

INTEGRATED
LANDSCAPE
MANAGEMENT

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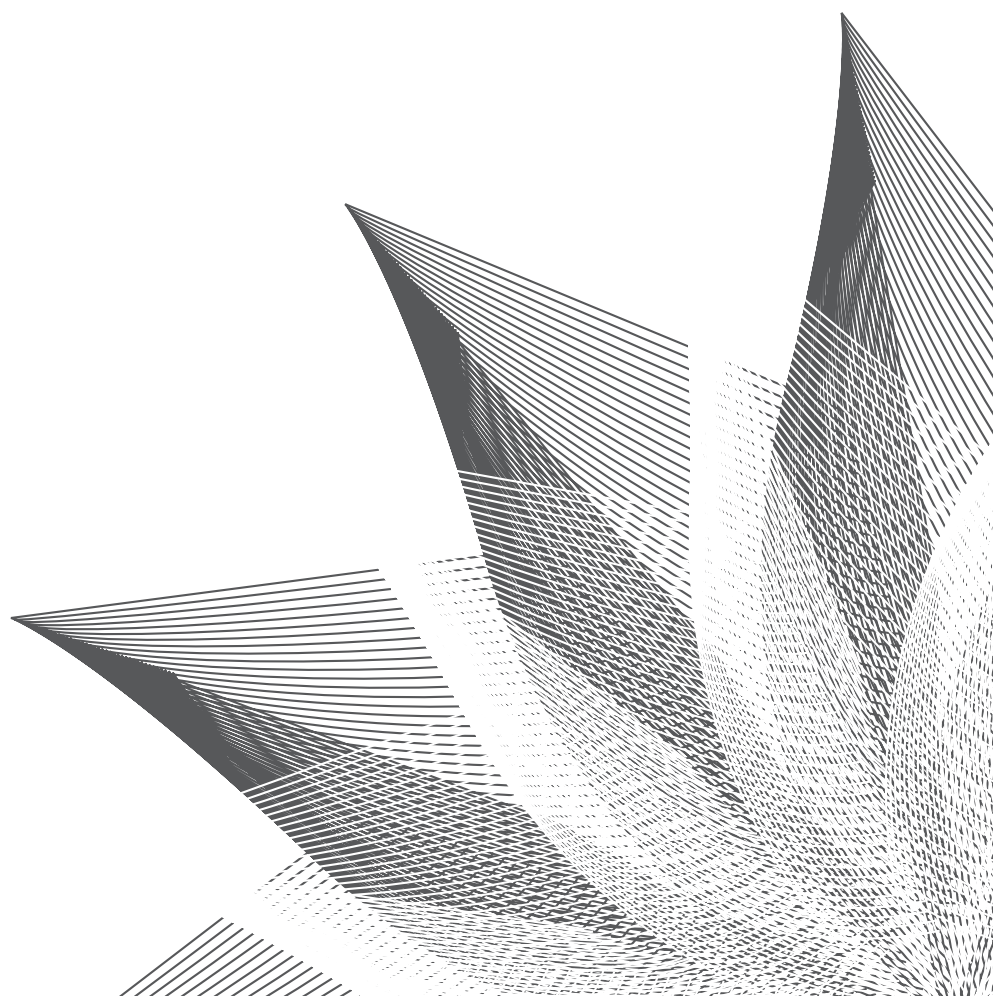
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INTEGRATED LANDSCAPE MANAGEMENT

ECONOMY, SOCIETY, ENVIRONMENT AND CULTURE

INGUELORE SCHEUNEMANN
AND **LUIZ OOSTERBEEK** (EDS.)



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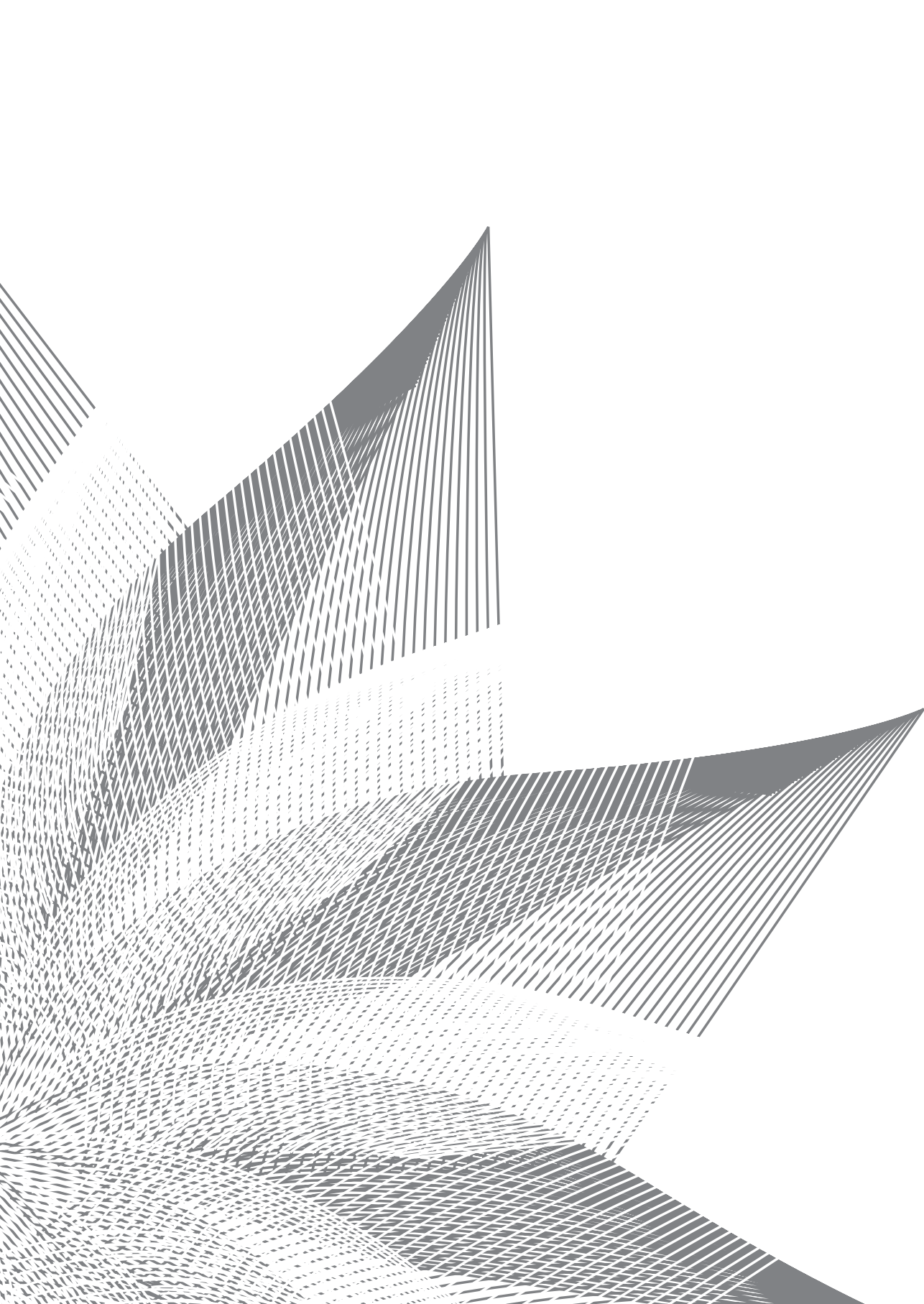
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PREFACE

ELIEZER BATISTA

As an actor and participant in the creation of the theory of sustainable development, I became an observer and a critic of numerous initiatives that have succeeded throughout the planet, aiming to achieve sustainability.

Already, back in 1980, as president of Companhia Vale do Rio Doce, named VALE, today, the implementation of the Project Carajás, in Pará State, Brazil, instinctively sought the sustainability of the region by respecting the environment through the preservation of one million hectare of virgin forest, the building of a town for workers within the limits of VALE land, in addition to the construction of a city for five thousand inhabitants with all conditions of infrastructure, education and health, predicting population growth in the region surrounding the project. This city, outside the limits of the Carajás project, called Paraopebas, was voluntarily built by the company, although this is an obligation of the State.

These principles were the basis for the Porto de Tubarão (Tubarão Harbor) in Espírito Santo, Brazil.

Inspired by these models Stephan Schmidheiny theorized on Sustainable Development at ECO 92, establishing as its pillars the economic, environmental and social aspects.

Since then, many programs have been established by international organizations, such as the European Commission, Inter-American Development Bank, UNESCO, UN, and by national bodies in different countries, in order to develop programs aimed at sustainability. And, this includes, studies on the relevance of transforming sustainability itself into a science.

However, what was possible to monitor and observe, was the failure, to a large extent, in achieving sustainability. Even in the Carajás Project, what was a model city became over the years, the Paraoapebas that we see today, with its more than 100 000 inhabitants, open sewers, slums, high crime rates, and other ills common to most cities, regardless of geographical location.

The questions have been "what went wrong?", "Why it did not work?". Responsibility for failure has been assigned or to governments, or to enterprises or to the unidentifiable system. Detailed analyses were and are made, particulate, pointing what or who is to blame for the failure, however, without indicating the way out or solutions to overcome this failure.

Perhaps, because they face the obvious, it is not an easy task. I refer to confront the obvious, because, as Luiz Oosterbeek and Ingelore Scheunemann stated in their publications, "... reality is always integrated, it is one ... The human interventions can be disorganized or disarticulated, and often are". And so, the three pillars praised for Sustainable Development are traditionally treated in a tight manner with defined boundaries, without interdependence, forgetting the relation of cause and effect.

The introduction of the principles and basis of Integrated Landscape Management-GIT has brought the interconnection of economy, environment, the social, by setting as transverse axis, the culture, which requires that the territory be brought into sustainability, as the cell that brings together all four elements, where everything takes place, where reality stands as one.

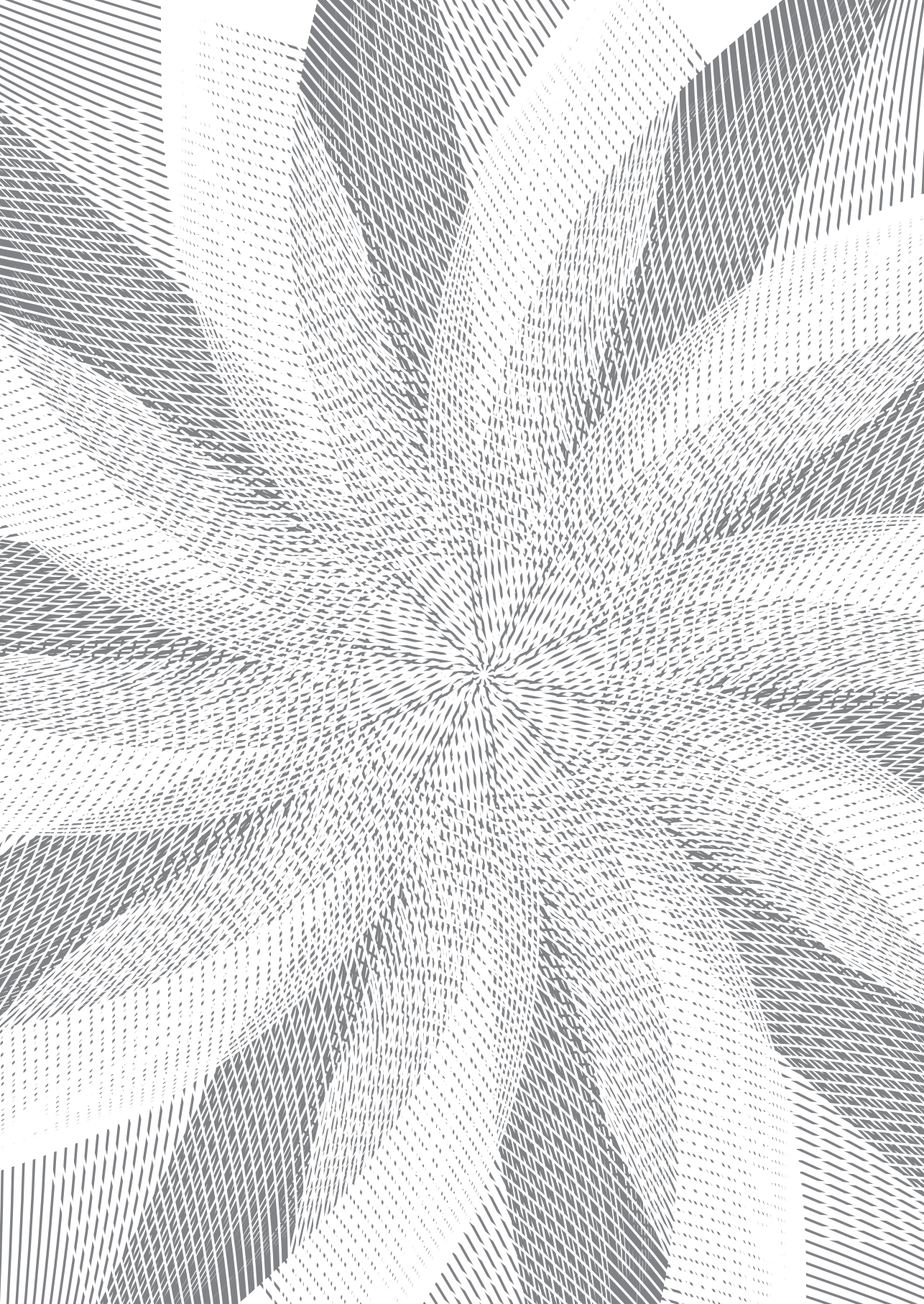
Taking as a starting point ILM programs in European countries, in Brazil, the partnership between Tomar Polytechnic Institute-IPT and BioAtlântica Institute-IBio allowed the introduction of practical principles and processes of Integrated Landscape Management. Its onset is through the development of the Programme for Strengthening the Social Capital and Qualification in Integrated Landscape Management for Sustainable Development at the Rio Doce Basin, which took place with the support of large private and State enterprises. Even before governments and civil society, enterprises understood that the Integrated Landscape Management constitutes the needed response to supplant the fraction treatment of the territory, and the Specialization Course was succeeded by the establishment of a series of contracts.

Until today, environmental permits, a necessary step for the establishment and retention of businesses, has build up processes not always consistent with the knowledge of the territory, leading to the establishment of disconnected conditions within itself and with the territory in question, with expenditures by companies, but without a real and permanent social / environmental benefit. Among these, no treatment "a priori" of the the influx of people, who often, are not professionally qualified, and are attracted by job opportunities that are generated by a large enterprise, whose surroundings results in poverty-generating tensions which brings insecurity, crime, public health problems, and last but not least, the slums in its worse aspects.

The implementation and consolidation of the processes leading to the Integrated Landscape Management, as it translates into greater effectiveness of the economic / environmental / social intervention in the settled territories, it will also bring recognized advantages not only by local and regional society, but also by the market. And this point was understood by BNDES – Banco Nacional de Desenvolvimento Economico e Social – and led this Brazilian government agency to include in their policies the principles of ILM, as to attend to the real intersection of the social economic and cultural segment, and turning itself to the surroundings of large projects.

Along with all these initiatives from IBio and IPT, there is the publication of present book – Integrated Landscape Management for Sustainable Development – which compiles the different themes that are the basis for the qualification of managers in ILM treated by specialists from different countries. It is, therefore, a contribution to the training of managers in Integrated Landscape Management and technical training for professionals to work in this aspect, whether in enterprises, public service or civil society associations.

The coordinators of this initiative, Professor Luiz Oosterbeek by IPT and Professor Inguelore Scheunemann by IBio, incorporate in the book the experience of those who devoted themselves to the study and reflection for the design of Integrated Landscape Management, and also the practice of coordinating and implementing projects in different magnitude and territories, which transforms this work into a source of information and basic document for those preparing to work in programs that incorporate the Integrated Landscape Management as a principle.



INTRODUCTION

LUIZ OOSTERBEEK

INGUELORE SCHEUNEMANN

The second decade of the twentieth century began under the sign of crisis and mistrust. After the shock of 2008, the current situation confirms that difficulties will not be overcome with old recipes. On several fronts (economic, financial, cultural, environmental ...) the current words are articulation and collaboration. And, in all of them perplexities and frustrations are added.

Attention is called to the need to understand the integrated and systemic nature of current difficulties: the financial crisis will not be overcome without a new economic order, the environmental disruption will not be avoided without technological innovation and social equity, and local anxieties will not be settled outside of a global strategy. The society, economy, environment, cultures ... the complex reality of the territory calls for integrated strategies that overcome nowadays dyslexia. This is called Integrated Landscape Management (GIT).

A personal collaboration based on the relationship established between the Polytechnic Institute of Tomar (Portugal), and the Institute Bio-Atlantic (Brazil), we organized in 2010, a first graduate course in Integrated Landscape Management for Sustainable Development, which supported the first ILM projects in Brazil. Several colleagues contributed to this course and this book presents a series of chapters on topics that are essential to train in "Integrated Landscape Management", written by expert teachers in the subject, chosen, mainly, for their vision and experience in knowledge integration and transversality, and its applications, enabling lucid, objective and practical approaches to the complex

issue of ILM and emphasizing the importance of giving their opinions on three pillars: economic, environmental and social.

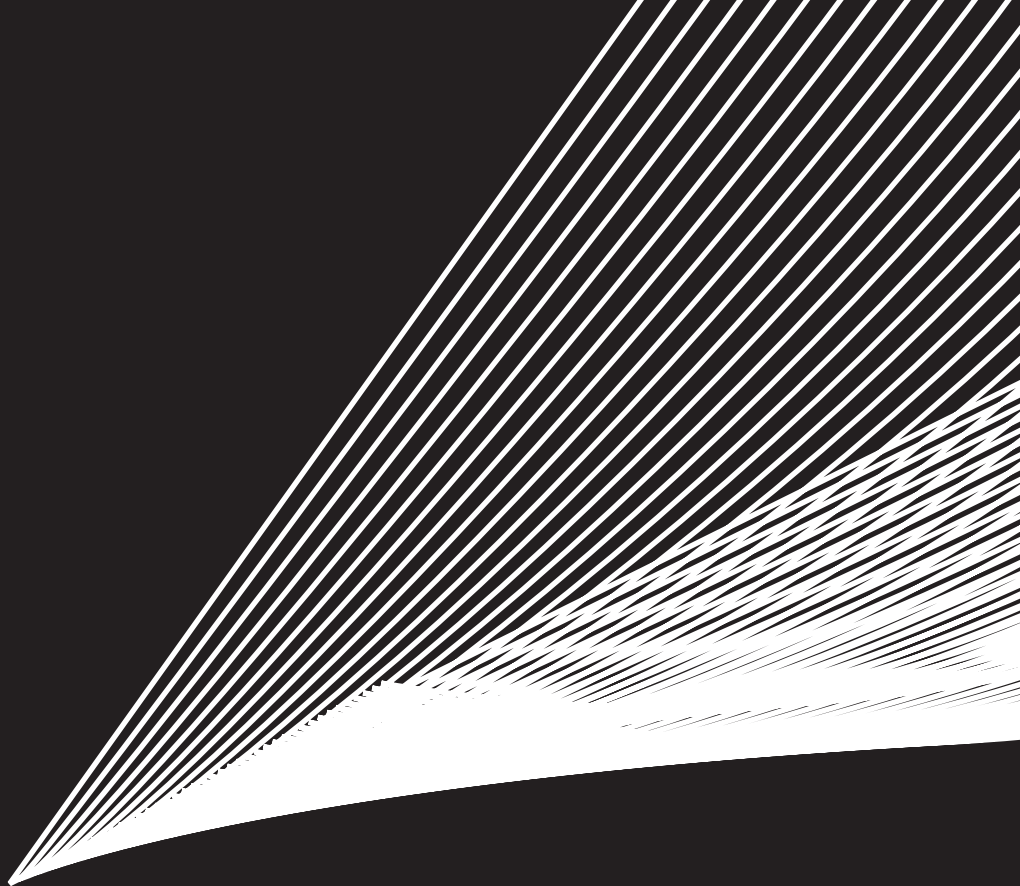
It is essential the leadership of the Polytechnic Institute of Tomar, who initiated a new approach to sustainability and of other European teachers who participated in the work and brought important lessons learned in their countries. Also fundamental, is the ability of the Institute Bio-Atlantic to build up very quickly, several partnerships in Brazil, bringing so many scenarios of ILM. Also essential, is the collaboration of several colleagues, with their specific contributions.

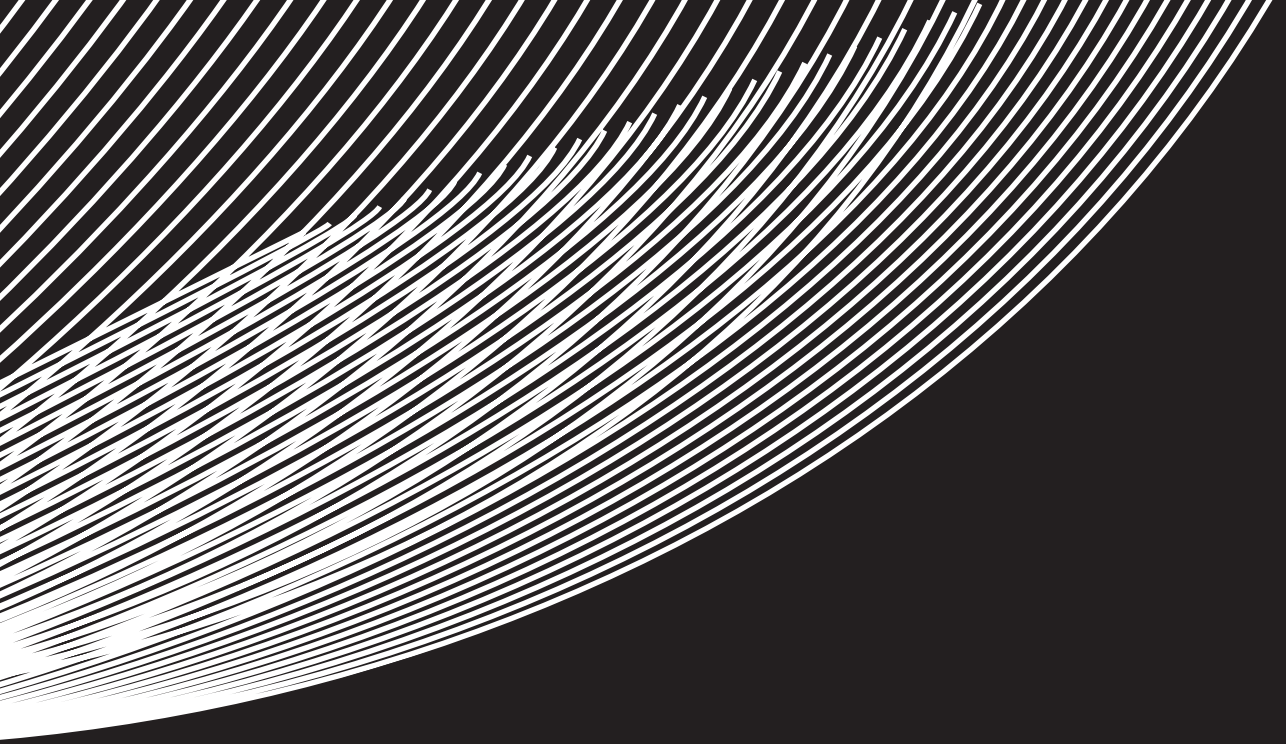
In different studies a historical overview of scientific facts was performed, the paradigms at stake and the very limited conceptions of people, individually, businesses and public authorities, concerned only with the immediate gains, without taking into consideration the consequences of the results generated from the investigations, the scientific work and their technological application.

