points to the stabilization at a new form of organization (BAUER, 1998), with different features from the original. The Butterfly Effect relies on the notion that everything is part of a larger system – in which small changes in part of a system can result in larger changes to other parts of that system. Systems thinking is the process of understanding how things influence one another within a whole; it focuses on cyclical, rather than linear, cause and effect relationships within and between organizations. Deming, Ackoff, Senge, and Wheatley, among others that traced the Organizational Systems Theory, believed that organizations should be faced as complex systems, so leaders should view problems as a part of a bigger system (LASSITER, 2011).

If the variables acting in the complete system are not exactly understood the organizations may fail. It is up to the leaders to take decisions and these may create positive or negative impacts within or outside the organization, it may also guide a part of or even the whole system to a new condition, according to the Chaos Theory.

## **A CHAOS PROCESS IN BRAZILIAN NORTHEASTERN REGION**

### **Caldeirão community: the beginning**

Built having work, religion and wealth as a base, the Caldeirão community became a utopia on how to live in society (CORDEIRO, 2004). However, a so well structured society, "with its workforce would bother the Colonels, who lost their army of cheap laborers for that "hick Eden". Faith in an afterlife paradise was already coming true. Those people fed up, dressed up, sheltered themselves and loved each other autonomously" (CORDEIRO, 2004, p. 87).

The colonels, the landowning elite, feared that other farmers could go to the Caldeirão community or built other communities with the same principle of organization. It would be a risk for the agrarian structure and therefore to the policy for the region, established by the colonels and the state. According to Martins (1983), capital and capitalism cannot grow without workers willing to work for a boss. For this to occur it is necessary that workers have only their workforce. If they own the instruments to work they will not have to work for someone else.

The politicians also feared that the Caldeirão community would reach a political importance as Juazeiro do Norte. In 1914, the government of Ceará tried at all costs to finish the growing of the city without success. It led to a war that is known in Ceará history as the "Sedição de Juazeiro", when the "fanatics" defeated the troops of the State and deposed the Governor Franco Rabelo.

After the death of Priest Cicero, in 1934, who supported and defended the community, his properties went for the Salesian Priests Order that aiming to recovering the Caldeirão farm "in 1936, began to suppress the "fanaticism of Juazeiro" and gave complete incentive for the military operation that drove the peasants out of the Caldeirão farm" (RAMOS, 2000, p. 375).

Fortaleza, the capital of Ceará, hosted a meeting of representatives from six institutions: Diocese of Crato town, Salesian Priests Order, Catholic Electoral League, Political Police (Deops), Military Police and Government of Ceará. The representatives heard reports from Captain José Bezerra, from the military police, who, in search of a pretext for invading the community, had spied it to see if there were weapons. The officer did not find them, but said the public forces needed to act quickly to avoid the possibility of a premeditated reaction because there were many people in the community (ARAÚJO, 2005).

The first attack to the Caldeirão community happened on September 11, 1936, when "residents were expelled, had their houses burned and their properties were confiscated in favor of Crato town" (MARTINS; VASCONCELOS, 2007, p 8).

The news that members of the Caldeirão community had taken refuge in Crato town was enough for the police forces to act again. There was a new confrontation that "ended with four deaths on the government side, including Captain José Bezerra, and five on the other side, among them, Blessed Severino, one of the leaders of the community. This was the trigger for a new bigger action" (MARTINS; VASCONCELOS, 2007, p. 8),

After the disclosure of that conflict, military troops departed from Fortaleza to hunt the remainings from the Caldeirão community and avenge the death of Captain Bezerra. The Brazilian Minister of War, General Eurico Gaspar Dutra, put the federal forces at disposal of the government of Ceará State and authorized the deployment of three airplanes from the National Aviation Detachment.

From the aircrafts, machine guns fired, while 200 patrollers scoured the Araripe plateau to complete the mission. On May 11, 1937, about 700 farmers were massacred. No soldier died. Even after the military strike, policemen continued to chase, arrest, torture and kill people who wore black clothes and carried a rosary - the characteristics of the Blessed José Lourenço followers (ARAÚJO, 2006).

Thus ended perhaps the first attempt to fix the northeasterners to land through enabling better living conditions and the possibility of coexistence with the adverse climatic and geographical conditions of the region and the reason one can find for that is the will of the leaders at that time.

### **The Brazilian Northeastern region nowadays**

It has long been recognized that the periodic droughts that punish the semiarid region assume dimensions of a calamity due to the situation of poverty in which most of its inhabitants live (BRASIL.GTDN 1967, p. 67). This is also caused by the conditions of ownership and use of the land prevailing in that region. The distribution of land in the Northeast is very uneven, as shown by the Gini coefficient – 0.7918 – in 1992 (Duarte 2000).

After decades the environmental problems in the region are still the same. Brazil has a large part of its territory located in a semiarid region, and thus submitted to the risk of desertification. According to data pointed by PNUD/BRA/93/036 Project, the Northeastern region has about 180,000

km2 of areas with degradation processes considered very serious or severe and 18,740 km2 exhibit intense signals of desertification (BRASIL, 2005) .

As a result, almost a century after the Caldeirão community existed, the region still have the same problems: drought, lack of social assistance, hunger, weak economy, concentration of income causing richness for some and poorness for the biggest part of the people and difficulties posed by the environment. Figures 9 and 10 show common sceneries in the region during drought.



