

Interview with Clayton Lino: a naturalist in the 21st century

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50 years ago, Clayton Lino entered a cave for the first time in his life, in Vale do Ribeira, an experience that led him to direct his work to the environmental area. It was there that the physicist-architect-anthropologist-speleologist saw the Atlantic Forest for the first time, in Serra do Mar. The occasion was also his first contact with the Petar region (Alto Ribeira Tourist State Park), which he helped to implement and of which he was the first manager.

The adventure, in an extremely difficult cave, in which he moved through slender holes, low ceilings and underground rivers, was a successful baptism, which led him to play a fundamental role in the conservation of Brazilian caves and the Atlantic Forest.

Lino had an active participation in the environmental legislation consolidated in the 1988 Constitution, is among the founders of SOS Mata Atlântica and ISA (Instituto Socioambiental), helped to create the figure of the RPPN (Private Natural Heritage Reserve), was the proponent of the figure of the Mosaics of Protected Areas and worked to include them in the SNUC (National System of Protected Areas). He also helped to create the São Paulo State Environment Department, where he works to this day. He is a member of the Board of SOS Mata Atlântica.

He spent many years at the head of the National Council of the Atlantic Forest Biosphere Reserve, participated as a photographer in the first Brazilian expedition to Antarctica and was president of the Brazilian Society of Speleology twice.

He was recently in Brasília, participating in the mobilization against presidential decree 10,935, from January this year, which puts Brazilian caves at risk as never before. Despite acknowledging that the environmental movement has been forced to act predominantly on the defensive against setbacks and threats in recent years, it remains optimistic about society's reaction.

“We have bills trying to disorganize the SNUC, the Atlantic Forest Law, protected areas, the Forest Code, that is, the entire environmental, social and cultural issue in Brazil is not only being threatened, but several important setbacks have already taken place. But I'm optimistic. I know that all evil passes too. The covid-19 pandemic made mobilization very difficult, we could only put it on social media, make a virtual petition. It is very different when society can gather in a space, manifest itself, show the concentration of people around a cause. I have now seen a reaction from society that I hope will grow a lot.”

In an interview with SOS Mata Atlântica, Lino recalls the creation of the Foundation and the actions of environmentalists shortly after the Brazilian redemocratization, talks about the situation of Brazilian caves, the importance of creating the Atlantic Forest Atlas, setbacks and paths of environmentalism for the future of the country and on his performance, as a 'naturalist of the 19th century', mixing areas and knowledge to act for the good of the planet.

“I characterize myself as a person who does not have this limit of disciplines. Because I think that allows us to have a better relationship with the planet. All these things are very integrated. It's like that on the planet. People are the ones who divide.”

– You have a background in physics, architecture and anthropology, you are a speleologist... how do your various backgrounds contribute to the way you see and approach nature?

These formations were not a planned thing. I was born in Franca, in the interior of the state of São Paulo, and then I came to the capital with the idea of being a physicist, I wanted to be a nuclear physicist. I studied physics until my senior year. But in this process I got to know architecture. And as I discovered architecture, I saw that it had a lot to do with me. Even in part because it's several things in one. You have a degree in architecture and you can do theater, photography, you can work with urbanism, with historical heritage, landscaping, and so on. This wealth of the profession caught my attention. I did physics until the last year, but the last exam I gave blank, although I knew all the answers, because I didn't want to pass, I wanted to transfer to architecture.

Then I did my Masters in Anthropology. I was well advanced in preparing the material and also preparing the dissertation, but I was already a speleologist and I met, at the Speleology Congress at the time, a person, Lélia Rita, who would become the first secretary for the environment of the then newly created state of Mato Grosso do Sul. She wanted to develop tourism and the environment. And he called me to go there and do the work of surveying the tourist and environmental attractions of the new state. And then I went to Bonito, which no one knew at the time, and which later became the Brazilian capital of ecotourism. I went to the caves, stayed with the Kadiwéu Indians, with the Terena, in short, I spent four months there.