The work in Integrated Landscape Management requires a holistic- systemic vision of the territory, perception caused by a series of themes exposed in this book.

This book also contains the monographs of four students that were enrolled in the Specialization Course in ILM, held in Ipatinga-MG. These works were developed during the course incorporating the theoretical basis from different topics, but, mainly, from practice performed in specific programs or projects of the enterprises where they worked.

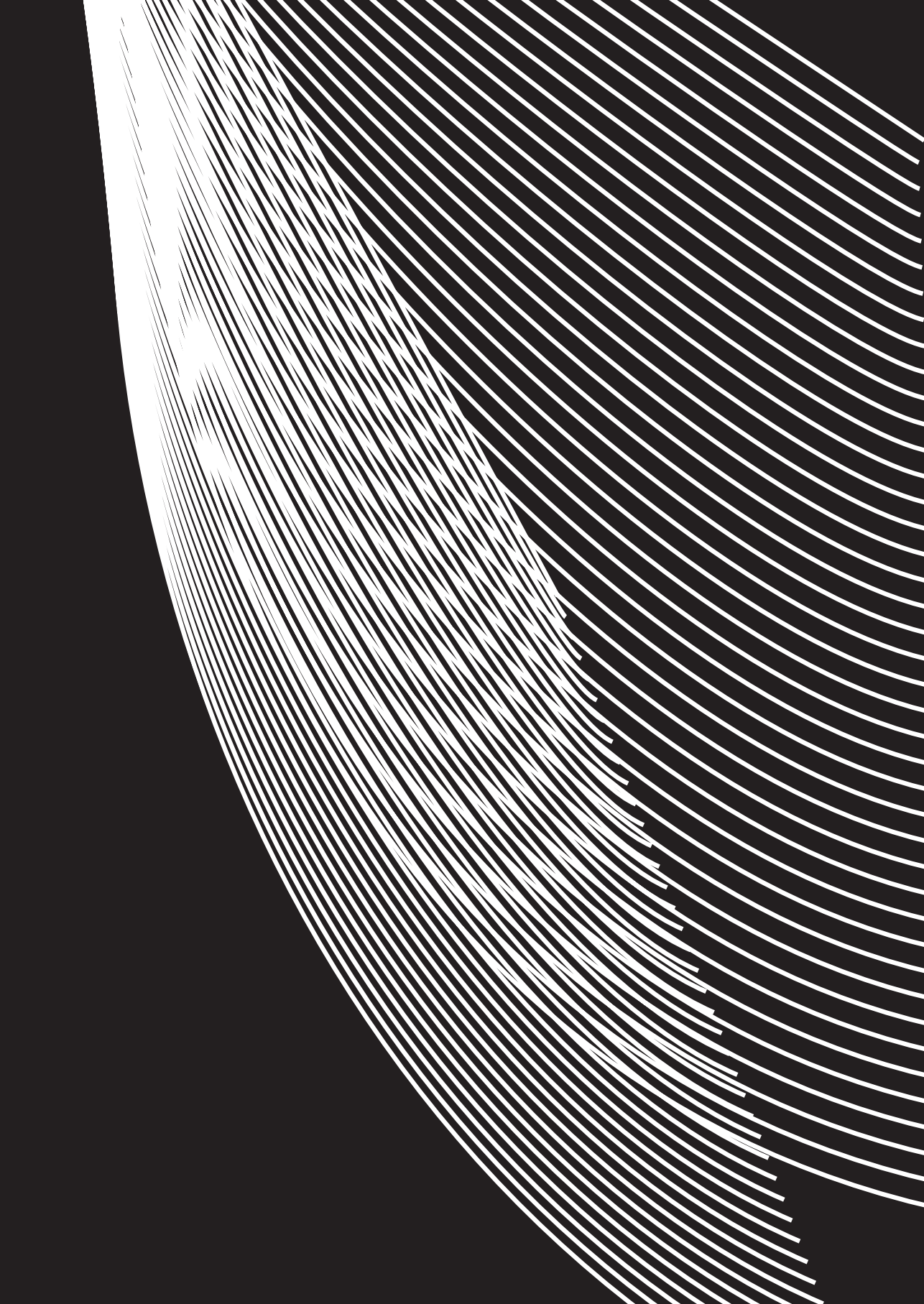
To understand Integrated Landscape Management in its principles and methods and its applications, is not the only challenge. We must multiply this knowledge and make it accessible to more people. Hence there is this book's publication. However, a note is needed from the editors to clarify that this work is not intended to be definitive, since Integrated Landscape Management is a process, therefore in continuous evolution.





PART I

Fundamentals and the direction of Integrated Landscape Management



INTEGRATED LANDSCAPE MANAGEMENT AND BRAZIL

INGUELORE SCHEUNEMANN

The RIO-92 Conference was the reference moment to start and inaugurate the concept of sustainable development, and also contributed to a broader awareness of the environmental damage, largely, attributed to the developed countries. From this point, the concept of sustainable development began to be treated with greater emphasis, becoming part of government policies and programs. However, the operation has shown results with low consistency related to theory. In an attempt to reformulate the situation, the Institute BioAtlântica-IBio, together with the Polytechnic Institute of Tomar – IPT, has as one of its purposes, to act institutionally nationwide, as a transforming agent, representative of social sectors, proponent of public policy, or as organizer and partner in initiatives of the corporate social-environmental sectors.

PIONEER EXPERIENCES IN INTEGRATED LANDSCAPE MANAGEMENT IN BRAZIL

THE CARAJÁS PROJECT

The Company Vale do Rio Doce-CVRD, was one of the first multinationals in developing countries to operate in the natural resources global trade. Besides mining and the production of iron ore, the company launched the development of a system of integrated services and logistics. Thus, operating not only mine but also, railroads, port facilities and a fleet of iron ore and petroleum freighters organized on a global

scale. With this structure Vale do Rio Doce could achieve high levels of competitiveness in this sector.

From the integrated vision of CVRD, under the leadership of Engineer Eliezer Batista, president of the company at the time, it was observed, beyond the economic concern, the social and environmental adequacy. In this sense the industrial and environmental interest were united, applying management techniques available at the time, and also community interests.

The Carajás Project Cia Vale do Rio Doce, was the first experience, among the large-scale enterprises, which included the treatment of economic, environmental and social element, simultaneously. Besides the development of mining and the consequent generation of jobs, care was taken for the permanent preservation of a forest area of one million hectares and the construction of the embryo of the city Paraopeba, outside the geographical boundaries of the project including all services to the population, demonstrating, since that time, the company's concern with the full development of the area. From the observation of this project Schmidheiny theorized about sustainable development, during Rio 92.

Despite of having been the inspiration for the theory, Engineer Eliezer Batista told the newspaper O Globo (04/04/2010) that today, he assesses that the Carajás project did not achieve sustainable development, because along the years, a belt of houses and people, who were not supposed to be absorbed by the project, was established in its surroundings. There were no initiatives by the government, state government of Pará, the federal government or the population to monitor and prepare for the development of the growing settlement, a situation that is repeated in many other ventures in Brazil and worldwide.

The Carajás project and its international impact moved the business world, not only about how to successfully develop the physical infrastructure of similar projects, but, also it demonstrated that sustainability is dependable on the project to integrate social and environmental impacts, requiring, still, a fourth transversal element: the cultural dimension and identities.

In his statement, Dr. Batista said that it is essential to recognize that the geographical area where the company is established is indivisible from its surroundings. We must consider the territory as a whole and from a systemic point of view to be able to analyze the many elements that make up the territory. Recognize that the

economic, environmental and social components, not only must happen simultaneously, but that there is an interlocking "ab initio", which is independent of wishing or not wishing that an element interferes with another. There is mainstreaming between the economic, environmental and social that needs to be recognized.

It must also be recognized, that it is not only the company's responsibility to take care of the surroundings of the enterprises, but there is a joint responsibility of the company, the civil society, local and regional administrators. And to make this possible, we must understand the need for Management of a territory to do so in an integrated manner in a logical network, and which requires qualification and training at all levels, for all actors.

Moreover, there is still a suggestion to achieve sustainable development by filling the existing gap, which is, counting on people who are trained for Integrated Landscape Management.

THE FIRST EXPERIENCE

In 2005, the Polytechnic Institute of Tomar - IPT, Portugal, signed a cooperation agreement with the University Vale do Rio Doce - UNIVALE, Brazil, to develop a program of Specialization in Integrated Landscape Management. After this, the CAPES UNIVALE approved a Master's Degree program in the subject. However, with the change of the higher management of UNIVALE and the non renewal of the agreement with the IPT, the Masters remained with only two lines of research, Parasitology and History, which do not meet the principle of ILM, thus drifting away from the initial purposes.

THE BIOATLÂNTICA INSTITUTE AND THE POLYTECHNIC INSTITUTE OF TOMAR AGREEMENT

In 2009, the Institute BioAtlântica - IBio, signed a cooperation agreement with the Polytechnic Institute of Tomar - IPT aiming the development of the Programme for Strengthening Social Capital and Qualification in Integrated Landscape Management for Sustainable Development at the Rio Doce Basin, which developed during

the year 2010, as a first pilot action in Integrated Landscape Management – ILM, with the participation of Gorceix Foundation, linked to the Federal University of Ouro Preto, Minas Gerais, Brazil.

The program was to focus on the strengthening of human capital of the region of the Rio Doce Basin and others, in a perspective of environmental compatibility and socio-economic-cultural sustainability, and the constitution of a network to build up knowledge open and participatory, in order to involve, particularly, organizations and professionals from other regions beyond the basin of the Rio Doce.

The audience was comprised, primarily, of technicians and leaders of major enterprises in the mining and steel industry in Minas Gerais, technicians from the government of State of Minas Gerais and Espírito Santo, and municipalities and NGOs in the region, object of the pilot project.

It was established as objective of the Program the training of technicians through post-graduation courses *latu sensu* (specialization), and training activities and formation. Other objectives were set and achieved along the development of the program, such as:

- Design a core institutional partnership, with strategic profile, to promote prospective discussions in the region, aiming integrated development, diversified and sustainable;
- Promote a new paradigm of regional development, integrated and sustainable, from example and from the search of concrete solutions for specific problems;
- Encourage the creation of a human resources network, progressively wider, that shares this perspective and that is in a nodal space, managed by an institutional partnership, promoter of Integrated Landscape Management.

From this Project it was initially created the Program with defined purposes:

- Train managers of small productive units, helping its eventual conversion into a model for programs to be undertaken by the region;
- Promote the expression of cultural and identity diversity of the region;
- Promote a culture of innovation, internationalization and quality control.

The proposed model uses the concept of "Institution Building", which includes the creation of a resource center, specialized courses for the "intermediary leaders", actions for ongoing training in order to meet the different actors (central and local government, enterprises, associations and other civil society organizations, higher education, structures of expression and articulation of identities), in a network structure.

The students of the specialization course, mostly coming from enterprises in the region of Rio Doce, which operates local or national, have been taught by a faculty consisting of professors not only from Brazil but also from countries in Europe, Latin America and North America, which were selected from the most renowned experts on various topics that are part of the management of a territory, but especially for their vision and experience in mainstreaming of knowledge and its application.

From the perspective of formation, the course required that students have practical training activities of collectives aiming the understanding of what represents Integrated Landscape Management and its role in the territories where they live. These activities were brought into practice integrated in the monograph project that each one developed, which should necessarily be part of the activities developed in their professional duties. This has led companies and / or governments not only to be aware, but also participative in the program.

The regional community, through leadership in all its segments, has been involved for the first program activity, a Workshop on Regional Prospect, with discussions of strategic areas from a variety of specific polarity and global (Territory, Knowledge, Institutions, Identity and Image).

Hoping to create a framework for position clarifying discussions not always conscious of the different protagonists, an attempt was made for a careful assessment of the region, taking into consideration internal strengths and weaknesses, and threats and opportunities determined by the external environment. For this technique was used internationally known as SWOT (Strengths, Weaknesses, Opportunities, and Threats). The analysis of these four dimensions, followed by a methodological study of the correlations between them, allowed a detailed look at the operation scenarios of the project, but mainly, established the foundations of strategic actions to be taken at all levels in a foresight exercise designed for 2030.

The Program also consisted of an International Seminar of Integrated Landscape Management for Sustainable Development, held in Ipatinga, with the influx of business representatives, federal, state and municipal governments, academics, NGOs and society in general, which was chaired by the governor of Minas Gerais, as well as guests from different countries and international organizations.

It was included as a priority program in the establishment of resource centers, both in Ipatinga where the focal point of the program was settled, as in the territories where students develop their projects. These centers are structured to work as a "nucleus of participatory reflection and actions generating," with the perspective of building partnership, with a strategic profile, to promote prospective discussions in the region, regarding integrated development, diversified and sustainable. The various resource centers tend to organize themselves, building a network of integration centers of land management strategies. Such spaces should articulate the higher and vocational education, the projection of memory and identities and the articulation of operating agents from public and private sector, into concrete actions. Ideally it has the shape of a civil society organization, nonprofit, involving municipalities, businesses, universities, associations and other local structures.

The Earth and Memory Institute of Mação - Portugal, recently created an Earth and Memory Institute in Brazil, in São José -SC, which is an example of this structure, including a virtual showroom connected to the network "PACAD" (Program of Scientific Animation and Digital Arts), a library and rooms for discussion and training, in which actors from different organizations and interests, build common dynamic and design future scenarios.

On September 25, 2010, the Earth and Memory Institute (Polytechnic Institute of Tomar) and the Institute BioAtlântica signed an agreement to create the Action Center on Integrated Landscape Management – CAILM, an Euro-Brazilian alliance for Sustainability. The experience gained in implementing the Program to Strengthen Social Capital and Qualification in Integrated Landscape Management for Sustainable Development of the Rio Doce Basin allowed to define implementation and monitoring actions of projects based on ILM principles at companies in Minas Gerais, Rio Grande do Sul and Rio de Janeiro.

PROJECTS IN PROGRESS

1. *Açu Logistics and Industrial Complex*

The project of creation of the Logistics and Industrial Complex of Açu, led by business group EBX, on the northern coast of Rio de Janeiro, occupying an area of about one hundred square kilometers, is one of the largest projects of industrialization and urbanization in the world. The project is designed to create a platform that integrates the processing of mineral resources, triggering a direct manufacturing chain (steel mills, cement plants, shipyards), indirect chains (turbine production plants, automobiles and high-tech industries), and an outlet (minerals and processed products) via a shaft and ground logistics of a large commercial port.

The project does not end, however, only in the industrial aspect. The company took an offer from the Institute BioAtlântica and its partners, Polytechnic Institute of Tomar and the Earth and Memory Institute, both of Portugal, which is based on a policy of sustainability grounded on four pillars: social, environmental, health and safety, and of awareness and prospection. These pillars are the foundation of all companies of the group and their departments.

The preliminary project to establish the Program of Integrated Territorial Management in the Açu Complex and its regions of influence, proposed lines of actions for the next five years, specifying the actions planned for the current year.

In the first half of 2011 we can highlight as important IBio activities, the organization, establishment and inauguration of the Knowledge Centre, located in the municipality of São João da Barra, recommended for programs in the ILM, which will function as "nucleus of participative reflections and action generating."

Also took place, the first Prospective Seminar, and several thematic forums of Education and Culture, Health, Territory and diversification of traditional economic activities.

2. *Sustainable Territory's of Ribeirão do Boi*

The Institute BioAtlântica - IBio, in partnership with the government of Minas Gerais and Espírito Santo, as well as NGOs, universities and enterprises in the region, is, since 2006, developing the Program Sustainable Doce River Basin. The program was initiated with the Sustainable Guandu Project Design in Espírito Santo and the Project Ribeirão do Boi Territory in Minas Gerais. Both seek to integrate economic and environmental actions for sustainable development and changes paradigm in land use and territory occupation, with the full involvement, engagement and empowerment of local communities with the actions and activities to be developed.

There is agreement between the entities engaged in the project that the Project Ribeirão do Boi Territory, near the Vale do Aço; it has the ideal characteristics for a demonstration project, mainly, because it is a representative region in its profile of land use, in the agrarian land structure, socioeconomic and environmental situation in the whole basin of the Rio Doce. In addition, the Ribeirão do Boi, being near the Parque Estadual do Rio Doce, (a State park), one of the most important Protected State Unit of the Atlantic Forest, will serve as a laboratory to experiment in the integration of development activities and environmental conservation.

"Ribeirão do Boi Territory: a project to catalyze actions and integrate social, environmental and economic sustainable development", in this context, it aims to promote the development and testing of innovative actions and models of sustainable land use and forest restoration, and also, the promotion of new production chains, thus enabling at medium - long term, a greater balance between productive activities and environmental conservation.

In this project, are being implemented, methodological tools based on the Integrated Landscape Management - ILM that considers, fundamentally, the training of human resources in a logic of social capital formation and the creation of a model of prospect / monitoring internalized by the community that is intended, in favor of a culture of quality and critical reflection. The Integrated Landscape Management has enormous potential for the construction of a enterprising social network formed by civil society organizations, community leaders, landowners, state and local governments and businesses, allowing the empowerment of projects and undertaken actions. Empowerment happens as there is conquest and distribution of power among

many. But it is not the mere performance of tasks that defines empowerment, but the action connected to a sense of responsibility for the work done, the acquisition of knowledge and the capacity to make changes from there.

Thus, the Project Ribeirão do Boi Territory, aims, from this perspective, promoting the management of a territory in an integrated manner, with strengthening the human capital in the region, in conjunction with actions and projects for sustainable development from the perspective of environmental compatibility and economic-cultural-social sustainability.

3. Valuing Life in all its dimensions - Serra da Piedade

The Institute BioAtlântica in partnership with the Archdiocese of Belo Horizonte, Minas Society of Culture and PUC Minas, intend to capacitate church representatives, teachers and employees who are contributing in the Serra da Piedade Project.

The first activity was to hold a Seminar on Integrated Landscape Management in PUC-Minas, Eucharistic Heart Campus in April 2010.

The activities of the seminar was conducted by professor Luiz Moguel Oosterbeek, Polytechnic Institute of Tomar, Portugal, and the professors Inguelore Scheunemann and Aline Tristão from IBio, who presented the methodology of Integrated Landscape Management -ILM.

The method aims the development based on territorial dynamics and requires a society conscious of its role in the planning.

The Seminar was part of the project and helped the actions developed by ILM.

The project is broad, and it is focused on the potential of the Serra da Piedade in order to integrate the partner institutions and the activities of teaching, research, and extension with sustainability actions that will ensure growth and development of the territory of Serra da Piedade.

The motivating axis of Piedade ILM Project is a national and state cultural heritage, the Shrine of Our Lady of Mercy, the patroness of the state of Minas Gerais.

4. Integrated Landscape Management for the region of influence of Celulose Nipo-Brasileira – Cenibra

The partnership between the IBio-Institute BioAtlântica and Cenibra resulted in the company's adherence to the associated body of IBio.

Cenibra is a multinational industry for cellulose production, currently in the expansion phase of the third production line, installed in the municipality of Belo Oriente - MG.

The municipality is located in the Atlantic Forest region, in the Metropolitan Chain of the Steel Valley, Doce River Basin.

The establishment of a new crop-planting of eucalyptus brought a lot of unrest in the population, concerned about the fate of their lands and changes in their economic activities.

Aware that the lack of knowledge on the part of the community and government, about the programs designed to benefit the population and the region, was leading to an uncomfortable situation that could turn into conflicts. In partnership with Cenibra, IBio initiated a program of Integrated Territorial Management in the region of Belo Oriente, containing guidelines and actions for the surrounding industrial environment and its expansion area.

The company will invest in the diagnosis, planning and coordination of actions to optimize human and financial efforts to be invested in a program of Integrated Landscape Management.

5. Center for Forest Research and Integrated Landscape Management of the State of Espírito Santo.

In partnership with the government Espírito Santo, IBio works for the creation of the Center for Forest Research and Integrated Landscape Management of the State - ES.

Among the objectives of the center are the articulation of the projects of Integrated Landscape Management and the development of innovative forestry research for the conservation of natural resources, involving the improvement of the productive chains of production and forest restoration and environmental services market in the State of Espírito Santo.

6. *Serra do Cabral - Vallourec & Mannesmann*

This project starts with a survey of the territorial area of the Serra do Cabral having as a result the training phase at the presidential and managerial level and preparation of the Integrated Landscape Management project.

The Serra do Cabral region is characterized by its richness in cultural heritage represented by cave paintings and natural heritage which is evident at the Park of the Serra do Cabral. As remarkable productive activity reforestation for commercial purposes can be mentioned, and it is heavily dependent on characteristic human labor. The territory is characterized by changes in the type of planted forest with high technological management.

FINAL CONSIDERATIONS

The BNDES document "Policy for BNDES performance in the Surrounding of Project" comes to be a facilitator in Integrated Landscape Management project and other actions of IBio.

By funding projects, particularly those of greatest potential in the regional aspect, BNDES intends to act more in depth and integrated in areas and regions that are receiving the investment, which comes to constitute a major advance in relation to previous policies.

The proposed action consists of BNDES's strategy of promoting regional development.

"The concept of territory, adopted by BNDES, includes not only a delimited physical cut, but mostly institutionalities and activities in this space that competes for its configuration."

Projects in development, as well as, those in the initial phase, aims, to not only the implementation of Integrated Landscape Management in the various considered geographic space cuts, but also that they become territories models. It is expected that other territories seek in this practice a systems view on the territory and the management mechanisms of the ILM.

It should also be noted that the different projects mentioned have their motivation, based on distinctive characteristics of each territory. At the Integrated Landscape Management for Açú Complex Project and its Areas of Influence, the economy was the triggering factor for its implementation; for the Project Ribeirão do Boi it was the environment and environmental degradation; in the Serra da Piedade project the cultural heritage was considered; Cenibra Belo Oriente-the determining factor was the social degradation and in the case of V & M - Serra do Cabral, the changes in productive activity. The principles of Integrated Landscape Management, as well as the central methodologies guiding the actions in a ILM project are always present. However, the peculiarities of each territory, not only the environmental, the economic and the social are treated in a specific way, as well, and especially, the culture, which characterizes that space; it is the amalgam among the three spaces and identity, driving force or stagnating force.

Enterprises have taken the lead in pushing ILM programs in the territories where they are installed, because of the understanding of the major changes that affects them. However, ILM also requires the participation of the public institutions. And it is strongly focused in society, through educational processes for the understanding of the territory as a system, and that there must be awareness of the interdependence between the three aspects that make up the theory of sustainable development, having culture as transverse axis.