Figure 9 – Scenery 1

Source: <http://4.bp.blogspot.com/wX X9sEDEwK0/UPLZcSn2ZNI/AAAA AAAAAEM/04A2eZCMoDI/s1600/foto+seca+nordeste.JPG>



Figure 10 – Scenery 2

Source: <http://blogviniciusdesantana.com/wpcontent/uploads/2013/02/seca1.jpeg>

As drought, lack of resources and of an appropriate structure for their survival in the region are still a reality, Northeasterner population still faces hunger. In August, 23, 1983, *the Jornal do Brasil*, a newspaper from Rio de Janeiro, showed the News about people eating lizards' in the Brazilian Northeastern region due to the lack of food caused by the drought. The news is shown in Figure 11.



Figure 11 – People eating lizards.

Source: <http://www.noticiasdepentecoste.com/2012/10/pra-aqueles-que-tem- memoria curtissima.html>



According to Wanburg (2012) a study made by the *Instituto de Pesquisa Econômica Aplicada* (IPEA), in Brazil, about the vulnerability of families between 2003 and 2009, which took into account the variation of social and economic dimensions in the period, found that the vulnerability as a whole is strongly concentrated in rural areas, in Alagoas, Maranhão, Piauí, Ceará and Pernambuco state (all in the northeastern region). The study takes into account the ability of Brazilian families in reacting to difficulties in social and economic dimension like restricted access to opportunities in different ways, either through poor housing quality or by its precarious location, the difficult access to a vacancy on the labor market, lack of access to education and knowledge, or even the effects of this lack of knowledge on prevention and prophylaxis of health.

In 2013, there were almost 10 million people suffering due to the drought in the Brazilian Northeastern region. Figure 12 shows the region, the States (CE (Ceará), MA (Maranhão), PI (Piauí), BA (Bahia), RN (Rio Grande do Norte), PB (Paraíba), AL (Alagoas), SE (Sergipe)) and the number of people and cities in each State with problems due to the lack of water.



Figure 12 – Almost 10 million people suffering due to drought.

Source: <http://www.r7.com/r7/media/2013/20130314-SecasNordeste/20130314-SecasNordeste.jpg>

Still in 2013, as a consequence of the drought, hunger is present in the region; the newspapers showed news about families in the northeastern region hunting rats for food. The news, which can be seen on Figure 13, informed that "Starving families in Piauí State eat rats due to the drought",

*The lack of food due to drought is making people in Piauí state hunt rodents to complement the food. In Brejinho, district in the municipality of Assunção do Piauí (located 273 km from the capital Teresina) every day in the late afternoon it is common to see locals going to the areas of caves for putting traps to catch "big tailed rats" (GAMA, 2013 , p.1).*



Figure 13 – Starving families chase rats to eat.

Source: <http://laudaamassada.blogspot.com.br/2013/03/22-de-marco-dia-mundial-da-agua-e-o-que.html>.

In 2014, the social, economic, land ownership, political and environmental problems in Brazilian Northeastern region are the same, showing that sustainability is still a dream in the region; it suggests that the process started by destroying the Caldeirão Community is still going on. The Chaos Theory states that a chaos process leads to a new state, different from the original one and that a part may influence the whole system. It is possible to consider the destruction of the Caldeirão community as the beginning of a chaos process and what is happening nowadays as the continuation of the same process and it also means that if the leaders had used the way of living of the Caldeirão community as a model to be followed by the whole region, the chaos process would probably lead to a different system and living there, nowadays, could probably be completely different.

## **FINAL CONSIDERATIONS**

The analysis of documents relating to the practices of the Caldeirão community constitutes an important tool that shows the precarious survival conditions of the Brazilian Northeasterner, exposed to the evils of drought, can indeed, be improved.

Considering what says Sachs (1993), between 1926 and 1937, in the Caldeirão de Santa Cruz community, in the Brazilian semi-arid northeastern region, there was a perspective of sustainability, providing better living conditions to their inhabitants in an inhospitable region.

Regarding Sen (2000), the literature review showed that only political freedom, as a condition of development was not fully practiced by the Caldeirão community, thus enabling, with some restriction, development based on freedom.

Whereas the condition of sustainability in the Caldeirão community was inspired by the will, expectations and ideals of its leaders, Priest Cicero and Blessed José Lourenço, and that it was



destroyed, based on the interests of other leaders, it is possible to consider that consolidation or dissolution of sustainable nature actions are the result of the expectations and desires of leaders. These findings cannot be generalized, since this was a single case study, it is suggested other studies to generalize this finding.

However, the self-sufficiency of the community caused a reaction in the elite of the time, since the kind of life in the community was against the wishes of the priests, politicians and landowners, each one having their own reasons. This was decisive for the total destruction of the Caldeirão community and to start a chaos process that is still in progress in the region. If the leaders had taken the Caldeirão Community as a model to follow, life in the whole region could be different.

Leaving aside the interests of the people to meet the needs of a ruling class, suggests corruption and condemnation of the same people to worst conditions. This is what one may observe in the Brazilian Northeastern region: a still going on process of chaos that was started by leaders that did not consider or respect the needs or rights of the people under their command.

As a topic for further researches, it is suggested to investigate the fact that once the sustainability concept was put into practice in the Brazilian semiarid region so long ago and had positive results, why the conditions for surviving in this region have not changed or even worsened? What are the political, economic, social or religious reasons involved? It would also be interesting to discuss to what extent the charismatic and religious character of the leaders contributed to the conditions of development and sustainability.

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