And then something else appeared. I was already working with photography and speleology, and Ibama called me to be the photographer for the first Brazilian expedition to Antarctica, which took place in late 1982 to 1983. It was irresistible. I explained it to my supervisor and he told me that I needed to decide whether to do a master's degree or to go to Antarctica. Then it hit me and I went to Antarctica. That was the end of my Masters in Anthropology. But I remain passionate about anthropology, studying it all the time and living it in my work, in the approach to this relationship between man and nature, especially in the case of traditional communities.

All these things are very integrated. It's like that on the planet. People are the ones who share. I, although I don't have a physics degree, I use it a lot and I love physics. It is a way of thinking, of seeing the world. The same thing with architecture, biology and anthropology.

– How did caving enter your life? In an interview with Museu da Pessoa you said that everything you do today is because you entered a cave in Serra do Mar...

I have always been very connected to nature, my father had a farm and I would accompany him there every weekend, I loved it. My mother always had this bond of enchantment with nature. That certainly influenced me. I have always had a relationship with nature that was cordial, of enchantment.

I was still a physics student at Mackenzie, but I was already in the architecture directory. There I met two colleagues from Rio Preto, who used to do amateur theater like me. The dictatorship closed all activities of this kind, but I found them again in São Paulo, when I moved here. And one of them, already knowing that I liked nature, told me about a group at USP that did expeditions, canoeing, mountaineering, etc., which was the CEU (Centro Excursionista Universitário). I went there with this colleague to attend a meeting. He never came back and I never left, to this day I am a member of CEU. On the day I arrived, there was a slideshow of a group that had gone to Vale do Ribeira for the first time, exactly in the Petar region. They returned delighted. And soon after, in Semana Santa 1972, I went on a tour there. It was there that I first saw the Atlantic Forest, Serra do Mar, the traditional communities of the region, Petar, and I entered a cave for the first time.

My first cave was very difficult. It started with a hole in the ground, went down five feet and went out into the dark, into a 20-meter abyss, descending on a ladder made of steel cable and aluminum steps. Then we arrived at an underground river, followed by 80 meters of low ceiling. I had a really big beard at that time and I literally got soaked beards. And in the end we left in a huge, ornate, beautiful room. At that moment I heard myself saying to myself: this is it! I had discovered something I wasn't even looking for, had no idea even existed. But I knew that was forever. So much so that this experience changed my life forever.

In April 2022, the 36th Brazilian Congress of Speleology took place in Brasilia, and they made a very exciting surprise for my 50 years of caves. I have been president of the Brazilian Speleology Society twice. Caves changed my profession, my relationship with nature, with people. Along with this, the questions of the traditional communities of the Atlantic Forest were posed for me.

In other words, I really started to work on the environmental side because of the caves. I specialized in protected areas, natural resource management, traveled around the world, became a “mix of professions”. And I continue with this 19th century, naturalist profile of mixing things up. Which I think was a huge privilege in my life. I wish that for all my children.

– How is the conservation area of caves in Brazil? There was a mobilization in April this year against a presidential decree, 10.935/2022...

I was there, in the mobilization. Brazil, despite everything, is still the country that has the best cave protection legislation in the world. This was a well-done construction, involving the entire speleological community. The main point, perhaps the biggest contribution that we have made to this, happened during the process of elaboration of the 1988 Constitution. Fábio Feldmann was a constituent, there was an environment commission that I was part of, with many other people, and we highlight that we needed to protect the caves somehow in the Constitution. And we did this by placing the caves (underground natural cavities) as Union assets. What followed was that Brazil became the first democratic country where all caves belong to the Union, we do not have a private cave. And we also place them as part of the cultural and scientific heritage.