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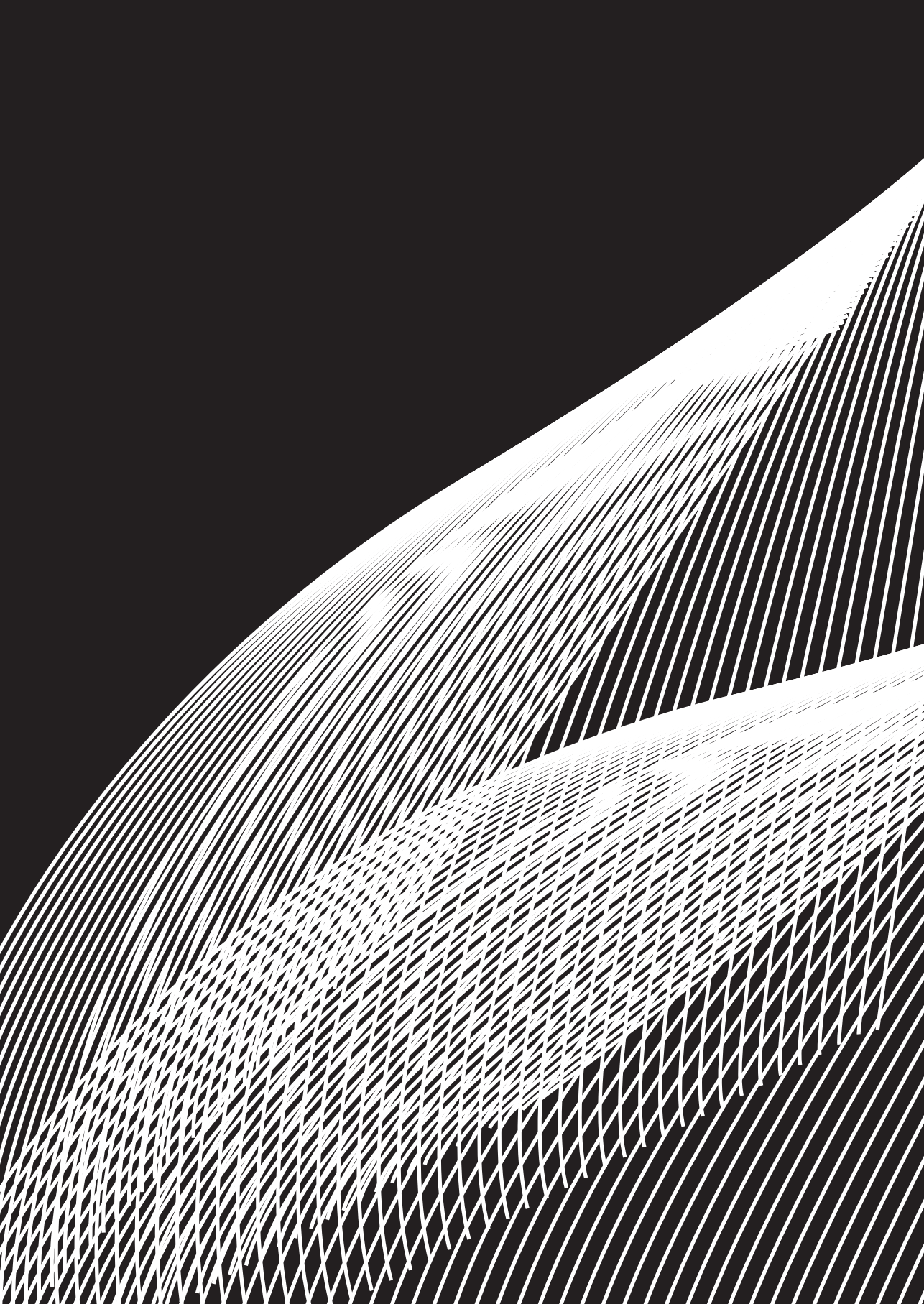
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PRINCIPLES OF INTEGRATED LANDSCAPE MANAGEMENT

LUIZ OOSTERBEEK

The world is the substrate on which the game of our abilities develops.

E. Kant (1802)

The Integrated Landscape Management integrates the planning and organization objectives developed during the twentieth century, but demand an integrated view of social dynamics in the territory, in its social, economic and environmental ways. This view is made possible by the integration of intervention actions on the territory (space) in the temporal flow creating structures and mechanisms of participatory governance. The implementation of integrated management is part of making diagnoses, but seeks not essentially how to solve problems but how to overcome dilemmas, building future scenarios (prospective) and promoting subsidiaries(supported by flexible structures) and conscious choices (human capital formation). The article discusses the history of models and instruments of landscape management, clarifying the specificity of Integrated Management.

THE PRESENT WORLD AND THE NEW TERRITORIAL DYNAMICS

Public policies have been targeted, with rare exceptions, to the needs of economic growth. Even after the emergence of the concept of sustainable development with the report of the Brundtland Commission (UNITED NATIONS 1987), which in turn

took up the principles of the “triple bottom line” delineated from 1981, the understanding that this concept provided has been focused on economic dimension, whether to make it a priority, whether to deny it (but always starting from it). This understanding begins with the consideration that human groups operate mainly in space, and its success can be measured, mainly, by economic growth (GALOR 2005) that provides a greater access to material goods of various kinds. From here follows the interest in articulating the interests of these groups in the organization of space in order to harmonize their respective agendas towards a common and converged future (OOSTERBEEK SCHEUNEMANN 2010). In this context, the economic dynamics are complemented by social dynamics (groups) and supported by external constraints (environment). It is thus a non-systemic approach of human behavior, which considers the different dimensions of the original model of sustainable development but does not include it in a whole (see for example, PORTUGAL 2007).

If it is true that the territory is the most crucial dimension of our behavior as a species (SILVANO 2001), and if it is equally true that this behavior is cut, in a very visibly way, in human groups of various types (social, national, ethnic, economic, religious, etc.), it is no less true that the dawn of the twenty-first century is marked by the emergence of a relatively new phenomenon, though repeatedly discussed in the past (s. PKEKHANOV 1901): an unprecedented status of the individual in society.

The twentieth century was marked by unprecedented growth, which enhanced the energy consumption and threatened to break environmental balances (to the point of being able to influence the climate changes – s. SANTOS 2007), but allowed an extraordinary population growth, that the extension of the average life expectancy and the falling infant mortality play a decisive role. At the same time, never so many millions of human beings – since the economy of production was generated and created complex societies – have escaped poverty, despite the overwhelming growth of the poor. The evolution in the twentieth century brutally exposed the contradictions of the system we live in, often through war, and also saw the emergence of a new notion of participation and citizenship, which is stronger than the traditional understanding of democracy.

There are essentially two factors that led to this advance the participation of citizens in their societies. On one hand, in many countries economic growth has leveraged a middle class increasingly strong, which is the source of various social movements, especially after World War II, around various "rights" (from right to independence of the colonies to the rights of women, youth, black people, indigenous communities, homosexuals, among others), freedoms (of expression, assembly, demonstration, etc..) and guarantees (from these rights and freedoms, including the construction of several types of providential States in the areas not only of safety but also health, education, and sometimes even employment – s. AMARAL 2010).

The growth of the middle class was accompanied from the penultimate decade of the twentieth century, by the growing inability of the States to provide for stability and the growth desired. The end of optimism that followed the Second World War, marked by the end of the dollar/gold parity (in 1971, marking the beginning of the end of the Bretton Woods system, built in 1944) and then the oil shock of 1973. The more developed States where democracy had its way for some time, mostly in the northern hemisphere, were revealing oscillations in their ability to "provide" for the past 35 years, during which the increasing loss of resources that supported trade of tradable goods (particularly in Europe, which suffered the impact of independence of the colonies, on which rested much of its wealth) was compensated by mechanisms of expansion of consumption based on credit (generating shorter cycles of crisis and a financialization of the system – AMARAL 2010).

From the last decade of the twentieth century it was generalized that the knowledge that the Nation-States, by themselves, do not have the means to resolve any major issues that affect humans beings, from the problem of energy to the access and saving of the consumption of drinking water. This reality has led many countries to emerge in a dynamic individual participation, which incidentally took their first steps in the American continent (USA and Brazil) but spread quickly to Europe (in a process parallel to the growing electoral abstention in countries where voting is not required).

The combination of the processes of increasing participation (or desire to participate), with the growing impotence of the Nation-States to arrange solutions to basic problems that affect individuals (food, energy, water, health, safety), the emer-

gence of new powers often stronger than many nation-states (as some big business groups worldwide – s. ROSSETTI & ANDRADE 2009), the unprecedented structural unemployment on the planet (in a context where growth is possible thanks to technological innovation, but it generates less need for jobs each day), environmental imbalances unsuspected a few decades ago (energy consumption, global warming, accelerated reduction of biodiversity), strengthening of the systemic integration of regional realities through new technologies... all these processes reinforce the intervention area of isolated individuals or small groups, on an unprecedented scale. In the past, at various times of crisis, the actions of individuals or small groups were very important (by supporting, for example, the nineteenth century anarchist outbreak). But what changes in our society, today, is that the traditional structures for socialization of behaviors (the states, but also the churches, political parties, unions, and even their own families or institutionalized NGOs) no longer are efficient tools that fit the behavior of individuals (OOSTERBEEK 2006). We live in a moment of transition when also those "collectivizing" structures lost their effectiveness, making room for individual intervention with potential global impact.

SOCIAL, ECONOMICAL AND TECHNOLOGICAL DYNAMICS

The territorial management (OOSTERBEEK 2002) has to accommodate to this new reality, where the atomization of the behaviors is growing that, globalized, the system faces serious problems to grow (even though its economic component grows), increasing entropy (or disorder). The territorial management needs to incorporate the atomization and chaotic behavior (i.e., the number of variables multiplies beyond what can be planned completely in advance) in its matrix, and not merely as a disturbing element (MONOD 1970; DELEUZE 1990). In short, territorial management has to be more management and less order, more foresight and less planning.

In this context it is important to understand what is relevant to people, to these new "liberated atoms" that relate and often collide uncontrollably. So, people, regardless of social dynamics, do not stop worrying about the processes that influence its individual and collective survival. Processes from which, since pre-modernity, the society was building specialized areas of academic reflection (OOSTERBEEK

1999): Food (agronomy), comfort (engineering, energy), health (medicine, pharmacy), security (defense, law), and identity (humanities).

It is precisely in these areas that the current society, despite the increasing competence in academics, cannot help to overcome the difficulties and anxieties of people: the speculation of basic food prices due to the business of bio-diesel, the decrease in welfare systems across Europe and its almost non-existence outside, the growing insecurity (marked by the return of the pirates to the seas in the Indian Ocean, 500 years after the Portuguese had affirmed their presence in the region precisely to combat piracy), the financial difficulty to reconstruct various basic equipments (very clearly in the U.S., where much of the infrastructure dates from New Deal), urban concentration of population, the explosion and the recovery of millions of micro-identities... The global territory is today, more than ever, a complex network of urban centers, a drift that still echoes the illusion of Le Corbusier: that such spaces are parameterized in four key dimensions (live, work, rest and move), ignoring the dynamics of the unpredictability and variability of human behavior. (OOSTERBEEK & SCHEUNEMANN et al. 2011).

Individuals perceive these difficulties, although more in some countries and regions than others, depending on their respective starting points. But it is true that the crisis is felt more in the northern hemisphere, where the feeling of "loss of acquired rights" is too strong, it is no less relevant in other countries, whose growth is strongly influenced by the crisis of consumer markets of the northern countries and by the limitations objectively imposed on the growth of energy consumption (which if not limited by international agreement will be so by natural disaster). The clearest expression of this is the contradiction generated by the increase in parallel to unemployment and the economy, which put into direct conflict the economic and social system in a potentially explosive way.

In this context, it is very problematic the growing gap between technological innovation and the expertise of individuals, which directly reflected in their critical competence. One of the expressions of the global crisis is the crisis of educational systems, that in contrast to what is often written, is more serious than a century ago, precisely because it is true that we reduced the overall rate of illiteracy and is also a fact that in large regions (including Brazil) the family's role as an educator were drastically reduced, so that functional illiteracy is more serious today than in 1910. Just think of the average individual survivability in a context where the

networks fail to supply electricity, water and food products: in 1911, not only the world's population was six times lower and the current urban concentration was much inferior, diluting the pressure over the territory in any such event, such as widespread powers to gather resources for survival (recognition of edible species of a predator standpoint, knowledge to cultivate, autonomy to control the limited production of fire, etc..) were much higher. The crisis of the transport of products systems that supplied Rome in the third century A.D., sank the city, of nearly 2 million people, in violence and instability and precipitated the collapse of the empire. In the transition to modernity, globalization has advanced largely as a complex system of transport and communications; it is interesting to see how the Venetian Republic, in the mid-sixteenth century, retrieves its protagonism, momentarily hurt by the Portuguese incursion beyond the Cape of Good Hope (BRAUDEL 1994). How Sao Paulo, New York, Tokyo, Paris or Lisbon, would function, today, if there is an extended "blackout" for a few weeks?

The twenty-first century is already marked by the proliferation of "small" and very violent conflicts, and a third of the 345 conflicts recorded by the UN in 2008 was due to racial or religious reasons, that is, it was not determined on the conscious level by any of the factors mentioned above, which obliges us to understand the relevance of a fourth dimension of sustainable development, beyond the economy, society and the environment: culture and identities.

In the twenty-first century, the gravitational axis will move to the southern hemisphere. China is already today the second largest economy, and India will be the third in 2020. If the countries of what once was called "third world" represented only 37% of 41 billion dollars of world GDP in 2000, they represent (including Brazil) 51% of a global GDP which is estimated that in 2014 nearly doubles that value despite the crisis). It is an inversion of the center of gravity that does not, necessarily, imply the same growth rate of employment, social rights or democracy and civic participation; an economic growth that will not meet necessarily the needs of environmental balance. And a growth that can generate growing criticism and differing individual reactions, as those emerge from individuals increasingly alienated within a framework of general retreat of rationality and mastery of core concepts that structure the rational knowledge: space, time and causality (PIAGET 1975).

When the dynamic unions are seeking, at the same time, the reduction in birth rates, the increased life expectancy, the growth in social welfare state, the tax cuts

and retirement age of 65, i.e., an impossible equation in short or medium term, is the concept of causality that is in loss. When the IMF suggests in the current context, in Greece or Ireland, identical recipes to those that preceded the rural exodus of the last 20 years (where the rural production served as an impoverishment cushion) and the financialization of the global economy (when the Nation-States still had a decisive voice in the evolution of markets), i.e., recipes that in the new context does not calm down the market (because they realize that the path of civil war is being drawn, the implosion of the euro and the rebirth of totalitarian nationalisms in Europe), are the concepts of time, space and causality that are forgotten. When strategies are held in territorial planning and management in five-year cycles, that is, unable to respond effectively to the resulting volatility from the acceleration of cultural and socio-economic dynamics, it is the understanding of the relationship between space and time and the crossing of independent causal series which is questioned.

TENSIONS AND DILEMMAS

We have today many urgent challenges and no possible resolution to the local or regional scale, against which Nation-States are powerless. These challenges are structured around access to vital resources (the survival of the system protagonists), the need to rationalize the use of the territories (the organization of the system), the safe and efficient means of transport and communication (networks of system) and the pressure on the environment (global sustainability of the system). Access to water resources, already animates several conflicts on all continents, is probably the most serious, although it is spoken less than fossil fuels (OOSTERBEEK 1997). We will have more territories with little drinking water and its redistribution on the planet, in regulated systems and solidarity will be an unavoidable way to prevent wars.

In this process, the recognition of cultural diversity not only as a right but as a strength of our species will be essential in the future, what leads us to a range of identities, which is currently fragmented and reorganized. New countries were born in the last decade; several are not socio-economically viable, although pushed by dynamic identities. They are expressions of an inevitable drive (the identities)

that tries to accommodate to an anachronistic format (the Nation-States). As always, life will be stronger, and will remove (as it already is) the power of those States, creating new dynamics of power, more suited to globalization. The reorganization of territorial identities, including from national problems unresolved in all continents (most severe in Africa, but very present in all countries, especially in larger ones), the processes of re-appropriation of territories (by descendants of indigenous communities or ethnic groups condemned as diasporas in the past) or repatriation of assets (that arise with increasing frequency as the pole gravity shifts to the South), are other elements that cause increasing conflicts of root identity, which then shape the territorial dispute.

A third group of global issues that stands today, alongside water and identities, are those arising from the efficiency and safety of transport systems and communications. In a global system, the streamlining rationalization of the territories of the planet will be a precondition for sustainable development. The micro-territory sustainability itself is impossible. Even larger units such as the space of the current European Union, will have great difficulties to be viable within over than a century, unless the entire system collapses and disperses. The rationalization of the use of the territories will make that they become increasingly inter-dependent, i.e., less autonomous and less sustainable in an isolate way. Ensuring the safety of facilities and systems of transport and communications in a situation of increasing urbanization will be vital. All urban systems of the past, regardless of each socio-economic frameworks, perished by a failure of the supplying systems to the city and also supplying information in time to decision makers centers. The insecurity in whole countries (like Iraq or Somalia, now on the verge of splitting) or in growing areas of large cities (like Paris), or blackouts that have affected large economies such as North American (but also Brazilian) illustrate this problem.

A fourth group of tension arises from the contradiction already mentioned above, between the growing economy and the employment decrease by the same instrument that makes the economy grow: technological innovation. This contradiction, which is punctuated by the relocation of companies (which reduces the efficiency of collective intervention of trade unions or similar structures) and the crisis of the middle class (which is reduced rapidly in the North and doesn't grow at the same rate in the South, which reduces the social basis of democracy), enhances

the efficiency of individual actions, that are extreme examples, that is suicide and terrorism. On the other hand, being a contradiction that generates poverty, further accentuates the pressure on the environment: for example, much of the mangrove ecosystems were destroyed on the planet, and especially in Africa, for very poor people who used it as a source of fuel, in the absence of any capacity of the respective States, often at war, to overcome for basic needs.

As noted by several participants at the Symposium "Changing Nature – Changing Sciences. The challenges of global environmental change for the social sciences and the humanities ", organized in December 2010 by the boards of social sciences and philosophy and human sciences of UNESCO, Nagoya (Japan), the global system requires a global world government, and no structures such as the G-8 or G-20 or the United Nations itself (all inter-national entities, but not truly global) have the capacity to meet this need (regardless of another element, not negligible, that is democracy and, even more, the participative dynamic that the current world system lacks for the reasons invoked above).

PERCEPTION AND KNOWLEDGE

In this context, it is essential to raise the critical consciousness of individuals, so that they restore the basics that allow master the concepts of space (territory), time (dynamic) and causality (intersection of the dynamics in space), in which the territorial management can do little more than minimize losses in a context of increasing entropy. And it is this sense that it is very urgent a integrated territorial management, which is not limited to sectorized responses and do not become limited to a mere collage of some technical measures for the economy, to other measures for society or another for the environment (CORAGGIO 1994), but understands that, from the understanding and enhancement of cultural dynamics and identity strategies it is possible to promote convergent subsidiaries strategies that respond in an integrated manner to all these questions. An integrated management that teaches the obvious inter-dependence between the variables considered, which builds in a pragmatic way flexible and transitional solutions, which sustainably improve the economic, social and environmental dimensions of the societies giving room for

its reorganization and identity based on the humble recognition that the world is changing rapidly, even though we are not able to see how a more stable future will be, which is certainly beyond the current generation (FARO POUSA et al. 2005).

It is useful, for such an intervention program, to start from an understanding of what drives us as part of a particularly successful species on the planet that notwithstanding its relative weakness has grown very considerable, occupying all continents and almost all ecosystems. We are primarily a species that, like all other living species, is composed of individuals who obey two vital principles: to ensure their reproduction (which is the first "duty" of living beings) and to ensure their survival. It is easy to note that not always these "commandments" are followed, and especially in our current society, the second (the survival and the "individual rights") overlaps in many cultures (particularly in countries and richer social groups) to the first (reproduction and the "collective rights of the species").

It is also useful to be aware that, in the reproduction strategy, our species didn't "choose" the path of progeny (a short life with a large descent, like most insects), but neoteny (a short descent and a long life, with a long period of extra-uterine growth, favoring the relevance of non-innate behavior, and lacking, in that respect, in learning mechanisms – GOULD 1977). Thus, what we now call the teaching is not an "additional service" or a "superfluous right", but a biologically programmed necessity, whose loss of quality (recorded above, due to the crisis of the socialization and, in particular, family) is a danger to the survival of the species. It is the basis of extra-uterine learning knowledge that the individuals of our species have developed mechanisms of institutional and applied cooperation, which ensured its competitiveness against other species. More than a question of identity of species (more individualistic or more altruistic), cooperation is a selective brand of competitiveness, intelligence and efficiency, which today, as a species, we are losing in an unprecedented scale. (LEAKEY 1989)

The success of our species, which today is faced with new dilemmas, always held group strategies based on established relationships between individuals and between environmental contexts (including other human groups) within landscapes (or perceptions of the territories), in which behaviors generated by the primary needs (economic) were mediated by representations and socio-cultural heritage punctuated by patrimonial markers (both cultural and economic, included in

the environment) that ensured the continuum of the species through its transformations.

The strategies to develop, regardless of its ideological profile (because it will always be about making choices in scenarios marked by dilemmas, more than by problems), should be based on accurate diagnosis and recognition of the conflicting and contradictory nature of reality, seeking not "the collective point of view", that does not exist, but the consensus and convergence of interests and perspectives, through integrated action programs. Such strategies should be based on conscience of the dilemmas, in understanding the choices that face these dilemmas are mandatory and therefore require a recovery of critical and rational competence of the citizens, which permits them (us) to understand the present as a moment of history that we can influence only in a limited extent.

In this context, cultural heritage, in the extent that allows to separate appropriations from different interests and points of view, is not only a basis for human collectives self-esteem but also a territorial marker that highlights the dimensions of space (where we move) and time (from where and to where), and therefore (more than through its value in the sphere of tourism) an engine of economic growth and environmental balance (OOSTERBEEK 2006).

Integrated Landscape Management must be understood, from this scenario, less like a school of thought and more as a praxis, where theory emerges and rationalizes practices that aim to reunify the dichotomies created in previous stages of development, between global and local, between economy and culture, between urban and rural, between market and subsistence or between theory and practice.

The territory must be understood as a system consisting of resources, mostly non-renewable, which lacks an integrated management of their usufruct in the perspective of a development compatible with its preservation and that is sustainable, which implies the articulation of different perspectives, often conflicting. On the basis of territorial human behavior is knowledge, enabling to build strategies for articulation of needs and resources, guided by maximizing ratios of cost / benefit (logistics). Such strategies are built, however, not directly to the territory, but to the perceptions that different groups of people have of it.

Indeed, the territory is a physical reality, but it always exists for us as something that we view "from the outside", something that is external and what we per-

ceive. In this sense, the territory is a complex of territories, or rather perceptions that we call landscapes.

It can be said, in this sense, that the landscapes are defined by the looks: while the territory is formed by what we might call a resource (in terms of our species), incorporating all the material issues, recognized or not by human groups; landscapes are selective perspectives, conditioned by the cultural, technological or social context of the observers. The same territory is not perceived the same way, is not the same landscape for a civil engineer, a farmer, a painter, a technical engineer, a landscape architect, a manager of water resources, an archaeologist, a bank official or a writer. Each one will "see" what his brain, and under it certain dynamic socio-cultural and cognitive skills, allows. The landscape of a farmer has more colors than that of an urban consumer, for example, not for physical reasons (biological competence to distinguish the colors is the same) but for epigenetic differentiation (i.e., in the evolution of individual extra-uterine, where education and behavior play an essential role – PIAGET 1976). In general, we do not "see", i.e. we do not incorporate in our landscapes what is irrelevant. Just think that the star constellations were much more present in the landscapes of a century ago, when the population was essentially rural and artificial lighting at night was scarce.

This plurality of landscapes has important consequences in territorial management, as the implementation of strategies for the territory (public policies and others) necessarily follows from the kind of landscapes that are visible. And it is in this process that cultural heritage has a key place, because it consists of everything that a society, in its different segments, appropriates or converts the symbolic foundation of existence, segregating certain human groups but concentrating others. The diversity of landscapes, on the contemporary eyes, can be balanced by a convergence of interests in the past (through the enhancement of cultural heritage, whose diversity allows multiple appropriations, diluting the conflict), an essential element for the collective mobilization around future goals. The economy regulates the relations between individuals to meet their needs, and social dynamics organizes these same individuals; is their relationship with the environment that allows us to identify and develop territorial assets, which enhance territorial competitiveness; but is the heritage that can help overcome the fragmentation of the present, mobilizing different groups and interests on a common basis (foundational) in the perspective of a common future as well.

If we think of any historical process or successful business, we easily find that all the organizational dynamics follow the same relationship between present (focus of tensions, conflicts, disagreements), past (foundational, mythologized, simplified, in which the protagonists of today can all be reviewed, while acknowledging the contradictions) and future (source of anxiety and distress, but also of expectation). Could Portugal or Brazil, but also the Nestle and Fiat, exist without taking care of this patrimonial dimension?

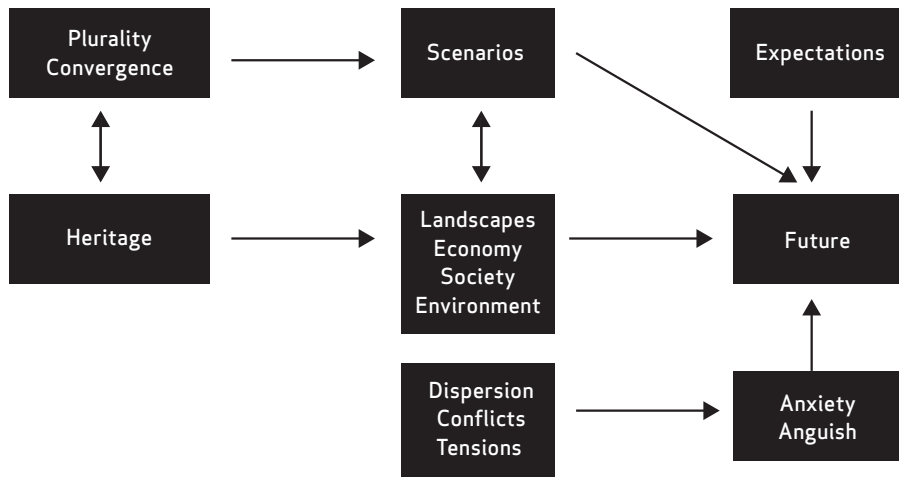


Figure 1 – Cycle time of the perception of the area

As the memory at the individual level (AUSTER 2004), wealth is a "data bag" that permanently restructures, to support ever-changing collective identities. It is indeed interesting to see how this process, currently, the cultural heritage sector is the fastest growing archeology. This situation follows directly from the new world geostrategic articulation: the emergence of the South hemisphere led to the increased value of assets as they could review the descendants (real or imagined) of populations that, in the past, had not made great stone buildings, that had remained standing until today, and whose built heritage is essentially a legacy of colonial times. Archeology, able to rescue the small traces, as structures built on land or wood or non-monumental day life, became the main instrument to "widen the past," allowing a greater "support base" for a future that can be guessed more polinucleate, less cohesive and more threatened by the global entropy of the world

system itself. Archeology investigates the material remains of ancient human societies as well as technologies that they were associated with and in a process that is of interest to present's human groups because is a builder of collective memories (OOSTERBEEK 2007).

It is this "game" between memory (heritage), present (economic, social and environmental dynamics) and future (prospective), gives coherence and sustainability to development. In a systemic logic, is not about trying to identify which of these components is the most relevant, since the nature of the system is that, precisely, is not a hierarchical body in which it is possible to define primary and secondary areas. The future can only be built from the dynamics of present, but to counteract the tendency of these to spread chaos (integrated planning it is crucial to build an inclusive vision that forms part of a temporal flux that comprises from its past (memory, heritage) and that supports an integrated management model (including its governance).

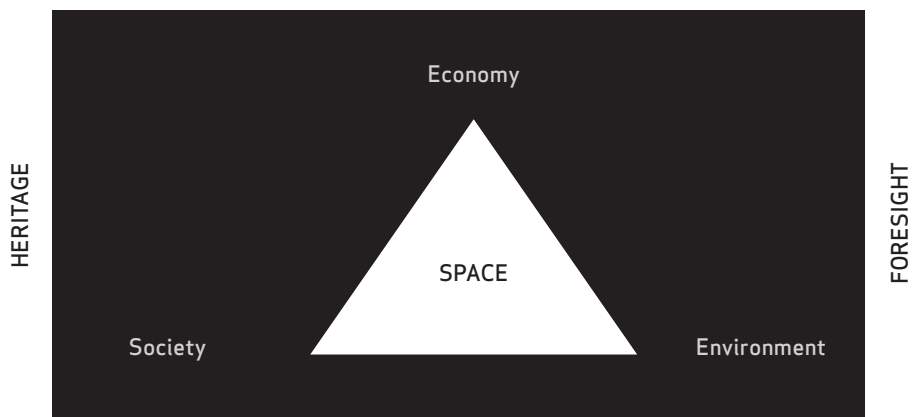


Figure 2 - Territorial system

Sustainable development (MICARELLI 2002; MAFRA & SILVA 2003; SCHEUNEMANN 2009), as constructed in projects such as Carajás and formulated in the Brundtland report of 1987, needs to rely on the relationship between the pillars of sustainability (economy, society and environment) but does not exclude its integration in a temporal flux which various actors need to be conscious of. The absence

of this consciousness, that accompanies the loss of the aforementioned notions of space, time and causality, is probably the main cause of the current impasse of humanity.

LANDSCAPE MANAGEMENT

The need to link the different spheres of society, i.e., the economic dynamics and its relation to the environmental context, stems from the tendency for the dispersion in the system and the growth of entropy, with energy loss and reduced growth (ESPINDOLA OOSTERBEEK & 2006). Concerns about management with resource protection or with greater social cohesion have evolved rapidly over the twentieth century, being accompanied by unprecedented growth of the administrative apparatus of the State (FERREIRA 2007). This development followed the major upheavals in international conflict, which revealed various difficulties. This is how the 1929 crisis and the Great Depression of the 30s, which revealed the ineffectiveness of control mechanisms and functioning of the state in regulating the economy, raised the first experiments in enterpreneurization of state intervention sectors (by then still essentially reduced to the military, security and representation functions, not ceasing to be curious about the current discussion of the reduction of public functions, which tends to forget its own origin). The complexity and the enormous financial costs of World War II, already announced in the Spanish Civil War, is in the origin of the systematic policies of budgetary control, that the Marshall Plan will help to spread, while introducing, in the West, some concepts of medium-term management that had been initially implemented in the USSR with the five-year plans. This idea of management, which currently dominates all countries, has this origin indeed, though often ignoring the underlying theoretical assumption: the economic determinism in its relationship with human behavior (BOUKHARINE & PREOBRAJENSKY 1919). The understanding that human behavior is not reducible to sparse groups defined by socio-economic criteria, but assumes more complex pluralities, led to the corporatism recovery from the second half of the 1960s. Corporatism had a significant impact, mainly as a mechanism of political-social balance in the decade preceding the Second World War, but reborn

especially after the crisis of 1968-1969 in the territorial management sphere. The collapse of the USSR, the end of a world split, but "neat" and "predictable", implied the strengthening of the future visions and the management tools conditioned by them, which led to the generalization of strategic management in the last decade of the last century, complemented by participatory management (in its turn expression of the growing role of individuals in society).

The territorial planning and organization were structured by the beginning of the third millennium through the progressive incorporation of various instruments and models, such as those mentioned. Its objectives are the result of a vision of the relationship between public and private spheres that has consolidated around eight principles: rational management of resources, economic and social cohesion (that the Welfare State is a central element), the harmonic distribution of population and activities (which however did not prevent urban concentration), satisfying the needs of urbanization (where energy costs are particularly significant), the defense of property (understood as historical monuments but gradually incorporating other dimensions, as mentioned), rehabilitation of historic urban centers (often re-occupied by tourists and transformed into "non-places" – AUGÉ 1994), the revitalization of rural areas (which was transformed into peri-urban areas COSTA 1998) and, in a global sphere, the economic, social and cultural development. For this ambitious program, the organization of territory strategies were structured around the policy of land (ownership and use), but also around measures of durable balance of the biophysical structure, adapting to new realities the institutional structures, protecting values associated with promotion of the balance between resources, activities and communities.

All these instruments and management strategies are now a useful kit, but proved being insufficient, again. Awareness of the growth of random elements that disintegrate the system (marked by the attacks of September 11 in the beginning of the decade and the sub-prime crisis at its end), failure to promote a re-environmental balance without compromising growth expectations at the South, the extending of the social gap around the world despite economic growth, the growing conflicts ethnically and culturally based... all these symptoms have promoted the need for new tools to what we now call "Integrated Landscape Management". The Integrated Landscape Management integrates the objectives of planning and

management mentioned above, but looking for an integrated view of social dynamics in the territory, in its social, economic and environmental ways. This view is made possible by the integration of intervention actions on the territory (space) in the temporal flow discussed above and by creating structures and mechanisms for participatory governance. The implementation of integrated management is a natural part of making diagnoses, but not essentially seeks to show them to solve problems, but to overcome dilemmas, building scenarios for the future (prospective) and promoting subsidiaries (supported by flexible structures) and conscious choices (formation of human capital). A key focus is given to the promotion of critical judgment, through education and integration between the structures of local action (municipal power, companies, unions, NGOs and other local development agents) and college education (rational and universal by definition). This articulation, which should be structured around centers which can converge to the area's resources, allows meeting, simultaneously, local and global needs that are currently placed in human groups (OOSTERBEEK & HEALING et al., 2011). It is about continuing to think globally (strategy) to act locally (proximity), but also to think locally (identity) to act globally (globalizing sites in the same sense of political and economic globalizations).

The Integrated Landscape Management is a global strategy to an already globalized world, which proceeds from a holistic conception of socio-economic space (territory) and favors a proactive intervention (management), exceeding the disciplinary fragmentation. It starts from the understanding that economy and culture are the same reality, seen from different angles, since the culture are the representations and embodiments of the economy.

As mentioned, this is not about operating a rupture or promoting a discontinuity with instruments already existent, but incorporating new tools and reshapes the existing ones. The planning and management of the territory, in classical terms, follow 13 principles that operate on the scale of Nation-States with growing economies (ALVES 2007): the public interest (which arises from the objective convergence of interests of different segments of society), freedom and responsibility (returning to the ideas of Kant), legality (the rule of law), social justice, equity, solidarity (which respond to the social dimension of sustainable development), solidarity (which reinforces the collective identity), the sustainability (which re-

fers to the economic dimension of development), balance (which includes also the environmental dimension), decentralization (which enhances the institutional efficiency on the network), participation (which allows you to integrate the dissonances), coordination (which prevents the dispersion) and the efficiency and rationality (stemming from the earlier).

The Integrated Landscape Management, however, differs both in the object and in the objectives, particularly in the instruments it uses. As mentioned above, it embodies the consciousness of the new status of individuality, so that by the goals sees diversity and contradiction as something to organize and not to avoid, realizing the dilemmatic, more than problematic, nature of reality. The Integrated Landscape Management, understanding this as a reality and as a concrete synthesis of multiple causal series not fully monitorable and configurable, it is reinforced that the instruments of perspective (that systematize the diversity of points of view), of continued foresight (that allow to build scenarios and redirect options for a permanent way), technological inclusion (which requires education as a way to combat alienation and rescue the relationship between individuals and the environmental dynamics of the territories) and transdisciplinarity (enhancing the disciplinary specialization but integrating it into a general epistemology allowing an understanding of the systemic as a whole).

CONCERNS		TRADITIONAL PLANNING	ILM
Object	Public interest		
	Individuality		
Objective	Liberty and responsibility		
	Legality		
	Social justice		
	Equality		
	Equity		
	Solidarity		
	Diversity and contradiction		
Means	Sustainability		
	Equilibrium		
	Decentralization, autonomy		
	Participation		
	Co-ordination		
	Efficiency, rationality		
	Perspective		
	Foresight		
	Technological integration		
	Transdisciplinarity		

Figure 3 – Comparison between the traditional approaches of the planning and Integrated Landscape Management

The means, tools and resources that the Integrated Landscape Management should provide are spread in our society in various institutional settings (public and private), so its articulation in various areas, is essential. The most effective way to do it, by concentrating the resources and strengthen new dynamics of governance is the creation of resource centers, or nuclei of participatory reflection and generator of prospective discussions and actions, towards the integrated, diversified and sustainable development. Such centers should link education (superior and vocational levels), the projection of memory and identity ("museum") and the articulation of operating agents (public and private sectors, involving companies and NGOs) into action. They ideally have the shape of a civil society organization, non profitable, involving municipalities, businesses, universities, associations and other local structures. The Earth and Memory Institute of Macao (Portugal), from which was recently created an autonomous ITM in São Jose (SC, Brazil) is an example of this structure.

Thus, the Integrated Management promotes primarily the continuity of procedures related to planning and management of the territory, but includes many insights, as exemplified below.

The Integrated Landscape Management is not a handbook, so it does not have a set of requirements that must be followed. But it is possible to identify a procedural flow, that part of the known binomial knowledge/logistics to be molded into an articulation from the culture of the social, economic and environmental development dimensions. It is this combination of variable geometry, which is then projected in the direction of territorial governance, using intangible strategies (human capital formation for understanding the dilemmas and prospective) and institutional (resource centers). This process, in turn, translates into different measurable plans, operation that is now performed by the territorial certification mechanism.

Being a flexible model, the direction of Integrated Management follows, however, some guidelines and considerations that, returning to what was written, can sum up in five principles on the territory and in five principles of management.

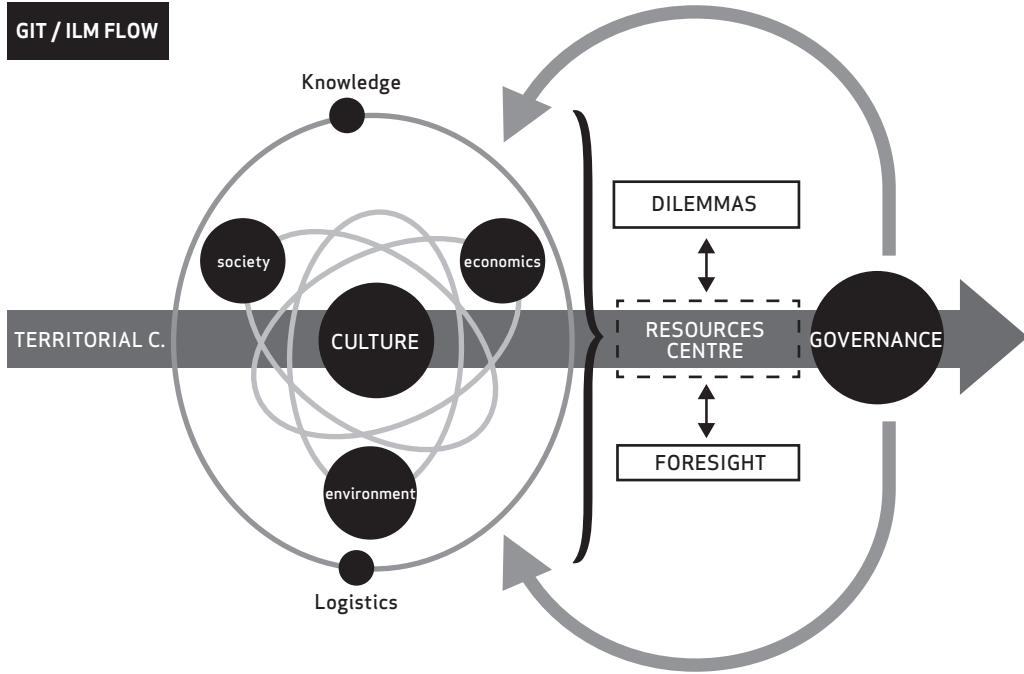


Figure 5 - The process flow of Integrated Landscape Management

The principles concerning the territory underline its systemic nature, the importance of cultural perspectives, the inseparability of economy and culture, the importance of understanding human beings as a living species that does not escape to the biological laws and the importance of sustainable development:

1. The territory is more than the scenario of human intervention; it includes it, and is not completely monitorable;
2. Human groups do not act directly in the territories, but in landscapes, i.e. cultural perceptions in those territories;
3. The economy is the relationships that human beings establish among themselves and with the land / landscape to meet their needs, and culture is mediated form on how these relationships are represented;

4. Without population growth there is no future for Humanity;
5. Without economic growth compatible with environmental balance and social equity, ruptures are inevitable.

The principles regarding management emphasize the dynamic nature of the instruments of integration, the relevance of education, the importance of resource centers and the urgent need to address all issues in a systemic way:

6. The nature of human and environmental dynamics includes contradictions, implies choices, implies consequences, sometimes irreversible and face with dilemmas and not just problems;
7. Consequently, the ILM requires a multidisciplinary and participatory approach, under penalty of being reduced and strengthen social conflicts and environmental imbalances;
8. The central element of the ILM is the formation of human capital and combating alienation;
9. The establishment of partnership structures (resource centers) which connect higher education with municipalities, businesses, NGOs and education / training, is an indispensable tool;
10. In economics it is important to think the society, in the administration it matters think the culture, culture is essential to think the economy, in one word: in each area it is essential to involve, in its management, multi-disciplinary work groups, technically solid but not monolithic.

In fact, the reality is always systemic and integrated by nature; the human interventions can be uncoordinated and do not recognize this reality. The Integrated Landscape Management takes up the conceptual unity that was lost from the late nineteenth century, and somehow revisits the great understanding of Saint Augustine, in the difficult transition between the fourth and fifth centuries of the Christian Era (St. Augustine, Confessions):

There are three periods of time:

Past Time, or memory

Present Time, or intuition

Future Time or expectation

Massamá, January 2011.

	Traditional planning	Strategic planning	Integrated landscape management
DYNAMICS	Evolution	Selective leap evolution	Unequal and combined evolution
FOCUS	Plan oriented	Action oriented	Citizen oriented
OBJECT	Results	Organizations	Individuals and groups
VALUES	Recognized but secondary	Considered	Values dynamics
CONTEXT	Less considered context	Contextualization	The context as text
PROCESSES	Vague	Stated mission	Articulated plurality
	Pre-active and reactive	Pro-active	Pro-active
	Predictive	Foresight	Foresight
	Internal information	External information	External information
	Technocratic	Political, technical, social	Political, technical, social
	Centralized	Decentralized	Integrated

Figura 4 - Specificity of Integrated Landscape Management

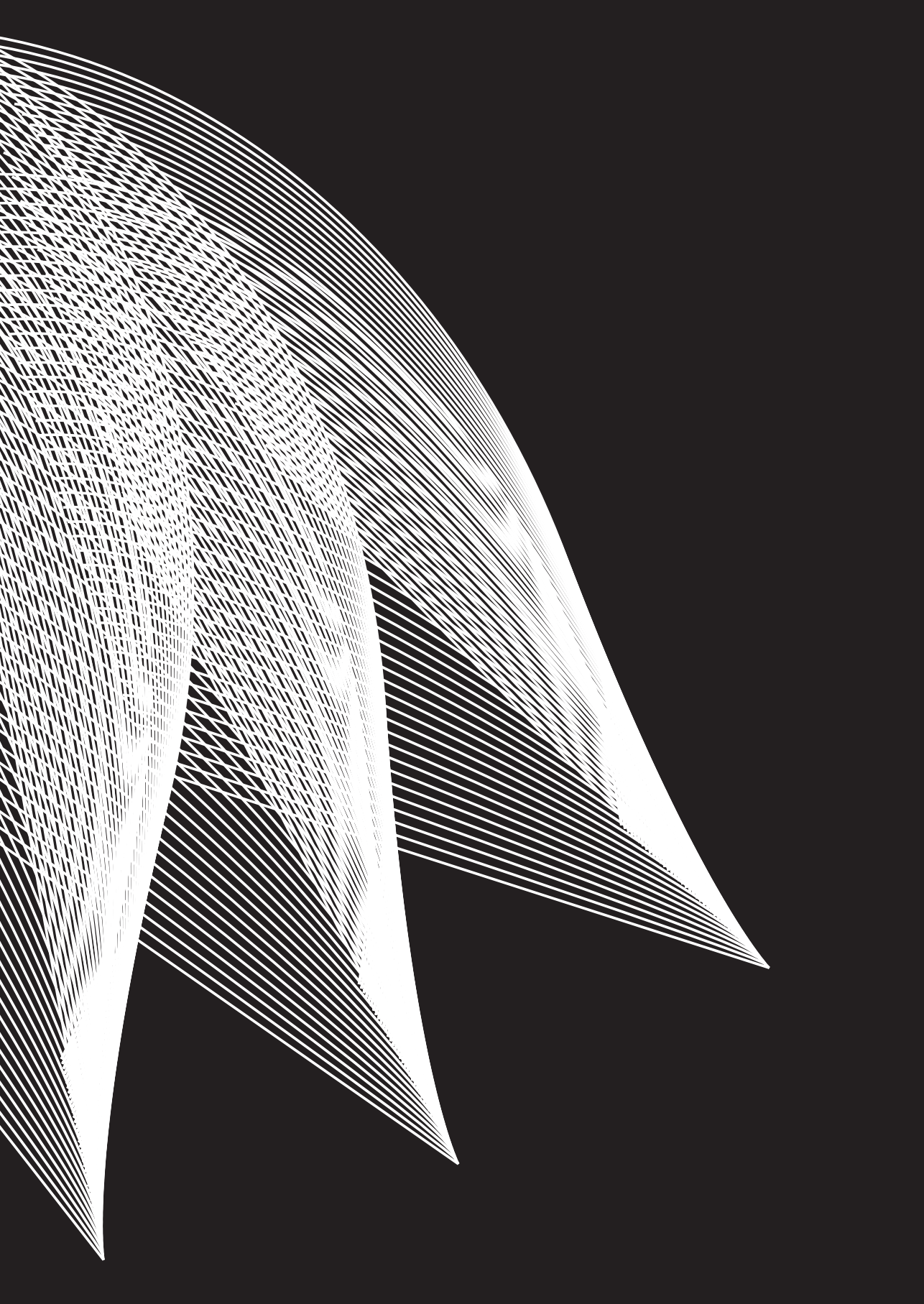
	Comments
	In a territorial system asymmetries and differences of rhythm occur, but processes remain web connected, allowing their permanent re-combination.
	GIT is concrete; it does not abandon an abstract and rational approach to social and cultural groups, but recognized the new status of individuals in society.
	Results are transitory and organizations are conservative, both leading to paralysis, despite their relevance. Chaotic individual and group behaviour stands for the main social dynamics.
	Focusing values and their dynamics allows understanding the dominance of perceived landscapes over tangible territories, when determining individuals and social groups' options.
	In a territorial system, even when several agendas occur, generating independent causal series, their web nature keeps them integrated and secures their joint evolution. It's from the global system, the true "reality", that one may understand its components.
	In a changing society crossed by contradiction, the future paths require plural and convergent constructs, beyond any concerns for agreement on every step of the way.
	Dynamics is in the changing system, so individual and collective agents must take the initiative and try to condition the evolution.
	Future cannot be predicted, but future rigorous scenarios are crucial.
	Communication is a multi-directional system that favours society's self-regulation.
	In a dilemma context in face of alternative future scenarios, choices must be technically based but comprise options that are expressed through political contradictions
	Integration renders diversity compatible with convergence.