This was the main base, and from it came CONAMA Resolutions, decrees, the creation of the CECAV (National Center for Research and Conservation of Caves), that is, we institutionalized all this in the line of conservation. There was a decree that no cave, under any circumstances, could be destroyed. Then, in 2008, came Decree 6,640, which placed the importance of caves and established that those of maximum relevance could not be destroyed, and that others could be impacted for specific reasons. The relevance criterion is inappropriate, because it only makes sense if it is used in a comparative way, not as absolute data. From studies we can define the relevance of a cave by its identified attributes, but we cannot say if it is irrelevant. Every cave in principle is important until proven otherwise. And this legislation brought another reasoning, which is that no cave is important until proven otherwise. But now we have the worst decree of all, the greatest threat that has ever existed to Brazilian caves, which is 10,935, signed by Bolsonaro in January of this year, which says that caves of maximum relevance can be destroyed too. It is total irresponsibility. This ended up in the STF (Superior Federal Court), there was a demonstration by Minister Ricardo Lewandowski suspending it, but it still goes to the plenary. We all made a manifestation in the STF, there is a motion in Congress with the support of hundreds of scientific and environmental institutions, from Brazil and abroad. We are, at this moment, depending on the STF to manifest itself. We are very hopeful that this setback will not happen.

We will always have to fight, the same for the Atlantic Forest, for the Cerrado, for the Amazon and other Brazilian biomes. But some moments are very sad in Brazilian history. Some out of ignorance in the pure sense of the word, that is, not knowing what they are doing, and others out of ignorance of

badness, of lack of vision. Ignorance in the saddest sense of the word, which is not realizing that, if we don't have sustainability, the country has no future.

– In the period of articulation of environmental organizations in the period before and during the Constituent Assembly, there was a great mobilization, but with a very positive horizon of conquests. Today the mobilization has been to not lose what has been achieved since then...

Today we are acting on the defensive. It's a lot of threat, a lot of pressure. We have bills trying to disorganize the SNUC, the Atlantic Forest Law, protected areas, the Forest Code, that is, the entire environmental, social and cultural issue in Brazil is not only being threatened, but has already suffered several important setbacks. But I'm optimistic. I know that all evil passes too. The covid-19 pandemic made mobilization very difficult, we could only put it on social media, make a virtual petition. It is very different when society can gather in a space, manifest itself, show the concentration of people around a cause. I have now seen a reaction from society that I hope will grow a lot.

We have to fight for culture regardless of who the leaders are, whether in the country's legislature or executive. It should be a struggle of the whole society. But, as society is very polarized in Brazil at the moment, if you defend something, you are automatically on one side or the other. I find it sad what is happening in Brazil. More than sadness, it's really anger. We had taken many steps in the country, we have come a long way in the last few decades, perhaps with a problem here and there all the time, of course. But there was a path that the country was treading, it was growing, improving, having more equity. Now, we have a degree of attack on everything we had already conquered. We'll have to win back.

And we have no option but this. The Brazilian commodity market, if it doesn't change, will suffer a lot from this. There are people taking advantage of the rise in the dollar, but who benefits from it? Very few people. We are increasing the biggest problem that Brazil has always had, which is inequality. And it's not that there's a lack of money in the country. It's just that he's in few hands. In such a scenario, together with the backlash of institutions and legislation, work on the environment is extremely difficult.

And there is still the issue of violence, we are the fourth country that kills the most environmentalists on the planet. With a population in need, it becomes even more difficult to conserve. It is a very serious and difficult situation. But I insist on being optimistic, because I've also seen other very bad situations that we've had. I hope there will be a civilizing reaction from Brazil.

– The first campaign of Fundação SOS Mata Atlântica, They are taking the green from our land, has never been so current, Brazil has gone from environmental reference to pariah...

SOS Mata Atlântica, the Mata Atlântica Biosphere Reserve, the Atlantic Forest NGO Network, and later the Pact for the Restoration of the Atlantic Forest, all these entities had a very good time, as a result of the country's redemocratization. The environmental movement was the first citizenship movement that was not prevented from acting at that time. They thought it was 'freshness', something idealistic. And when they found out what we were doing, we had already touched on very important things. And that was here to stay. It is a movement that has made a brutal advance in just a few decades. Redemocratization opened up space and the environmental movement occupied an important part of this space.

A second thing was the possibility, also as a result of the democratic opening, the 1988 Constitution, of an advance in the environmental discussion, which gained weight here and in the world. We have

created a very advanced Constitution in this area. It remains advanced compared to the legislation of most countries.