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CONSTRUCTION OF SCENARIOS: A VIEW TO POSSIBLE FUTURES FOR BETTER PLANNING

FERNANDO ORTEGA SAN MARTÍN

"We must seriously address the future, rather than resign ourselves to live guided by a pragmatism that is satisfied with the immediate, often born of the convenience to renounce the self thought, or be afraid of complexity."

Dr. Javier Medina (2003).

Since the beginnings of humanity, man has concern for its future, and has tried many ways to get to know something about what will happen in times to come. Slaughter says that "there are two reasons to look to the future. The first is to avoid threats. The second is to set goals, dream dreams, create visions, make projects, in short, projects for the future in a wide range of purposes and intentions. Both are as old as the human species and are in action since the beginning of time"(2004).

The evolution of human thought led us to create, increasingly, complex mechanisms to manage the uncertainty of the times we live. At the end of the fifties, a group of French philosophers, among who were Gaston Berger and Bertrand de Jouvenel, laid the foundations of a new discipline of social sciences, called Foresight, which would study the future to understand it and be able to influence it.

Since then, much progress has been made and foresight had tremendous growth worldwide, and is no longer possible to think seriously about making a planning process without having to respond to Foresight as a tool capable

of providing the best information in advance about the possibilities that the future holds for our company, organization, and even for our own personal life.

CONCEPTUAL BASES OF FORESIGHT

The prospective science born in Europe, and in its process of creation of several schools of thought emerge, whose differences are based on approaches that drivers considered as having more influence on shaping the future. Thus, the British placed more emphasis on developing the technology as the main engine of the future, while the Italians thought the future was nothing more than a social creation, and the French that the center of building the future was the man. All this led to the formation of three European schools of thought about the future: English Technology Foresight, Italian Human and Social Foresight, Human and Social and French Prospective.

But since the late nineties, the English school recognized that if technology continued to be an important force in shaping the future, its importance was not the same because there were other forces, equally important, which limited the achievement of results of research and development (R & D), which are mainly ethics and morals, whose influence is very strong, especially in the fields of genetic engineering and neuroscience. This recognition of the restrictions that currently affects the development of science and technology resulted, in practice, in an approximation of the conceptual frameworks of both schools, as the British studies have become more holistic and not so dependent on technology. Even the name, the same initial "Technology Foresight" was simplified to "Foresight".

Foresight and prospective French are the two schools that had more diffusion in the world. Foresight is practiced in Europe (UK, Germany, Spain, Portugal, East Europe, Scandinavia), Asia (all countries of APEC - Asia Pacific Economic Forum), Oceania (Australia, New Zealand) and America (Canada, Brazil, Peru, Uruguay, among others). The foresight is used mainly in Europe (France, Belgium, Holland, Switzerland) and Latin America (Mexico, Colombia, Venezuela, Cuba, Argentina).

However, as a special effort by the European Commission, the two schools (Foresight and Prospective) are in a clear process of convergence, since both

share the same conceptual framework, which can be summarized as follows:

1. There is no future predetermined; the future is constructed in each second of time (Berger).
2. The future is a multiple reality: there are many futures to be live the "futuristics" or "possible futures" (Jouvenel).
3. The future depends on the action of man (Godet).
4. The future must be taken as the ultimate cause of present (Godet).
5. You cannot look to the future as a continuation of the present, because every day it seemed the future seems less to the present (Handy).

So, now we can say, that both schools share a common "language", but have different accents, which in practice are represented by the use of different methodological tools, even when it is expected that the results are the same.

For this reason, in this article we use interchangeably the term "foresight" to refer both to the French school and the English school.

THE IMPORTANCE OF FORESIGHT

The greatest contribution of foresight to society is that allows us to identify and evaluate the different possibilities that the future can offer.

The main feature of the future is its uncertainty, as the times show a lot of great complexity and uncertainty. It is in this uncertainty that foresight becomes a critical tool for analysis (Figure 1).

Thanks to Foresight, the future is now presented as something that can be studied and analyzed, and so with this valuable information we can reduce uncertainty and be able to offer better plans for our organizations.

But for that to happen, it must be warn that one should look at Foresight as a systematic and permanent process, because the conditions change every moment, and what appeared to be more likely to happen in the future may become less likely, but that scenario that now appears to be the least possible could become more likely, if certain conditions prevail.

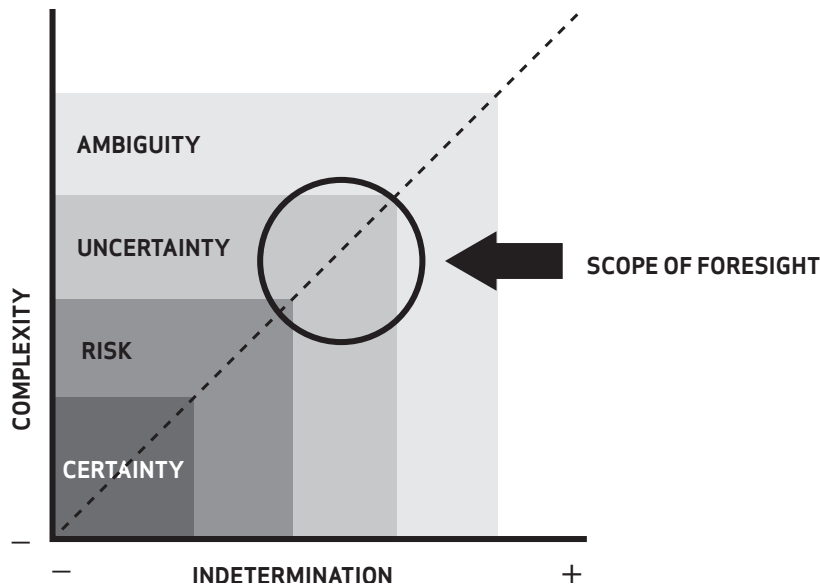


Figure 1 - Scope of Foresight (Medina y Ortégón, 2006)

THE PROCESS PROSPECTIVE

The foresight process is systematic and participatory and seeks to compile knowledge over the future and build visions in the medium and long term in order to better inform the decisions that have to be taken in the present and mobilize joint actions among the social actors.

The foresight process is a closed loop of four stages (Figure 2): anticipation, appropriation, action and learning.

Although the foresight is better known by the stage of advance, all other steps must be developed because the future is uncertain and changes very quickly.

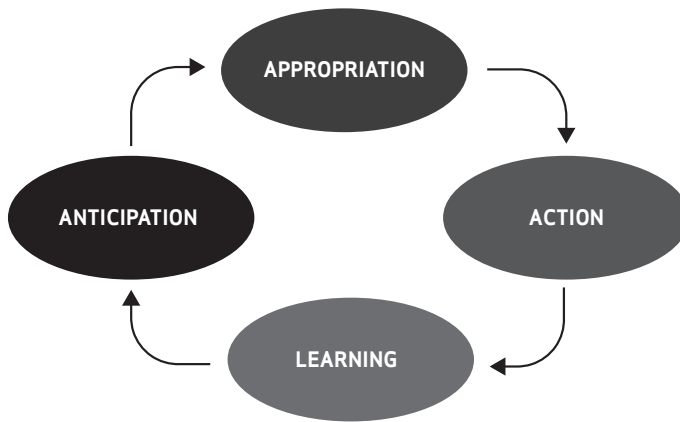


Figure 2 – The prospective process (Medina)

CONSTRUCTION OF SCENARIOS

One of the most employed foresight tool is the construction of scenarios. For this you need to know what are the "drivers" or main variables that generate changes in the future. The scenarios are formed by different combinations of "drivers".

A "driver" can be a variable, a phenomenon or event whose appearance would change significantly the future of the subject under study. Therefore, a "driver" can be defined as "the unity of uncertainty."

A "driver" has several components:

- Name: the name of a "driver" must be sufficiently clear as to be recognized through its reading which variable is being analyzed.
- Impact: any "driver" should generate a positive or negative impact on the future of the subject being studied.
- Movements or hypotheses for the future: as a "unit of uncertainty" all "driver" must have at least two options for the future. A coin has two options of uncertainty, since a data has six options. All possible options for the future a "driver" has need to be identified; to forget one can produce a high degree of error in the prospective study.

- Indicator: to know how the future will behave it is necessary that each "driver" has an indicator that signals which of the identified movement could happen.

An example of a "driver" would be the following:

NAME	Behavior of the Brazilian economy
IMPACT	Generates changes in supply and demand of products and services
MOVEMENTS	May have a sustainable growth in the coming years. May have cycles of growth and drops in the coming years. Could have a serious and lasting economic crisis in the coming year.
INDEX	Variation of annual GDP.

To make a good foresight study is necessary to identify all main "drivers" or keys. It is not possible to give a common recipe on the number of "drivers" that we must be found, because it depends on the complexity and indetermination of the subject, but a minimum of fifty can give an idea of the precise amount of "drivers" that must be identified to ensure an adequate quality of the study.

Once identified these key "drivers", the method of the "Axis of Schwartz"¹ can be employed to distribute them in two dimensions: importance and uncertainty, generating four quadrants (Figure 3):

- a. Quadrant 1: Surrounding, formed by the "drivers" less important and less uncertain. All scenarios share the same environment.
- b. Quadrant 2: Base, formed by the most important "drivers", but less uncertain. Still, all scenarios share the same base.
- c. Quadrant 3: Diversity, formed by the most important "drivers", but also more uncertain. This is the space where different scenarios are born.
- d. Quadrant 4: Details, formed by the less important "drivers" but more uncertain. In this space appear "drivers" that are already and moving out, as well as *new* "drivers" that is not known, yet, how they will behave in the future.

1. Method developed by the futuristic North American expert, Peter Schwartz.

The most important part of the process of scenario building is to differentiate them from the "drivers" that appear in the third quadrant (Diversity). This process can be done using different methodological tools, the most used to Morphological Analysis and Structural Analysis. The goal will always produce a high number of combinations of movements "drivers", but they must be possible. It should be noted that a scenario is not any picture of the future, if it is not a consistent view of the future. Combinations of movements "drivers" not possible or not consistent between them cannot be used to build scenarios.

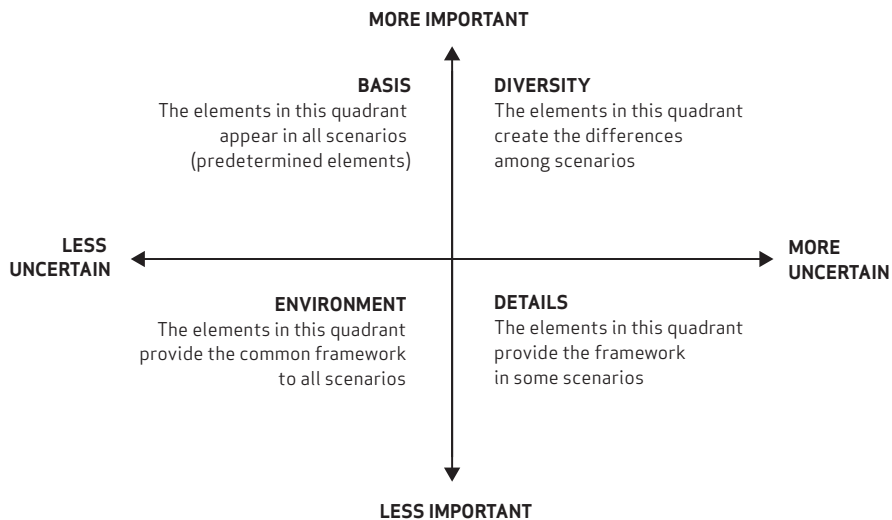


Figure 3 - The quadrants of Schwartz's axes

There are different types of scenarios:

- a. Trend scenario: That scene where we go if no force acts to change it (we also call it "automatic" scenario).
- b. Most likely scenario: That scenario that may be experienced if some changes happen identified as likely.
- c. Most desirable scenario: That possible scenario that can create in future the best conditions for all actors involved.

- d. Less desirable scenario: That scenario where there are many threats that jeopardize the future of the subject under study.

The ideal is to identify the scenario that is both more desirable and more likely to happen, and start building it from today. This scenario will be called “target” scenario.

AN EXAMPLE OF SCENARIO BUILDING

In example, we can work the theme of “The Future of the City of Ipatinga in 2020.” For this we must identify our key “drivers” in an amount not less than 50 “drivers,” build “Schwartz axes” and distribute on it, our key “drivers”

Suppose we only have four key “drivers” in Quadrant 3 (Diversity). These “drivers” would be as follows:

DRIVER	MOVIMENT 1	MOVEMENT 2
GLOBAL ECONOMIC SITUATION	SUSTAINABLE GROWTH	PERIODIC CRISES
NEW MATERIALS	REPLACEMENT OF TRADITIONAL MATERIALS	THERE IS NOT A LOT OF SUBSTITUTION
MIGRATION TO LARGE CITIES	PREFERENCE FOR BIG CITIES	PREFERENCE FOR NOT MOVING
CLIMATE CHANGE	SIGNIFICANT IMPACTS	STILL NO NOTORIOUS IMPACTS

With these “drivers” we could construct many scenarios if combine the movements between them. Thus we have: $2 \times 2 \times 2 \times 2 = 16$ scenarios.

Nº	THE GLOBAL ECONOMIC SITUATION	NEW MATERIALS	MIGRATION TO LARGE CITIES	CLIMATE CHANGE
1	SUSTAINABLE GROWTH	REPLACEMENT OF TRADITIONAL MATERIALS	PREFERENCE FOR BIG CITIES	SIGNIFICANT IMPACTS
2	SUSTAINABLE GROWTH	REPLACEMENT OF MATERIALS -TRADITIONAL	PREFERENCE FOR BIG CITIES	NO NOTORIOUS IMPACT
3	SUSTAINABLE GROWTH	REPLACEMENT OF TRADITIONAL MATERIALS	PREFERENCE FOR NOT MOVING	SIGNIFICANT IMPACTS
4	SUSTAINABLE GROWTH	REPLACEMENT OF TRADITIONAL MATERIALS	PREFERENCE FOR NOT MOVING	NO NOTORIOUS IMPACTS, YET
5	SUSTAINABLE GROWTH	THERE IS NOT MUCH SUBSTITUTION	PREFERENCE FOR BIG CITIES	SIGNIFICANT IMPACTS
6	SUSTAINABLE GROWTH	THERE IS NOT MUCH SUBSTITUTION	PREFERENCE FOR BIG CITIES	NO NOTORIOUS IMPACTS, YET
7	SUSTAINABLE GROWTH	THERE IS NOT MUCH SUBSTITUTION	PREFERENCE FOR NOT MOVING	SIGNIFICANT IMPACTS
8	SUSTAINABLE GROWTH	THERE IS NOT MUCH SUBSTITUTION	PREFERENCE FOR NOT MOVING	NO NOTORIOUS IMPACTS, YET
9	PERIODIC CRISES	REPLACEMENT OF TRADITIONAL MATERIALS	PREFERENCE FOR BIG CITIES	SIGNIFICANT IMPACTS
10	PERIODIC CRISES	REPLACEMENT OF TRADITIONAL MATERIALS	PREFERENCE FOR BIG CITIES	NO NOTORIOUS IMPACTS, YET
11	PERIODIC CRISES	REPLACEMENT OF TRADITIONAL MATERIALS	PREFERENCE FOR NOT MOVING	SIGNIFICANT IMPACTS
12	PERIODIC CRISES	REPLACEMENT OF TRADITIONAL MATERIALS	PREFERENCE FOR NOT MOVING	NO NOTORIOUS IMPACTS, YET
13	PERIODIC CRISES	THERE IS NOT MUCH SUBSTITUTION	PREFERENCE FOR BIG CITIES	SIGNIFICANT IMPACTS
14	PERIODIC CRISES	THERE IS NOT MUCH SUBSTITUTION	PREFERENCE FOR BIG CITIES	NO NOTORIOUS IMPACTS, YET
15	PERIODIC CRISES	THERE IS NOT MUCH SUBSTITUTION	PREFERENCE FOR NOT MOVING	SIGNIFICANT IMPACTS
16	PERIODIC CRISES	THERE IS NOT MUCH SUBSTITUTION	PREFERENCE FOR NOT MOVING	NO NOTORIOUS IMPACTS, YET

The next step is to identify inconsistencies, those situations that could not be possible, for example, the combination "periodic crises" with "material change", assuming that for the replacement to happen it is necessary to have large financial resource that would not be available with periodic economic crises. This would mean that the scenarios 9, 10, 11 and 12 would not be consistent. Also, we could assume an inconsistency in the combination "sustainable growth" and "notorious impacts of climate exchange," because the economies of countries should adapt to these changes. In this way, there would be no consistency of scenarios 1, 3, 5 and 7. And we could identify a combination that is not consistent and that would be "periodic crises" with "preference not to move," assuming that when there are crises people move to the cities looking for new opportunities. In this manner scenarios 1, 15 and 16 would also be disregarded.

So, only 6 possible scenarios would remain:

Nº	THE GLOBAL ECONOMIC SITUATION	NEW MATERIALS	MIGRATION TO LARGE CITIES	CLIMATE CHANGE
2	SUSTAINABLE GROWTH	REPLACEMENT OF TRADITIONAL MATERIALS	PREFERENCE FOR BIG CITIES	NO NOTORIOUS IMPACTS, YET
4	SUSTAINABLE GROWTH	REPLACEMENT OF TRADITIONAL MATERIALS	PREFERENCE FOR NOT MOVING	NO NOTORIOUS IMPACTS, YET
6	SUSTAINABLE GROWTH	THERE IS NOT MUCH SUBSTITUTION YET	PREFERENCE FOR BIG CITIES	NO NOTORIOUS IMPACTS, YET
8	SUSTAINABLE GROWTH	THERE IS NOT MUCH SUBSTITUTION YET	PREFERENCE FOR NOT MOVING	NO NOTORIOUS IMPACTS, YET
13	PERIODIC CRISES	THERE IS NOT MUCH SUBSTITUTION YET	PREFERENCE FOR BIG CITIES	SIGNIFICANT IMPACTS
14	PERIODIC CRISES	THERE IS NOT MUCH SUBSTITUTION YET	PREFERENCE FOR BIG CITIES	NO NOTORIOUS IMPACTS, YET

The following part of the process is to identify the trend scenarios, most likely, more desirable and less desirable, to find our "target," the one that we should start building. Generally, this requires developing a Delphi survey or other method, to measure the opinion of the social actors involved.

As an example, we can present the distribution of the following scenarios:

N°	THE GLOBAL ECONOMIC SITUATION	NEW MATERIALS	MIGRATION TO LARGE CITIES	CLIMATE CHANGE	TYPE OF SCENARIO
8	SUSTAINABLE GROWTH	THERE IS NOT MUCH SUBSTITUTION YET	PREFERENCE FOR NOT MOVING	NO NOTORIOUS IMPACTS, YET	THE MOST DESIRABLE SCENARIO
6	SUSTAINABLE GROWTH	THERE IS NOT MUCH SUBSTITUTION YET	PREFERENCE FOR BIG CITIES	NO NOTORIOUS IMPACTS, YET	TREND SCENARIO
4	SUSTAINABLE GROWTH	THERE IS NOT MUCH SUBSTITUTION YET	PREFERENCE FOR NOT MOVING	NO NOTORIOUS IMPACTS, YET	MOST PROBABLE SCENARIO
2	SUSTAINABLE GROWTH	SUBSTITUTION OF TRADITIONAL MATERIAL	PREFERENCE FOR BIG CITIES	NO NOTORIOUS IMPACTS, YET	PROBABLE SCENARIO
14	PERIODIC CRISES	THERE IS NO SUBSTITUTION YET	PREFERENCE FOR BIG CITIES	NO NOTORIOUS IMPACTS, YET	PROBABLE SCENARIO
13	PERIODIC CRISES	THERE IS NO SUBSTITUTION YET	PREFERENCE FOR BIG CITIES	SIGNIFICANT IMPACTS	LESS DESIRABLE SCENARIO

From them, scenario 8 should be the “target” scenario, because it is at the same time a likely scenario and most desirable.

THE CONSTRUCTION OF THE CURVES OF THE FUTURE

The final step of the prospective process will help build the curves of the future, which is a methodology that allows us to draw the process (trace the route) that will unite the “target” scenario with the present.

The starting point is the definition of a desirable future scenario. Then we must

identify "time marks", happened or situations that should happen in advance, that will lead us to the desirable scenario (Figure 4).

The curves of the future help us to identify, explore and clarify limitations and paradigms in our thinking, about how to build the future, and help us to overcome them.

In the same way, it can provide alternative solution to the challenges identified in the scenario.

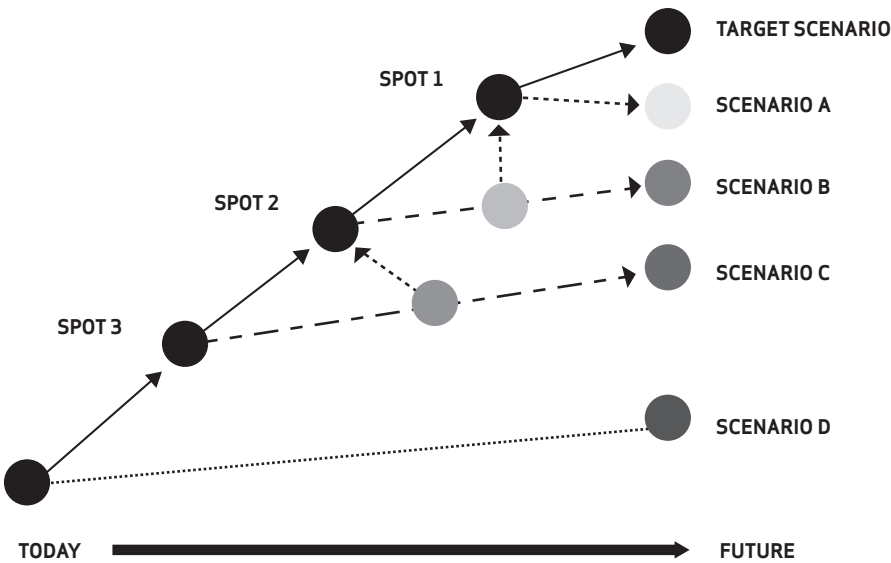


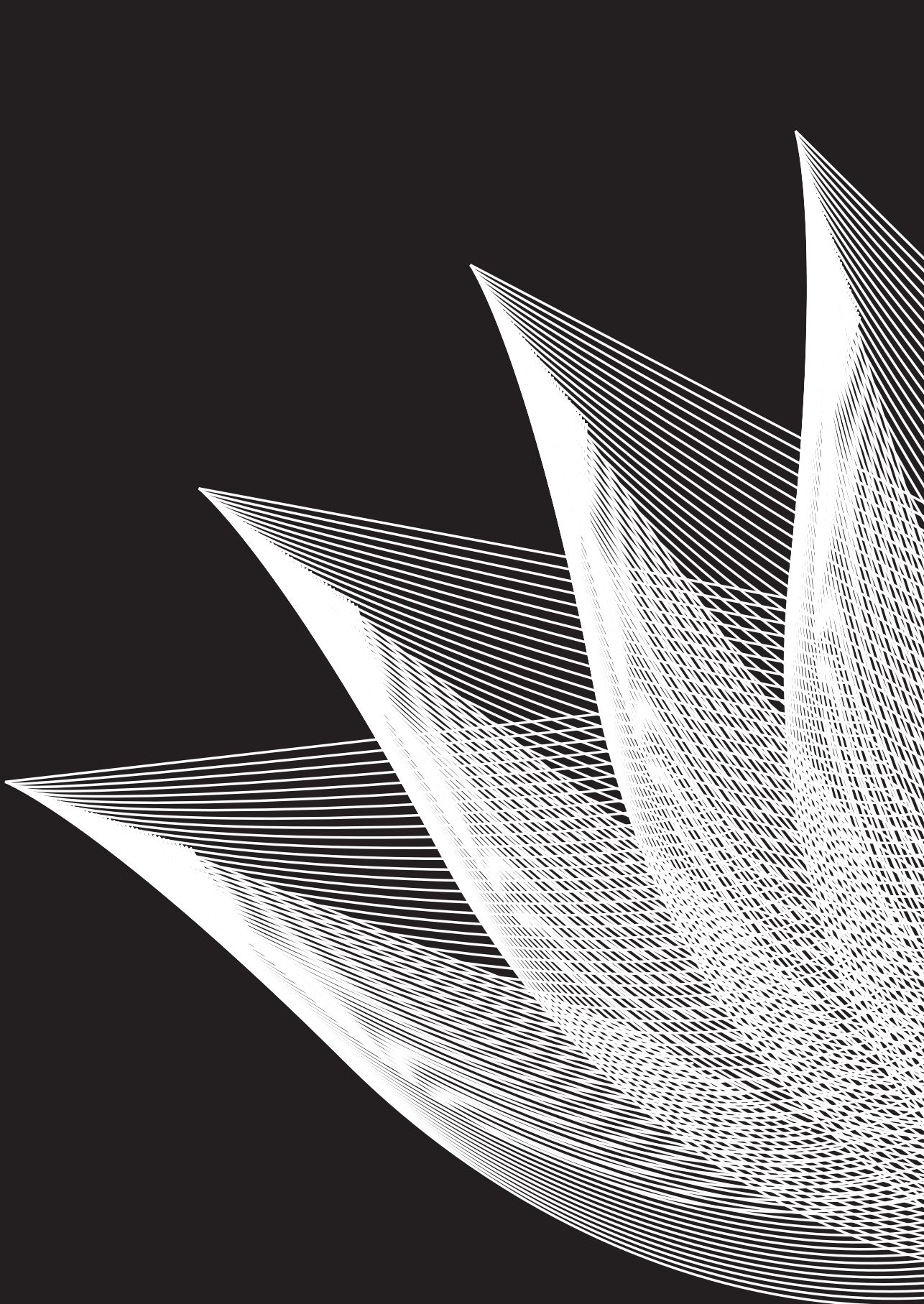
Figure 4 - Curves of future

CONCLUSION

The foresight is a discipline that can help significantly the planning processes of short, medium and long term in the organizations, enterprises and governments. The methods may differ depending on the schools of thought about future, but regardless, the results achieved allow reducing the uncertainties of the future, and help build a better future for our population.

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CORPORATE GOVERNANCE & INTEGRATED LANDSCAPE MANAGEMENT

ADRIANA DE ANDRADE SOLÉ

Starting with five important points that cannot be neglected by any type of development in this second decade of the twenty first century, we enter the context of enlarged corporate governance characterized by the conciliation of multiple interests: shareholders and stakeholders, introducing the Integrated Landscape Management, ILM. The transposition of the 8 P's of Corporate Governance: property, principles, purposes, power, roles, practices, perennity and people was made by drawing attention to two intrinsic factors of ILM: the dynamics of values and the diversity of perceptions that a single territory may have. A ILM interventionist project in the field must meet the various mutant expectations of all its stakeholders, such as the expansion of incomes and jobs, the promotion of opportunities for things to happen, ensure participations and create safety nets so that the achievements are not lost over time.

Governance in ILM projects focuses much more on decision making process and effective contributions that managers can give in order to choose the better quality strategies that may be more cohesive to territory changes and social transformations than the assembly of a power structure that works like the ones used in corporations. The credibility necessary to ensure legal compliance, sense of fairness, transparency and responsible accountability of all actions and the steps of a ILM project will depend on a robust platform of created Governance.

CONTEXTUALYZING: ATTENTION POINTS ON THE SECOND DECADE OF THE TWENTY FIRST CENTURY

The first decade of the twenty first century ended leaving us with the feeling that it barely started, it already ended, and left striking traces that will certainly give direction to much of the events in the coming years. The memories of the fall of the twin towers, the mega corporate fraud in the U.S. and the global financial crisis are still present in the memories of many of us. The impact and consequences of these facts and of others, calls the attention to five points that cannot be overlooked from now on by whatever the enterprise may be. They are:

- the “empowerment” of collective conscience,
- the intensification of the debate between ecology and economy,
- the risk of disconnection among the chains of supply,
- the universality of the principles of Governance
- and the actual great capacity of large corporations

About the first, the era of collective consciousness: the increase in the exercise of citizenship is clear. The articulated aversion of society to unethical behavior characterized by the most critical positions based on major issues such as probity and administrative policy, human rights, global sustainability, and institutional ethics has been widely disseminated in real time. The collective emotion, mostly in the form of catharsis, encouraged by the speed and boldness with which the information is available has led to a collective sense of urgency on the need to define position for a good part of society. We are leaving an era where access to information and knowledge was the privilege of few to a time characterized and influenced by the mobilization and articulation of public opinion. The strength of this new movement has been able to change the direction of events and outcomes of issues that were almost impossible in the recent past, in all sectors of society.

Tables 1 and 2 below, by Paschoal Rossetti, synthesize well the second and third points of attention: When we analyze some of the factors of economic expansion, such as population growth, increasing social aspirations, the issue of disposability and economic inclusion of social class, such as the current C-Class in Brazil, it is

difficult to predict a different scenario than one of intensification between the economic and ecological currents: sustainability and development of the planet. Both are necessary, but there is no intelligent and effective dialogue so far.



Table 1 – José Paschoal Rossetti: A strategic vision of the macro-economic environment: current conditions and likely scenarios, in February 2010, FDC

The third point that complements the previous, qualifying it, is the risk of disconnection of supply chains caused by the asymmetry in the rate of investment in the base industry, subsequent and final chains. Increasing environmental and legal constraints to the transformation of natural capital combined with the slowness in taking decisions of investment on the base industry clash with the demanded speed by the explosion of final markets, increasing the "gap" between supply and demand. This, if not strategically studied and remedied, will have a hard impact on factors of economic expansion mentioned earlier, changing scenarios designed so far to the Brazilian and world economies.

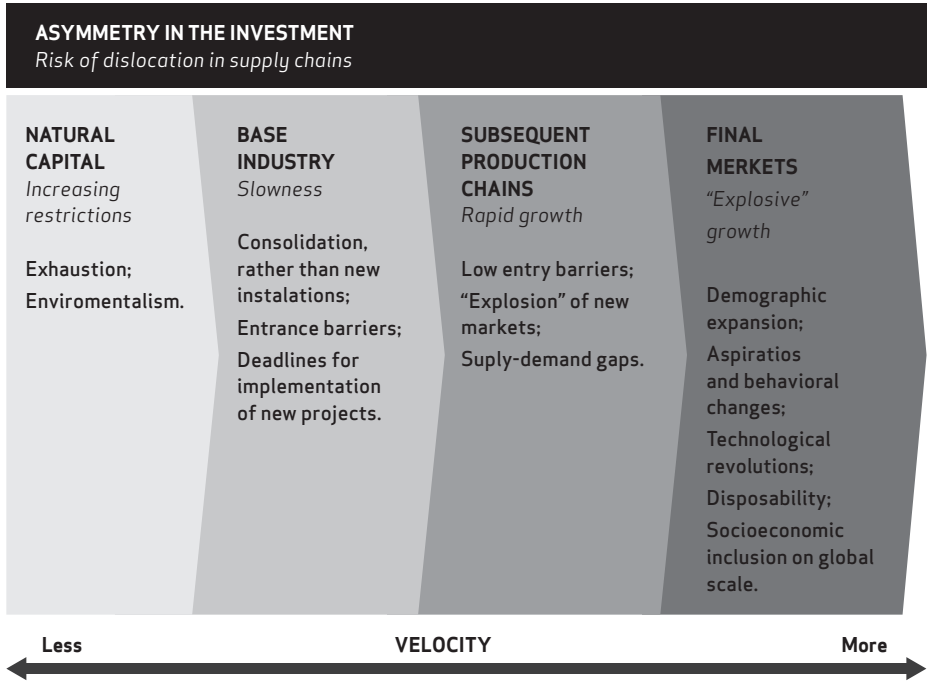


Table 2 – José Paschoal Rossetti: A strategic vision of the macro-economic environment: current conditions and likely scenarios, in February 2010, FDC

Our fourth point is the universality of the values of Governance and the interdependency of its dimensions: "compliance", legal conformity, responsible accountability to society and transparency, these are common values that permeate all three levels: Global, Nation States and Corporate. When we work for example, towards the Millennium Development Goals, the issues inherent to global sustainability and human rights, we are focusing on Global Governance. There are issues over which we cannot falter, society is aware of their importance and that its solution lies in the participation, involvement and commitment of all. The Governance of State refers to issues of the countries, sovereignty, relationships, political and economical power; and, finally, to the Corporate Governance focused on the business world, corporations and institutions, and its current power to influence all levels of society.

The actual economic power of the corporate world, our last point, is unquestionable! Only the top 500 global companies ranked by Fortune magazine had revenues of U.S. \$ 58.2 trillion, representing 39.6% of Gross World Product in 2009. This and other corporate numbers are historically unprecedented, and we can say the same of the accumulated power by the global corporate world. There is, therefore, according to Andrade & Rossetti, 2006, conditions in which this power is expressed as a steamroller for the benefit of the expansionist aims of these companies, if it were not the forces that make up the principles and practices of corporate governance that have been expressed, with increasing power to impact the corporate world.

Corporate Governance: brief history, control forces and harmonization of interests

Concurrent with the corporate enlarging, internal and external factors occurred, causing irreversible changes in the organizational and functional structure of the corporate world. Internally, the main movement can be observed in the structure of the control of capital in companies with the dispersion of the number of shareholders, the loss of control and the depersonalization of the property. As a result, the property has become disconnected from the administration; the founders-owners were replaced by hired executives, most major companies have become global enterprises without owners, and corporate objectives is no longer confined to the maximization of profits. In this way a new power structure within firms emerged, arising from the increase of hired executives, with dramatic effects on the control and the purposes of companies.

Externally, according to Andrade & Rossetti, 2006 the main change was the revolution that took place in relations between companies and society from the perspective of corporate social responsibility. Assuming that the rights of other stakeholders - the shareholders - could and should be reconciled with the rights of other stakeholders, new concepts were established. A conciliatory view proposed by Jensen, according to Figure 1, established a zone where the maximum return on long-term investors reconciled with meeting the demands of other groups of interest: senior management, employees, creditors, suppliers, consumers, local communities where companies operate and NGOs.

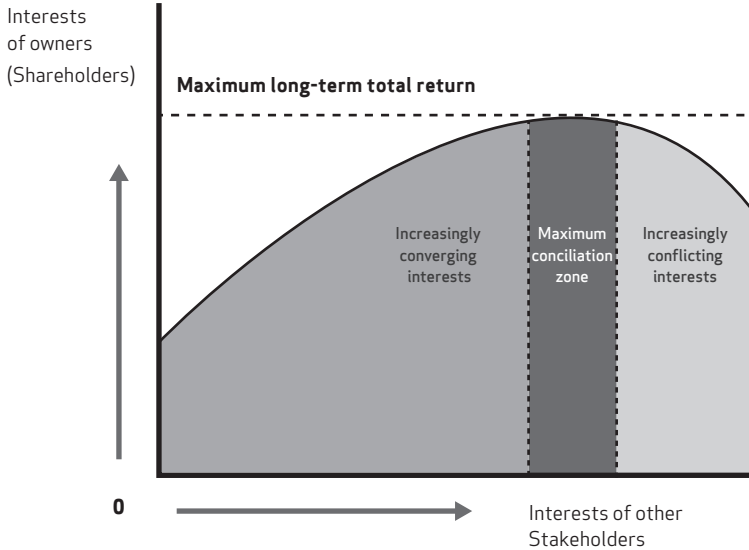
A CONCILIATORY VIEW*The trade-off between the interests of owners and the other stakeholders*

Figure 1 – Jensen, Michael. Value maximization, stakeholder theory and the corporate objective function. *Journal of applied Corporate Finance*, V.4, No.3, 2001

These two movements led to the definition of a set of internal and external forces of control of the corporate world. An initially focused conflict was established between dispersed owners, absent and passive owners and managers that were not owners, likely to make decisions that met their interests more than those of shareholders who had granted them the power to administer the paid-in resources of companies. To this conflict it was added a derivative of asymmetric rights between major shareholders with sufficiently broad power to practice expropriation and minor shareholders, jettisoned of the bodies in which the strategic direction and operations of enterprises as well as the rights over cash flows are defined.

Two categories of agency conflicts, one that encourages managers to be opportunistic and the other, that encourages the majority shareholder to be the villain of the story. Agency conflicts result in costs that turn the company vulnerable over time. Corporate governance is born as a result of the need for an effective external

monitoring to minimize these conflicts. There were actions of individual activists in the 80s, going through the creation of codes of good practice for countries and multilateral organizations, and rating companies, in the 90's, the corporate governance process arrived in the first decade of the twenty first century as "good corporate governance and ethical business practices are no longer luxuries-they are laws."Sarbanes Oxley Law.

As a result a new scenario for corporate governance unfolded in the next decade. Among its elements we highlight: the sensitivity of the capital market to indicators of the corporate rating agencies, the establishment of corporate and other boards (such as of administration and tax administration), that actually act as fiduciaries of the shareholders. The definition of codes of conduct, which no longer are pro forma parts, they are now documents that express commitments and effective answers to legal requirements, reduction of conflicts and agency costs, and more well-founded formal processes of governance, committed to the creation of value for shareholders, but also with an attention carefully turned toward the harmonization of the rights of shareholders with those of other stakeholders.

Concluding this topic, it is worth noting that the harmonization of interests is a response to external pressures, directly derived from three major critical issues, involving not only the long-term interests of the corporate world, but the ones of 6.9 billion people in the world: economic expansion, the environmental impact of this growth and global inequality, an issue that reinforces the concerns with the previous two. (Andrade & Rossetti, 2006).

Given these issues, and returning to the initial thinking about the enormity and power of large corporations, in every continent the term corporate responsibility has been emphasized. It encompasses a broad set of commitments that go beyond the generation of wealth, with which companies have been involved. This set includes responses to the expectations of stakeholders with whom they interact. These responses do not imply rejection of the primary demand that corporations must meet, and without which the others are unlikely to be met: the return of investments and the maximizing of the value of the company. This demand being met, the path that has been pursued by almost all large companies all over the world is to extend the good governance to other fields of interest that are no longer limited only to agents that interact in the following restricted chain of business owners, employ-

ees, suppliers and consumers. They include local communities, governments and nongovernmental organizations, having as a prerequisite the responsible management of conflicts of public and private interests.

Aligned to these demands, the latest principles of strategic management of companies suggest that the corporate objectives must achieve a wider set of interests, of an indoor and outdoor range. Even investors expect companies to meet the demands of society in its broader setting, because this positioning maximizes its reputation and its market value.

"In the twenty-first century, as companies are creating a borderless and global markets world, the strategic focus will be to ensure that corporate power is compatible with new standards of responsibility towards people and society." Robert Monks, 1996, *Whatching the Watchers: corporate governance for the 21 st century*.

CORPORATE GOVERNANCE, THE CONCILIATION OF MULTIPLE INTERESTS AND INTEGRATED LANDSCAPE MANAGEMENT

Corporate governance is expressed primarily by a system of relations between at least three actors: the Property, the Administrative Board and the Executive Board. To these three anchors others can be added, when they admit the active interaction with other stakeholders interested on the performance and the impact of corporations. Towards the conciliation of multiple interests, the triangle becomes a quadrilateral with the addition of other interested parts. What defines the scope and objectives of this relationship is the assimilation, by the owners of corporate responsibilities, aimed at the emerging goals, such as social, environmental and with actors in the business chain, both upstream and downstream. The owners expect, however, the extensive validation of the company results and the maintenance of its positive image in the long-term - in one expression, the corporate reputation.

In the internal environment, for the other parts involved in governance practice, other lines of relationship between the Administrative Board and the Executive Board shall be established, always reconciling legitimate demands with the primary purpose of the corporation, which is the maximum return desired by the investors. It is the responsibility of the Administrative Board, acting as trustee of the owners, to set relation policies with other stakeholders. The Executive Board is

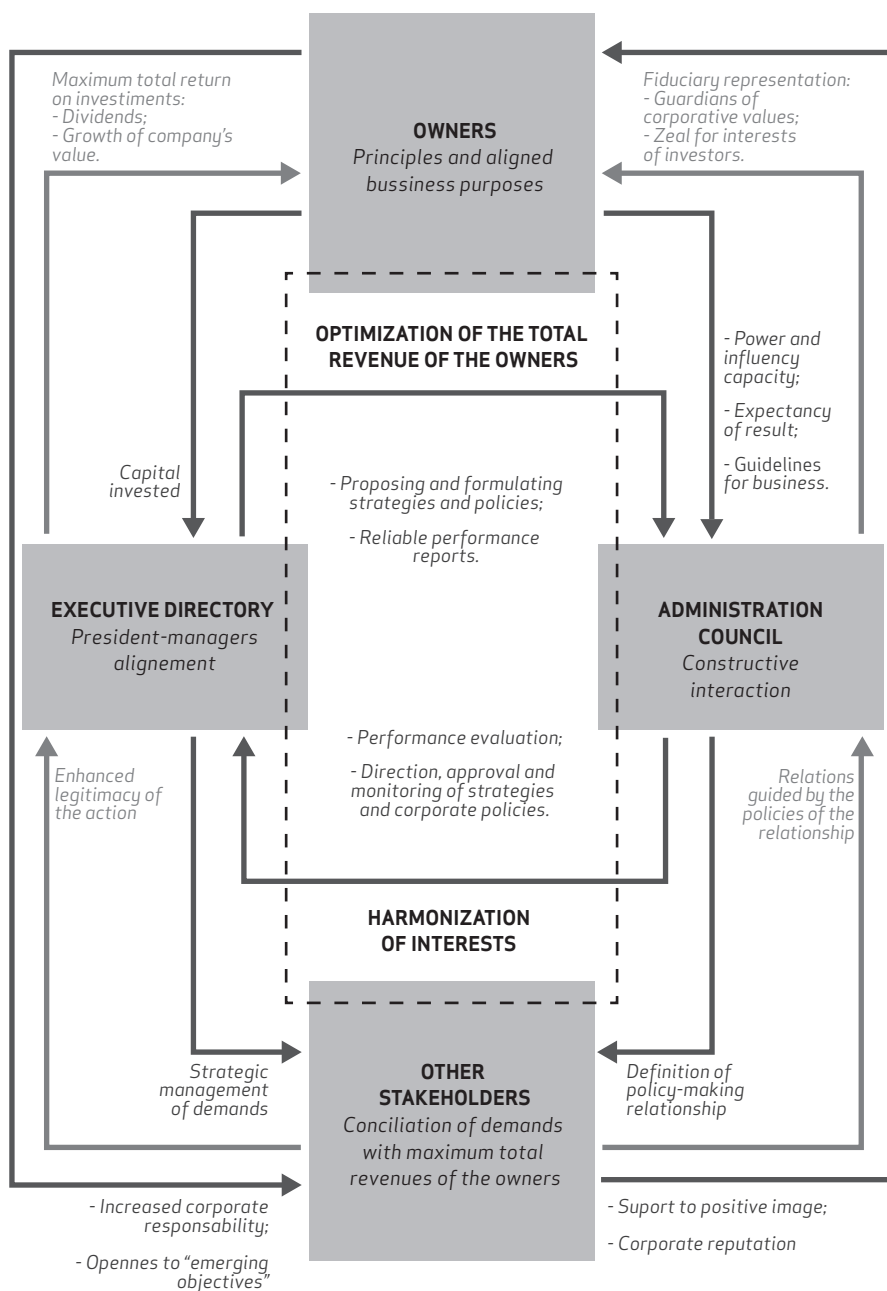
THE QUADRILATERAL*Conciliation of multiple interests*

Table 3 - by Andrade & Rossetti, 2009 exemplifies what we have just approached

responsible for implementing these policies, and looking at the strategic management of their demands. The involved parties will send signals that reinforce the legitimacy of the executive action.

In short, good corporate governance practices, are aimed at value creation and the perennity of companies, seeking the harmonization of the generation of maximum return of owners with other internal and external interests, and are seen as fundamental to the creation of a healthy and reliable business environment, important for the development of capital markets, the capitalization of companies and economic growth of nations.

The ILM, Integrated Landscape Management, (Oosterbeeck, 2011) is "a strategy... based on a holistic conception of the socio-economic (territory) and that favors a pro-active intervention (management). Recognizing the limitations of rigid institutional solutions, and considering the contradiction as the main engine of sustainable development, it seeks to build new platforms of governance, which recognize the expression of multiple and distinct interests. It understands that the dynamics of reality are unstable and mutant lacking a permanent monitoring and continued foresight exercise. (Oosterbeeck, Scheunemann and others 2011). This recognition of multiple and diverse interest, is focused on the sustainable development of a territory, is the point which we will start the practical relations of the corporate governance process and ILM.