A third point is that soon after we had the Eco 92 in Brazil. The preparation of Eco 92 (Rio 92) was extremely rich. And here, in the case of São Paulo, since the beginning of the 1980s, the creation of Consema in the Montoro government [the embryo of the São Paulo State Environment Department], the fight against nuclear plants and the protection of Juréia, for the implementation of Petar and Ilha do Cardoso, in short, things started to happen and we had a 'conjunction of the stars' that brought everyone together. This initial group occupied the government, partly remained in business, in the media, and at the same time in civil society organizations. People knew each other, and everyone worked together.

Then came the SOS Mata Atlântica movement. And it is from this movement that all these entities come out. SOS Mata Atlântica is the biggest answer that we have given, and with its creation came the campaign, which was very striking: They are taking the green from our land. She drew attention to a biome that no one was talking about.

– And what was it like to start talking about the Atlantic Forest?

In the beginning, we always had doubts about where the Atlantic Forest was and where it wasn't. There was a consensus that Serra do Mar was Atlantic Forest, but it stopped there. I remember an episode in which some people came to the Foundation's headquarters and asked us if the Airuoca region, in Minas Gerais, was located in an Atlantic Forest area. We replied that we thought so. And then we concluded that we needed to stop finding and be sure.

Then came the Atlantic Forest Atlas. We needed to have a full-length portrait of the biome. I started working with Eduardo Brondizio, who was a technician at the Foundation and today has very important international work on biodiversity. He was the person who worked with INPE (National Institute for Space Research) to use satellite images. To draw this picture, we needed to know which territory the Atlantic Forest was. We held a workshop attended by more than 40 leading scientists, engaged and intelligent people like Aziz Ab'Saber, Almirante Ibsen, José Pedro de Oliveira Costa, Paulo Nogueira Neto, in short, and the question was this – where is the Atlantic Forest? From there we took what was the basis for the IBGE's own work.

There were a few outstanding questions left after that, over the years. For example, the araucarias, which the people of Pará did not want to be the Atlantic Forest, because it was the Paraná pine tree, had its own identity and such. But they are one of the forest formations that make up the Atlantic Forest biome. It was a struggle to accept, but today there is a positive consensus for the protection of this endangered species. Does Ceará have the Atlantic Forest or not? What is happening in the Brejos de Altitude in Ceará and the Northeast? Is it Amazon? Is it a different Caatinga? Is it Cerrado? Which is? As a Biosphere Reserve, we hire scientists to go there and clear up these doubts. This scientifically demonstrated that the phytophysiology, the structure, the dominant species are part of the Atlantic Forest.

It was a construction of more than a decade. In the beginning, above Salvador, there were no satellite images that would allow good surveys. It was just cloud cover. It rains little but there are many clouds in that region. So we couldn't see, the clouds didn't allow a cover that showed us the evolution. The first Atlas went as far as Salvador, Bahia. And people from the Northeast complained a lot that it was necessary to have this survey higher up. It was only years later that we managed to have images that allowed the Atlas to capture the entire territory.

And he became the Atlas not of the situation, but of the evolution of the Atlantic Forest. The result of the work began to show, unfortunately, that the frequent news was the permanent deforestation. That was the big indicator. And with that, the fight for the biome was strengthened. The Atlantic Forest began to gain more and more space in the media. Every time we released the Atlas news, it was a big pressure on some states, and that had a lot of effect. It was a successful campaign in every way, reducing deforestation, publicizing the importance and threats to this forest, gaining international recognition.

This work has a weight. It is perhaps the most important project in the history of SOS Mata Atlântica. It was started right at the beginning of the Foundation and has been developing, improving technologically, it has not stopped in time. It has reached the municipal scale and now we have entered the deforestation alert phase.

– You were at the foundation of SOS Mata Atlântica, at that initial moment, of the articulations. How do you see the organization's evolution over time?

SOS Mata Atlântica has changed a lot. In some ways I think it's an adaptation to the new times and in others it's a change of strategy. We had some difficult times, with little availability of resources. Then it became, on average – because resources for conservation are always lacking – an economically stable institution. It allows her to do a lot.