In the processes of governance emphasized earlier, and the legitimacy of company stock, what ensures its credibility and public reputation is a strategic management focused on the demands of other stakeholders besides the shareholders.

What the ILM concept adds to what corporations today understand as strategic in its governance process are two key issues: The first is the issue of dynamic instability of the reality of territories which require constant monitoring and updating of the demands. The process of proactive intervention of corporations in the territories must be understood as dynamic and of spiral ascending. It never stops. From the moment you achieve structural changes in the territory, the recognition, the involvement and the social aspirations of the local public tend to grow exponentially, making it extremely dangerous for corporations to break after it has been launched. Rescuing what we call attention to in the beginning of this article, the current importance of public opinion power. The strength of the local public opin-

ion being articulated in the opposite direction to good corporate image and reputation, can act as a boomerang effect, becoming this effect fatal on the capital market and corporate credibility.

That said, a project to be identified as ILM needs to establish in each stage of the dynamics of its development a strategy of a safety net to ensure and guarantee the continuity of what was learned and conquered by the territory.

The second issue added to the corporate vision by ILM, is based on the relevance of what Oosterbeeck, 2011, suggests as the fourth dimension of sustainable development: beyond the economic, the social and environmental, culture and national identities also become a part of the scenery. Recalling that the initial tone of the twenty first century was strongly characterized by the fall of the Twin Towers in the U.S. and was confirmed by the proliferation of small and violent conflicts been attributed to causes of racial or religious grounds. Recent events in Tunisia and Egypt confirm the thesis that national unresolved problems in all continents, the processes of re-appropriation of territories, return of goods, and other elements are generating increasing root identity conflicts. Disregarding this, may vulnerabilize any national, corporate, or territorial strategy. The question of cultural identities emerges as a new dimension to be considered, studied, understood and above all respected.

An Integrated Landscape Management to have the strength and innovation that present society requires, not only needs to consider the cultural and identity dynamics, but also to empower them so that participatory and convergent strategies can be developed and sustained.

In this context, the cultural patrimony consisting of everything that a society, in its different segments, appropriates or converts in symbolic foundation of existence, occupies a prominent place. It becomes the element able to collectively mobilize action around future objectives, and dilute the existing conflicts. The diversity of views allowed in a single territory, allowing distinct appropriation makes cultural patrimony a basic link of convergence to the collective self-esteem.

Closing then the reasoning about the four dimensions of sustainable development there are: the economic dimension regulating relations between individuals and territory to satisfy their needs, the social organizing of these same individuals, the environmental, ensuring sustainability and cultural identity by mobiliz-

ing the different groups and interests on a common basis in the context of a common future as well.

**THE 8 PS OF GLOBAL GOVERNANCE TRANSLATED FOR A
ILM PROJECT: ATTEMPTIVE PROPOSAL**

In the usual definitions of corporate governance, the 8Ps are usually present, explicitly or implicitly, according to Andrade & Rossetti, 2011: Property, principles, purposes, power, roles (papel in Portuguese), practices, perrennity and people. Property is the fundamental attribute, differentiating companies, defining the relations with the reasons of being and with guidelines and principles derived from governance. The principals derive from the ethics that should prevail in the business world: a sense of fairness, transparency, responsible accountability, and legal compliance. The purposes converge for maximum long-term total return to shareholders, and in case of extended model of harmonization of interests with other stakeholders. The power comes from the owners, regardless of the degree of dispersion of capital control. Roles must be clearly defined among the instances of power and governance bodies, corporate boards and management. The practices

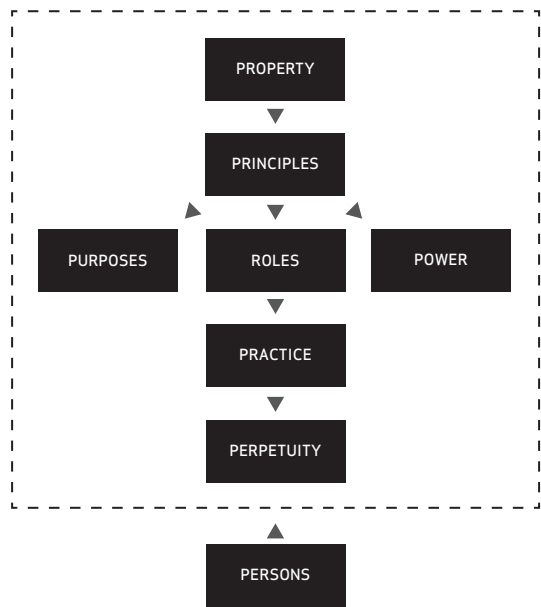


Table 4 - Diagram of the 8 Ps of Corporate Governance - Andrade & Rossetti, 2011

are focused on the management of agency conflicts and in minimizing its costs, the basic conditions for the survival of companies. People need to be trained to focus their efforts toward positive results for companies.

The transposition of the 8 Ps of Corporate Governance in ILM projects adds specifications that every day becomes more important in corporate and institutional worlds. Table 5 below describes the attempt to transpose.

No matter what the strength of the current established interests are, anywhere in the world, values and actions focused on transparent relations with society, responsibility towards future generations, self-regulation of behavior, understanding of social dimensions of economic acts - production, generation of income, consumption and accumulation and management of internal and external impacts of their activities, are goals that the corporate world is already responding to, for at least two decades. The Integrated Landscape Management as a pro-active intervention strategy, besides considering all of these issues adds new spice to the process of corporate responsibility, in that it puts into play the dynamics of values and the diversity of perceptions that a single territory may have.

ILM PROJECTS: STRATEGICAL PURPOSES FOR THE AGENCY AND STRUCTURE OF NECESSARY GOVERNANCE

One of the most notable changes observed in the transition from the twentieth to the twenty-first century, in the field of political and social reflexions, was the transposition of the foci of political and social inequality to exclusion. Following this implementation, the reduction of these excluded became the central purpose not only of governments but of the corporate world and organizations that have multiplied and are geared towards this great goal.

To promote an inclusive vision of social dynamics in the territory through interventionist actions, a ILM project needs to focus on this purpose and create structures and governance mechanisms capable of ensuring the formation of human capital and combating the alienation of individuals over the time of implementation and especially after project completion.

Summarized by contemporary thinkers, such as Nobel Prize winner Amartya Sen, the central causes of absolute socioeconomic exclusion are:

8PS	INSTANCE	DEFINITION
Property	Corporative	- Fundamental attribute that differentiates it from companies. - Reason of being of the Governance
	ILM	- Territory: Center of rationality. Each territory has its specificities that should be taken into account. Differentiating element from the projects. - Reason of being ILM
Principles	Corporative	- Ethical fundamentals of business and management: - A sense of justice (fairness), Accountability, Legal Compliance and Transparency (Disclosure)
	ILM	- Ethical grounds (ditto above) - Dynamics of values: respecting the predominance of perceptions about the territory
Purposes	Corporative	- Medium to long term targets with a consensus - Focus on returns: (a) Maximization of total return on the investment of shareholders (RTS). (b) Harmonization of the RTS with the interests of other stakeholders.
	ILM	- Medium to long term targets with a consensus - Oriented to the citizen, centered on the individuals and groups.
Roles	Corporative	- Clarity in the separation of roles and functions: - Family, Society, Company. - Shareholders, Directors, Managers. - Administrative Board and Executive Board. Chairman and CEO.
	ILM	Integrated, converged and self ruled

	GOOD PRACTICES	CRITICAL SITUATIONS
	- Patrimony of the stakeholder - Cohesion among stakeholders - Respectful relations	- Increasing misunderstanding among stakeholders - Different medium/long term purposes
	- Cultural Patrimony as agglutinating central element - Cohesion among all interested parties on the territory and respectful relations - Pro activism of the sponsors	- Negligence on cultural and identity issues - Disharmony among the sponsors of the project - Clientelism
	Internally shared and externally enforceable	- Non assimilation by internal staff - Values vary between shareholders - Deconstruction moved by transgression of group values
	- Integration and Inclusion - Prioritization and selection of certain actions by individuals and social groups - Reorganization /permanent recombination - Self-regulation	- Deconstruction moved by transgression of group values - Imobilism
	- Long term view aligned with the Member and Administrative Boards and in the Executive Board. - Clear strategy, consistent and focused on creating wealth. - Clarity in the definition of wide-ranging guidelines: Guiding Purpose (mission). Business purpose (vision).	- Misalignment in defining strategies, the model of entrepreneurship and in a growth rate. - Strategic Directions disconnected from the development of business environment in which the organization operates.
	- Long term view aligned between sponsors and stakeholders - Clear strategy, that is also consistent, motivating, achievable and focused on the dynamic development of the territory and their social group - Transitional Results and practical purposes constantly resized	- Misalignment and disconnection of strategies, focus and priorities.
	Segregated functions: Chairman e CEO.	-Non-segregated roles, accumulated functions -Contradictory decisions -Lines of expertise and competencies that are not defined. - Constant by-pass at all levels.
	Interdependence among all actores	Uncordination/ Burocratization

8 PS	INSTANCE	DEFINITION
Power	Corporative	-Constitution of the power structure: the prerogative of the shareholders. - Shared definition of the decisions with high impact. -Succession-planning in governance bodies.
	ILM	Nature of the network created connecting and ensuring the integration among individuals and groups and continuous evolution
Processes and Practices	Corporative	-Systematization: from the targeting of strategy to monitoring results. -Empowerment of governance bodies. -Conflict management and agency costs. -Construction of channels of communication, internal and external.
	ILM	-Asymmetrical and arithmated, connected via network allowing changes constantly. - Transient-focused Results in accordance with circumstantial relevance. - Multiplicity of agendas being articulated at the same time, constantly changing.

	GOOD PRACTICES	CRITICAL SITUATIONS
	-Defined, visible and accepted in the administrative bodies: -Empowerment and firm conduct of the Council. -Strong leadership, producing good results and admired in the Executive Presidency. -Competencies, and responsibilities clearly defined.	-Fragmentation and accommodations in the organizational structure to meet people, not geared to the interests of the Group companies. -Infighting among board members and key executives. -Indications and promotions are not based on meritocratic systems. -Discomfort with leaderships in respect to style, competences and generated results.
	Global and integrated vision and local and specific acting, articulated plurality, pro active integration and integration	Clientelism
	-Absence of conflict of interest. -Related-party transactions fully justified. -Systematic Practice: the targeting strategy of the monitoring of results.	-Absence of agreements, protocols and understanding of formal rules. -Opportunistic practices, conflicts of interest. -Collective decision-making disregarded. -Prevalence of informal management models.
	-Dynamism in permanent mutation -Plural and convergent constructions -Collective agents take initiative and condition evolution -Construction of robust and consistent scenarios. -Self-regulation, integration, convergence	-Opportunist practices, conflicts of interest -Collective decisions unconsidered -Privileged information

8 PS	INSTANCE	DEFINITION
Perennity	Corporative	-Except in exceptional cases, the ultimate objective of organizations. -Heavily-associable with: . Harmony of purpose. . Creating value for shareholders. . Reconciliation of shareholders' interests with those of other stakeholders.
	ILM	-Sustainability of the continued evolution of the territory. -Integration compatibilizing the diversity and convergence. -Creating a safety net
People	Corporative	- Key factor of good governance, present in all Ps. Base of the legacies, the conducts and the competencies that lead to perennity
	ILM	-Focus and main object of a ILM project

Table 5 – The 8Ps of Corporate Governance and ILM – Attemptive Transposition

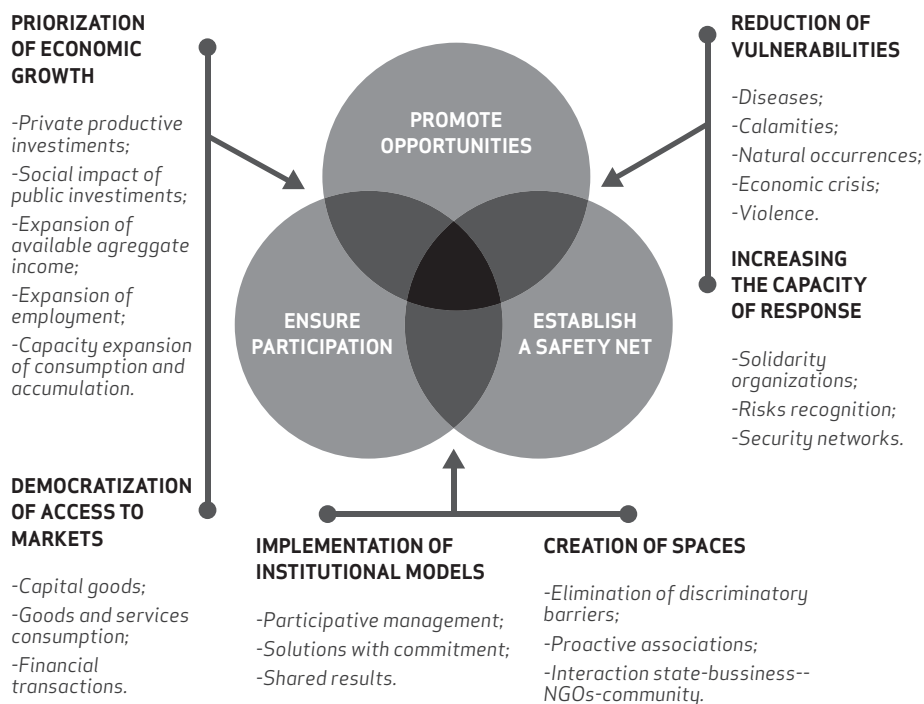
	GOOD PRACTICES	CRITICAL SITUATIONS
	-Effective management of corporate risks. -Development of new leaders: succession well conducted. - Strategy-focused on key factors of success. -Dealing with key issues.	-Lack of interest in society and business by distant heirs. - Increasing risks, decreasing results. -Legitimate interests unsatisfied.
	- Effective management of corporate risks. -Development of new leaders: well conducted succession. -Strategy-focused on key factors of success.	- Lack of interest on the territory. - Increasing risk, decreasing results. -Legitimate interests unsatisfied.
	-Alignment with corporate values. -Strategic Management of Human Resources. -Organizational climate, with high favorability. -Meritocracy and PPR-fair and well managed.	-Chronic and growing deficiencies in the HR field. - Disregard of the existing conditions and trends in the organizational climate. -Absence of legacies: "depersonalized"organization
	-Alignment to collective values. - Strategic Training of local agents - Climate of the territory with high favorability.	-Absence of local and personal identity. - Disregard of existing conditions and trends for the envisioned territory.

- Deficiencies of the excluded to access opportunities
- Distance of the radically poor layers from the power and decision making centers
- Greater vulnerability and reduced response capacity of the absolute poverty to vulnerability and crises
- On the other hand, the strategic proposals of projects and actions that might lead to the attenuation of social exclusion are also three:
 - Promoting opportunities
 - Ensuring participation
 - Establishing safety networks

These three strategic purposes may guide all projects of Integrated Landscape Management. In this three way strategy, we cannot forget the special importance of the opportunities that arise from a broad process of economic growth, characteristic of developing countries known as BRIC countries: Brazil, Russia, India and China. No matter how well structured they may be, the social actions of the corporate world has no power of impact which equates to a vigorous cycle of continued economic growth. This means that the larger support base of the reduction of absolute poverty is the creation of a favorable climate of business expansion, investment, employment, income, consumption and asset accumulation.

Summarizing the key points of the ILM, Governance models can be created through structured projects, of permanent dynamic nature, which seek to break the vicious circles of social exclusion, by transforming actions, focused on human development. To do so, on the basis of these projects there are always institutionalized systems, usually in the form of foundations, from which the possibilities to make effective partnerships are extended, and the search for external resources, including from public sources, and also absorb supports that come from the fruitful interaction with the communities of their own territory. The final result is of a greater efficiency in the allocation and use of resources, also because such models call for participation and commitment of the assisted people.

STRATEGIC ACTIONS FOCUSED BY A GIT PROJECT



From the organization point of view, the support structures of the main organs of Governance are constituted by:

- The General Assembly of shareholders, to which the Audit Committee is linked
- Administrative Board, because of its technical committees and its Independent Auditing,
- Executive Board, to which the business units and the units of shared corporate services report, among which is the Internal Auditing

Although subject to decisions by the General Assembly, Governance is actually exercised by the Administrative Board and the Executive Board and the bodies established under these two pillars of Administration. In the Administrative Board there are representatives of the owners (insiders), independent (outsiders) and out-

siders related. The degree to which the Board is involved in governance is a matter of great importance. There are no defined rules. Several types of Boards are possible, from the least to the most involved. The essential requirements of management, the time being experienced by the corporation, the characteristics and complexity of business are what define, in fact, the degree of involvement. But the trend is the middle ground: councils involved in control decisions and with the strategic monitoring and control, but not with the day to day management – nose-in, fingers out.

The mission of the Administrative Board is to align the board with the expectations of owners, accompanying and evaluating the Executive Board and the presented results. Following are essential requirements for an effective Administrative Board:

- A good advisory board
- Organizational Support
- Power and Influence capacity
- Permanent and well established relations with owners, managers and other interested parts.
- Formal functioning norms
- Adequate incentives for the constructive involvement of advisors.

Integrity, constructive engagement and competence summarize the attributes of good advisers. Reviews of the Administrative Board, from counselors, from the Executive Board and the CEO (chief executive) are recognized as practices that increase the effectiveness of governance.

The roles and responsibilities of the Executive Board are focused on constant search for strategic effectiveness, on operational excellence, creating value and maximizing return on owners. Attributes and attitudes expected of the CEO:

- Integration with the Administrative Board
- Commitment with the expectations of owners
- Effective alignment of the strategies and operations
- Express capacitation by systemic and multidisciplinary view

- Positive behavior, one of leadership
- Listening Capacity
- Decision Capacity
- Generation of positive results

Rescuing what has already been shown in the item of reconciliation of multiple interests, what defines the extent and goals of the relationship is the assimilation, by the owners, of expanded corporate responsibilities, aimed at emerging objectives. The owners expect, however, an extensive validation of the company and the support of its positive image in the long-term, which means reputation. The Administrative Board has the responsibility of setting the policies on relations with other stakeholders, and the Executive Board is responsible for implementing these policies, looking at the strategic management of their demands. The involved parties will send signals that reinforce the legitimacy of executive action.

The needed governance structure for a ILM project to ensure legal compliance, sense of fairness, transparency and accountability in society must not be very different from the one that the corporate world knows.

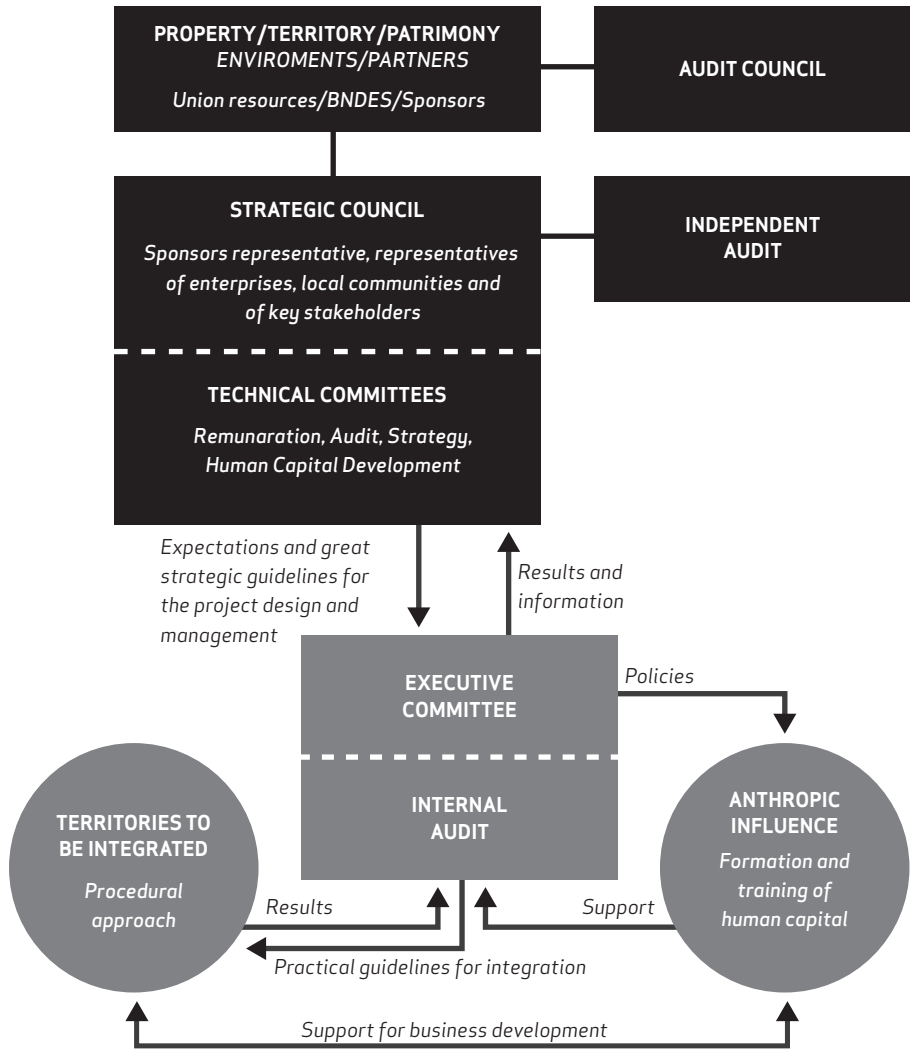


Table 7 shows a reference model.

A ILM project is so broad that it depends on both public and private investments. As an intervention in the territory, it must meet the various mutant expectations of much of their stakeholders, from the expansion of incomes, jobs and other opportunities to the promotion of opportunities for things to happen, in order to ensure the participation of the target audience and create safety nets so that the achievements are not lost over time.

From its conception to the final project approval, a control structure must be set to ensure the reliability and credibility of all sponsors. The way how it will be directed, monitored and encouraged must be previously discussed and jointly agreed so that principles and standards of the operations can be defined. It is important to realize that while the execution of the project occurs, taking into account the dynamics of values and events that need to be converged, the governance structure designed must be rigid and structured enough to be held accountable at any time that it is, actually taking place. The administrative probity, the technical competence, the interpersonal power and the flexibility of managers in negotiations and especially the transparency in the system of relationships created, will be the base of trust that needs to be created so that negotiations can be effective.

As with corporations, the environment in which we define the structure of power, the process and the ILM governance practices is subdivided into at least four interconnected blocks:

- Owners/Sponsors
- Control
- Administration
- Auditing and Fiscalization

Project control is exercised by the sponsors, management by the Strategic Council and the Board of Executives and the environment of auditing and inspection can be made up of: the Administrative Board, the Independent Audit, the Audit Committee and the Internal Audit. Among a liberal stance that relies on self-regulation and an interventionist that requires formal systems for monitoring the actions of managers, we focus on the legal formalization of these organs in the structure of ILM Governance.