But it doesn't come out of nowhere. It was built from an incredible, even strategic vision, and several people had and still have very remarkable contributions to it. Roberto Klabin, who was president for so long and who strengthened this economic aspect, I think his own entrepreneurial vision helped a lot in this regard. But it's not just a matter of resources. It was the creation of quality and reputation with a very competent team. The Foundation is a communication phenomenon. Today anyone in Brazil, and in many places outside the country, knows what SOS Mata Atlântica is. You ask an artist if he wants to do a campaign with the Foundation and he knows what SOS Mata Atlântica is and wants to do it.

In other words, it is a virtuous circle. That was producing things, disseminating with great competence, and had the weight of the media as fundamental in our history. Rodrigo Mesquita, Randau Marques, among others, are people who helped to put the Atlantic Forest as a general agenda for the media. And to show Brazilians the importance and the threats. This reputation was built in the field of communication, in the field of projects with results, with information. SOS Mata Atlântica is a generator of knowledge, it has concrete data.

There is also the issue of involvement, mobilization, which the organization also does very well. From the volunteers, from the work of Viva a Mata, that is, the mobilization of all the campaigns, the involvement of young people. SOS Mata Atlântica has gained greater depth in each of these areas. And it covered other areas. He entered the issue of water, cities, the sea, public policies. It was adding things, modernizing itself, conquering space and expanding partnerships. Marcia Hirota, Capobianco, Mario Mantovani, Belô, Malu Ribeiro, along with the counselors were key people.

But some things have changed. In the beginning there were more environmentalists on the council. There was a great deal of engagement, these people were also those on the front lines. Today we have a different council, with more people from the financial area, for example, and from the media area. But that diversity has always happened. Today, we sometimes spend a lot of time discussing finances in a meeting, much more than in the past. But that's good, because it's the guarantee that the technical teams can do their job, and they do it very well. Today the council fulfills its main role, which is to guarantee political and economic stability, the main guidelines for the Foundation. This, too, we learned. And it's a formula that worked very well.

– The Atlantic Forest Biosphere Reserve (RBMA) was the first created in Brazil, a very reflection of all this movement that we talk about here. The network of organizations that comprise it is quite active. How does this integration and performance take place?

It was really the first, and it started small. We only had three areas in phase 1 – Vale do Ribeira, with Petar, a little piece of the coast of Paraná and the area of the Tinguá Biological Reserve, in Rio de Janeiro. They weren't connected. We were joining other areas in the following phases, and today we are already in phase 7, with almost 90 million hectares. Since phase 4 we have become the largest Biosphere Reserve in the world. And we keep growing. Today, there are 727 Biosphere Reserves in 131 countries, brought together by UNESCO's MAB (Man and Biosphere) program.

In addition to being the largest of them, the Atlantic Forest Reserve is very active, precisely because it has a very inclusive management system. There are more than 250 institutions involved. There are state committees in the 17 states that make up the biome. Within each committee there are sometimes subcommittees. There are representatives of municipalities via ANAMMA (National Association of Environment Municipalities). And outposts, decentralized management units, plus many partners that are not a direct part of the management system. This model created a permanent network with a performance that is unparalleled in Brazil.

The management system is parity, half governmental and half non-governmental. The program is governmental and international, but we created here the first Biosphere Reserve with effective autonomy, with a Deliberative Council, defined by law. And the RBMA, like the 7 great Biosphere Reserves in Brazil, is not just a little box of the Ministry of the Environment. They are all linked to the MAB-Unesco committee in Brazil. The RBMA Board was the first joint board of its kind in Brazil.

In the non-governmental half we have representatives of NGOs elected by region, researchers linked to research institutions, representatives of communities and the business sector. It even has this characteristic of multilateral articulation. This is a characteristic of the Reserve, which even had its management system taken as a model for many others and won a UNESCO prize for that.

The Atlantic Forest Biosphere Reserve is, above all, this great articulation. Partners are very important. We have Projeto Tamar, for example, which has three outposts of the Reserve, which today are about 70, in different states and with different profiles. In other words, as they are doing that wonderful work, they are implementing the Biosphere Reserve. We have a vision that is not self-centered. We want conservation, sustainable development and the production of scientific knowledge, as well as the appreciation of traditional knowledge, which are the functions of the Reserve, to be happening in a participatory manner. Everything we do is through partnerships. Thus, our technical team, which is very competent and committed, is able to multiply its actions and engage people and institutions.

– We live in the Atlantic Forest. We consume and eat many products from this biome. What is the importance, in terms of mobilization, of also talking about this economy of the Atlantic Forest?

There is a huge economy in the Atlantic Forest. First we have to remember that this is the biome where 2/3 of the Brazilian population lives. We had a predatory history like few other biomes in the world. Even so, we have an incredible biodiversity in what is left of the forest, including many native products of great economic interest – such as yerba mate, cashew, pine nuts, palm hearts, numerous fibers, medicinal plants, ornamental plants, etc.

Yerba mate, for example, is native to the Atlantic Forest. More than 450 municipalities have this species among their main sources of income. The direct and indirect chain generates around 600

thousand jobs. It is the same as the Brazilian automobile industry in terms of the number of jobs. And better distributed.

We have the pine nut, the carqueja, the Brazilian ginger, the espinheira santa. Several species in the field of phytotherapics and cosmetics. But most of them are little explored in a planned way and predatory extraction ends up happening because this development was not adequately supported. More research is needed, support for development, sometimes investment in genetic improvement. There we have cultural aspects, research and economic aspects to be better articulated. If well managed, they generate sustainable wealth for local communities and the country as a whole.

We have stunning landscapes and associated cultures with great use and tourist potential. We have water and immeasurable environmental services that support our cities, industries, agriculture, energy production and other needs of our population. This standing forest economy must be recognized and valued. This is the focus, for example, of the Atlantic Forest Market, Sustainable Tourism and Biosphere Reserve Environmental Assets Programs.

In the current climate crisis, the greatest potential for Brazil to fulfill its obligations to reduce emissions lies in the control of fires and deforestation in the Amazon, but the greatest potential for removing CO₂ from the atmosphere, generating many financial resources with the new Carbon Market, is in the restoration of the Atlantic Forest. And the restoration chain can generate many thousands of jobs and income throughout the territory. The conservation, good management and restoration of our nature should be one of the main pillars of the economy for Brazil.

And we need to remember that more than 80% of the remaining Atlantic Forest area is on private land. Therefore, it is also necessary to engage rural landowners in the good management of natural resources and their conservation. A good example of this are numerous private reserves, the RPPNs, existing in the Atlantic Forest.

I participated in the creation of the RPPNs in 1990. In the elaboration of the SNUC (National System of Conservation Units) law, we placed the RPPNs in the group of sustainable use units. Originally, there was an article that mentioned that there could be exploration and management of non-timber forest resources, as long as it is within an approved management plan. But when this legislation went to presidential sanction, that part was vetoed, only full protection was approved. And what remained was a schizophrenic situation in the case of RPPNs, which are classified as sustainable use, but the only possible sustainable use with potential economic return by law in these reserves is tourism.

I always say that I don't want to see the creation of the association of RPPNistas repentant, or children and grandchildren angry with their grandparents RPPNistas. Because it is difficult to maintain an area with these characteristics. Passion is not enough. The passion is there, the creation of an RPPN is a proof of love. It's completely voluntary. People do it because they believe in, want to make their contribution, leave a legacy that is perpetual. Some of these areas have landscapes, waterfalls, trails that can be explored in some way in tourist activities. But others are not, and yet they are very important because they have a specific flora and fauna, a special landscape, or because they are screens around the integral protection conservation units. We need to concretely support the RPPNs so that they are maintained and are also effective mechanisms for sustainable development.

The possibilities for sustainable use are great, but this is not in the RPPN law. It is possible to work with the production of seeds, seedlings, medicinal plants, ornamental plants, fruits, chestnuts, honey, and so on. There is a huge field to explore the economy of the Atlantic Forest.

Finally, I would like to reinforce the need that, in the fight for the Atlantic Forest and other Brazilian ecosystems, among our priorities is, with emphasis, the engagement of young people, the defense of

our democracy, sustainability, equity and inclusion, contributing to the resumption of our country's environmental role. Only then will we have a worthwhile future.