In corporations, the governing body of society is the General Assembly understood as the meeting of members. In this instance, issues of great importance are solved such as: the provision of management accounts, allocation of income, high-impact operations, reform bylaws, elect directors and the Supervisory Board. In a ILM project, the Assembly of stakeholders also needs to be so, that sponsors and other interested parties can position themselves about the themes that need to be approved.

In some cases, it is recommended to prepare manuals to facilitate and encourage participation in the Assemblies. The Social Contract / Statute / Agreement of the Sponsors shall include mechanisms for resolving cases of conflict of interests.

The Strategic Council, and extensively, its committees and the Independent Audit bodies will act as guardians of the interests of sponsors. The mission, the essential requirements, the attributes and attitudes of the Council listed for the corporations serve as reference for the Strategic Council of the projects.

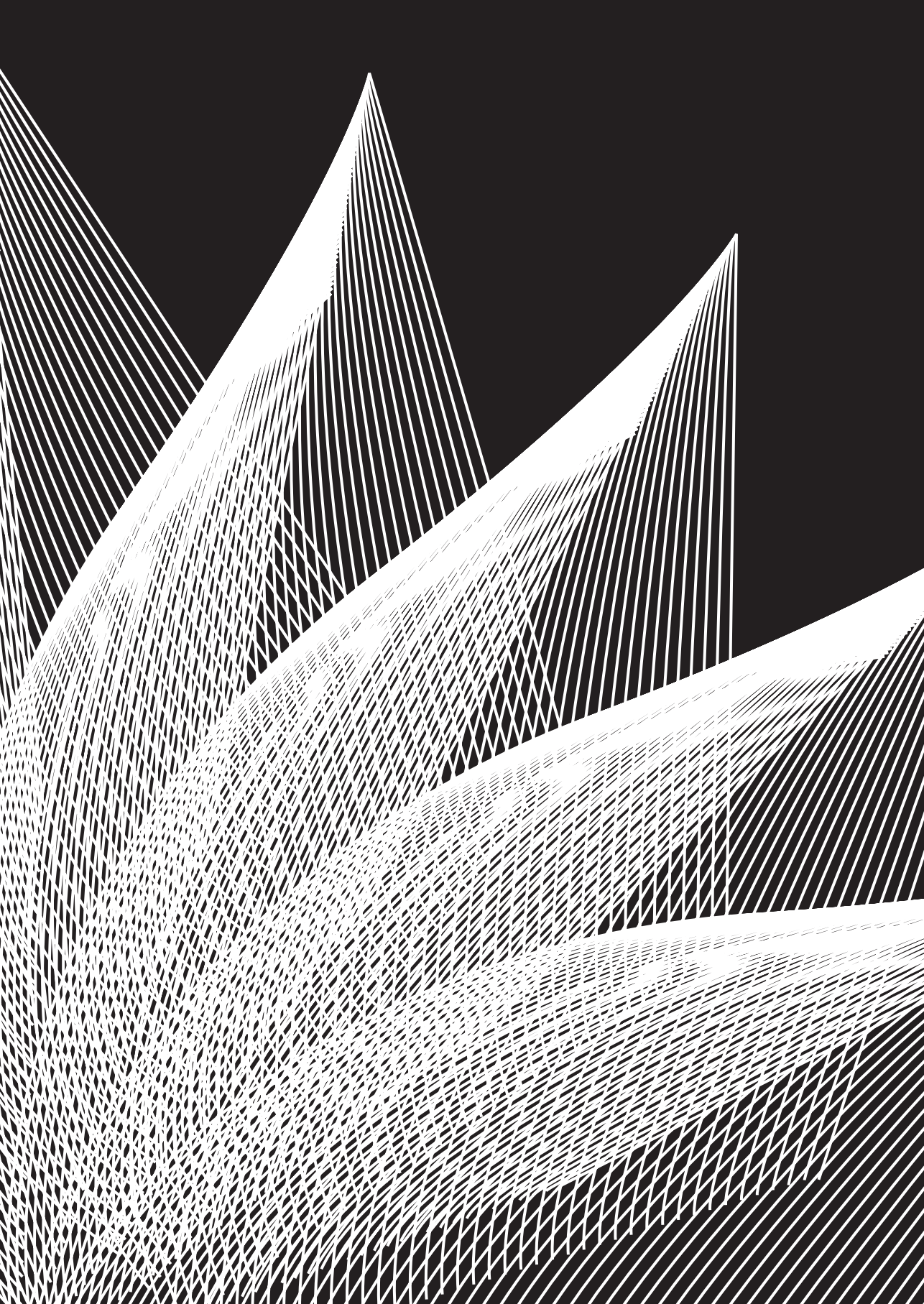
The Executive Committee, shaped as the Executive Board, has the responsibility of management of the territories to be integrated, and determines the anthropogenic policies of focused communities. It interacts with the Strategic Council in the exercise of the powers and functions assigned to them. It is also its responsibility the correlation of mission, attributes, and positions with the Executive Board in corporations.

Finally we need to clarify that the focus of governance in ILM projects, is not exactly an assembly of a structure of power that works, but rather the decision-making and effective contributions that managers can make to choose the best quality strategies that can be more adherent to the dynamic changes of the territories and necessary social changes. Certainly power issues are important. As grantors, it is of the sponsors' responsibility or of the Strategic Council that represents it, to monitor the Executive Committee. The focus on issues facing the decision-making process, focusing on strategy and territorial policies facilitate the vision of the great territorial transformations anticipating the position of communities within the territories.

The management of the ILM can become a legitimate claim of citizenship if they are capable of ensuring the four values which permeate the global instances, of the Nation States and the corporate world of governance process, repeating and emphasizing: Transparency, sense of justice, responsible accountability to society and legal compliance.

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THE LOGISTICS ON INTEGRATED LANDSCAPE MANAGEMENT

ELIEZER BATISTA

Brazilians may be the most qualified scholars and applied well in door to door logistics in the world. It is, however, a reverse knowledge. Most often we learn not with what we have, but especially with what we do not have. Most of the lessons and the advances that we experience come from the difficulty, the necessity. Only a clever and resourceful country like this could give economy to its natural wealth – for over 50 years – even before structural bottlenecks sizes. To overcome the logistical obstacles in the name of growth has always been one of our biggest challenges since Brazil is Brazil. Or even a little earlier. Walk Pero Vaz de Caminha did not need more than a few days to predict that in this land everything goes if you plant it. He just did not warn the King Dom Manuel how it would be difficult to dispose the agricultural production. Eager by the abundance found here, the Portuguese sent ships with a capacity of tons and suffered to find berths on the Brazilian coast. It was a warning.

Over 500 years later Brazil shows, once again, that it is an amazing country, completely capable to reinvent the wheel. We are ahead of the process of creation of a new paradigm for the symbiosis between economic development and socio-environmental change that which logistics is one of the most important vertices. This is the Integrated Landscape Management (ILM), an improvement compared to the original concept of sustainability.

The concept of sustainability – which sprang up the triad economy/environmental/social – has been extremely important over the past two decades. It gave

great support to economic projects throughout the world. However, this model has reached its point of obsolescence. Today, it is no longer able to answer the necessary equations for the development of a truly sustainable development.

The Integrated Landscape Management incorporates a factor that was not taken into account in preparing the *konzept* of sustainable development: culture. This variable has a transversal effect on all other factors. It is the local culture that ties the economic, environmental and social vertices, allowing a broad overview of each project and the region in which it appears.

One of the limitations of the current model of sustainable development is the fact that its scope is confined to the perimeter of the project in question, would it be an enterprise, a hydroelectric plant, a mining-metallurgical complex etc.. It covers only what is restricted to within the walls of the enterprise. The Integrated Landscape Management, no. It is based on a great-angular vision, advancing to the vicinity of the project.

Think of the steps that precede the installation of an enterprise or a factory complex in a certain location. This phase involves distinct items such as infrastructure, transport and impact on the environment, among others. These are factors that not only influence the final outcome as interact with each other, even because this calculation will take effect later in time to deal with the problem of infrastructure. That is, starting from the premise that culture is the point of interconnection between all these variables, it is imperative that the project is built on a basic concept of integrated logistics. It is in this question that lies one of the most important points of this new concept: the Integrated Landscape Management would not even leave the paper without a deep understanding of the logistics behind the project.

To understand a little better the umbilical cord between the Integrated Landscape Management and logistics, a brief etymology is revealing and enriching. The logistics from the Greek word *Logistiki* in turn from *Logarismos* (calculate) and *Logistis* (calculator). Logistics therefore means the art of calculating. The term was originally used to define the supply of an army in the war. It includes all the operations of procurement, storage, transport and delivery.

In other words, it is worth to say that the notion of cost should be based on a systemic view. It includes the calculation of all costs associated with the transport chain and other additional expenses from the origin to the destination of a particu-

lar product, i.e., door to door. The logistics key is to transform the physical distance on economic distance. This is the great challenge of any business.

As Engels said, an ounce of action is worth a ton of theories. We have in Brazil a prime example of how logistics is critical to the development of an economic project and, consequently, to achieve its sustainability in all vertices that the word implies. It was precisely because of the concept of transforming the physical distance in economic distance that Vale do Rio Doce has become one of the largest mining companies in the world. To go back in time and comprehend the leap of the company helps to understand where they cross the logistics and the Integrated Landscape Management, from the perspective of sustainability of an enterprise.

From the 1960s, the company has grown under the systemic-holistic design, operating systems in the modern concept of supply chain. All the logistics – expansion of the Vitoria-Minas railroad, the construction of Porto de Tubarao and the use of large ships, until then unprecedented – is designed to suit the mineral production, in this case the mines in Minas Gerais. The same procedure would be repeated years later in the deployment of the Carajas Project, also built on the harmonious integration between the mine, railroad and port.

This strategy was born of the challenge that Vale do Rio Doce faced when it began to expand its activities: how to make its product, iron ore, competitive in Asia, especially in the growing Japanese market? By then, in the 60s, Brazil still had a low participation in international trade, which contributed to our problems and logistical barriers to the flow of goods to major consumer centers.

Vale has seen itself, then, standing before the need to transport to the other side of the planet which, in proportion to its importance, was the cheapest product in the world – a tonne of iron ore cost about \$ 3. And it would do it in terms of future competitiveness with Australia, much closer to Asia and whose projects, moreover, were inspired by the Carajas. It was about simply getting the cheaper merchandise to the most distant market of the world.

It was necessary to imagine and seek productivity gains throughout the supply chain, from mine to the port of disembarkation. It would be what the engineer Michael Porter, a Harvard professor, two decades later has renamed as "supply chain", with the same principles: to establish a profitable and sustainable position against the competition. In short: to transform the physical distance in economy.

The logistics concept of Vale grew up on this model. From this concept, railroad, port, shipping and cargo handling, in its various modal interfaces, were developed and integrated in a systemic way and set to new parameters. That's what the American physicist Thomas Kuhn called "Paradigm shift" in his work "The Structure of Scientific Revolutions", 1962.

Gradually, with no previous theoretical knowledge and with great deal of intuition and common sense, we were applying the concept of sustainability in Vale through one of its vertices: logistics.

Brazil started a logistics revolution in this period, that even on trial and more than embryonic have already anticipated what was going to be a design project committed with sustainable development – at least at that time under the economic angle. Within this model of door to door integrated logistics another innovation was crucial to the reduction of physical distances: the container.

This new form of storage and transportation of cargo decreased the cost of freight and shrank the world. The logistics of container allowed the generalization of the supply chain management and resulted in the improvement of ports in different countries.

This report has didactic connotation and seeks to show how the principles of the Integrated Landscape Management, notably from its logistic variable, somehow began to take root more than five decades ago in what would become the largest private company in Brazil. If, at that time, it was still crawling on the idea of using environmental conservation and social responsibility as criteria in designing an economic project, it already had the logistical factor behind the commitment to perpetuate this venture.

Since this is another concept that had yet to be properly named, is no exaggeration to say that at that moment we saw the dawning of the idea of globalization on the national productive sector. The thought that it was necessary to study the flow of goods from origin to its final destination soon became universal and was built by the Brazilian industry.

Again, the mirror of history helps us to look to the future. The metamorphosis of Vale and the transformation of Brazil into a major global supplier of iron ore mark the advent of one of the first major corporate projects in the country that used the logistic as the culmination of a long-term vision, combined with further

primary precepts of sustainable development . This is a case that 50 years later deserves to be revisited and evaluated with a little more detail now in the light of the Integrated Landscape Management.

What was done in Vale helps to explain the importance of the logistical factor in the development of economic projects from the perspective of the ILM and its development in relation to the original concept of sustainability. At that time, the mining company caught sight on four or five decades ahead. For corporations which now follow the precepts of Integrated Landscape Management, with no exaggeration, are doubling this horizon thanks to the intersection with the environmental, social and economic variables and the region's culture is the chain cable.

In the early 60s, Vale had already completed the modernization of the Vitoria-Minas railroad, with significant increase in transport capacity. However, the company was conceived within a system that included the production of ore, rail transport, port facilities, shipping and distribution at the destination.

In this system, the bottleneck has shifted to the port. The original program of production and export of the company was only 1.5 million tons / year. However, port facilities did not support this capability, while there was a need to new markets. I.e., the model was not sustainable. It had no reliability needed to maintain the growth project. At the same time, it was not competitive for new and more distant markets, such as the Japanese.

When you have huge and high quality mineral reserves and with the improvements of Vitoria-Minas, Vale and Brazil found themselves facing a great opportunity wrapped in a complex challenge. We were face to face with a logistical Gordian knot that needs to be unleashed in the name of the development of the Vale and the nation.

By turning ourselves into the studies, saving the related proportions, we are faced with a situation similar to Japan, that was trying to rebuild its steel industry, virtually destroyed during World War II. Complementarity was obvious – we were looking for new markets for our minerals and the Japanese needed raw material for its plants.

The agreement with the Japanese is an example of how the logistic equation is fundamental to the implementation of an economic project, and therefore a key variable in the more modern concept of sustainability. Studies have shown that the export of iron ore to Japan would only be feasible under certain conditions.

Ships were needed with a minimum capacity of 100,000 DWT. The vessels were required to be versatile to transport oil from the Persian Gulf in the return journey. It would still be necessary to build three major ports in Japan to receive the new large bulk carriers and one in Brazil. It was also essential the closure of long-term contracts to secure financing.

At the same time, the shipping industry needed to be encouraged to build a new type of cargo within the required specifications. No site in the West accepted the contract. The Japanese took up the challenge under the leadership of Dr. Shintao, one of the greatest designers in the history of naval engineering.

The size and importance of a project for a country should be measured by the longevity of his legacy. This healthy bilateral insanity resulted in several contributions to the national infrastructure and logistics. The agreement between Vale and the Japanese steel mills bring to life the port of Tubarão, which today receives ships of over 300,000 DWT. The mining company founded Docenave, which became the third largest dry bulk shipping company in the world.

This *Konzept* spread to other parts of the world, such as Rotterdam, in Netherlands; Bakar, which today is Croatia; Taranto, Italy; Fos Sur Mer, France; etc.. Steel-makers, in turn, moved to the coast. The productivity of the transport of iron ore increased by 100 times.

Over 50 years later, we verify that this revolution dug the foundations of a modern logistics, sustainable, based on a systemic-holistic vision. Something perfectly compatible with the new frontier of sustainability. The Integrated Landscape Management covers all stages of transport of goods and products, from the birthplace of the raw material to the tip end, therefore, inside a concept of integrated logistics.

In partnership with the Macrologística enterprise and with fundings from the National Industry Confederation (CNI), which supported the project on its own initiative, we have developed a study on the logistics of cargo transportation in Brazil. The work included a detailed diagnosis of logistics in the country, establishing axis which will enable better conditions of competitiveness in the country. Up until then no one had made such a great equation. An integrated logistics thinking is the path that allows a better understanding of the territory itself. From this integrated logistics, it is easier to think and view the issue in a perimeter of the region that goes beyond the borders of the economic project, as the precepts of Integrated Landscape Management say.

That's how it is configured the second phase of development, the stage of the Integrated Landscape Management, together with the territorial certification, with a logistics system defined and educational projects based on transversal culture. Thus, it is able to establish an axis of integration. It is important to remember that the economy is also culture, since it focuses on variables such as history and interaction between groups of a given region.

For this reason, a fundamental question that is viscerally linked to the Integrated Planning and, more precisely, to the logistics structure is the use of economic vocations of each region. There are parts of the country in which the territorial division would follow the logic of economic projects inserted in them. This is not a cartographic redrawing of borders, but the adoption of macro-economic criteria for the definition of investment.

The concept of macro-regions takes into account the economic potential of each area in order to harmonize the local stronger activities and structure logistics, regardless of geopolitical boundaries. By the way, this argument is a good example of how the Integrated Landscape Management goes beyond the gate of a factory or around a dam and advances by the surroundings, so you can see the key elements of sustainability more broadly.

Important national groups are already developing projects or adapting their logistics structure based on the concept of Integrated Landscape Management. A prime example is the EBO Group, which integrate the Board of Directors. All his enterprises were created strictly following the principles of Integrated Landscape Management, including the territorial certification, which includes all the developments of the group. This measure allows the company and society to understand holistically the issue of territory based on previously established social, environmental, economic and cultural standard indicators. This is a proof that the strictest standards associated with the Integrated Landscape Management are precisely being fulfilled.

The principles of Integrated Landscape Management adopted by the EBO Group serve as a mirror to corporations and other economic projects:

1. The nature of human and environmental dynamics contain contradictions, implies choices and sometimes irreversible consequences and faces dilemmas, not only problems;

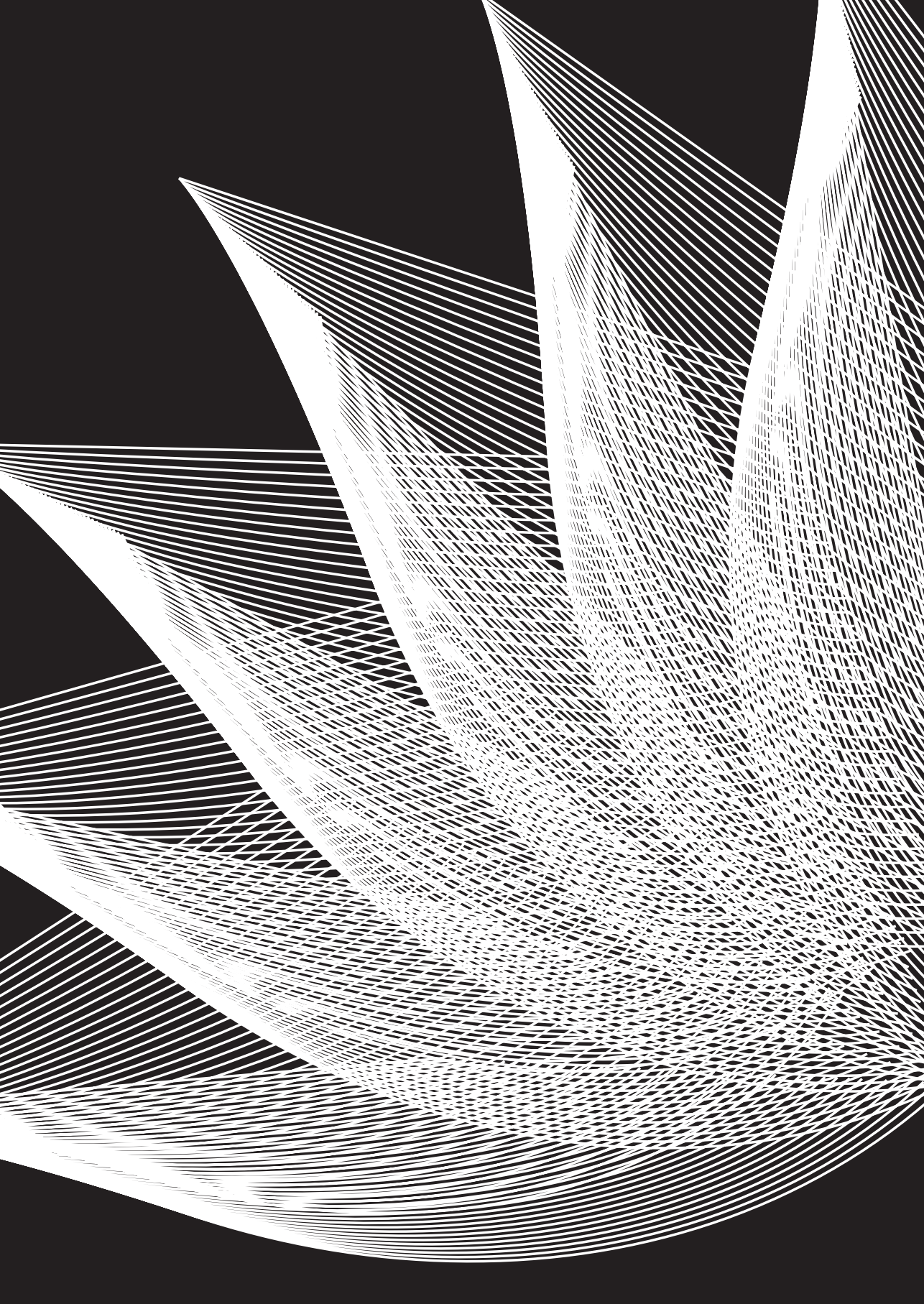
2. As a result, the ILM requires a multidisciplinary and participatory approach, under the circumstance of reducing and enhancing social conflicts and environmental imbalances;
3. The central element of the ILM is the formation of human capital and combating alienation;
4. The creation, along with the higher education, of partnership structures that articulate municipalities, businesses, NGOs and education / training is an indispensable tool;
5. In economics it matters thinking of society, in the administration matters think of culture, in culture is essential to think of economy, in a word: in each area is essential to involve in its management multi-disciplinary teams, technically sound, but not monolithic.

The Açú Superport is not only one of the largest projects ever made in history of the country but also one of the great examples of design built based on the vertices of Integrated Landscape Management. The industrial complex being built by EBO Group in Sao Joao da Barra, in northern Rio de Janeiro, covers the economy, the environment, social issues; all properly attuned to the cultural aspects of the region.

The Açú also serves as a reference regarding the assembly of a large infrastructure project created from a systemic-holistic view of the region and logistics variable. Synergy is one of the biggest advantages of this Superport. Full integration between the activities accelerates the processes of production and logistics, reduces costs and ensures world-class efficiency. Steel and cement industries, for example, can operate in an integrated manner. The iron ore will be received by pipeline or railroad and can be exported through the port or installed in the steel complex itself, all in an integrated manner.

Other cases could be cited, but by its magnitude and the number and importance of companies that will be installed in its industrial complex, Açú Superport can be used as a symbol in many other large scale projects being developed in Brazil under the light of Integrated Landscape Management. From the logistic point of view, it is a state of art project. The synergy not only of the triplet mine/rail/port, but also between industries in different sectors that will be installed on site, is a puzzle that fits perfectly.

Brazil has faced thus a unique opportunity. We are on the prow of a new concept that will radically change the relationship between business and society. Besides the theoretical knowledge that allowed us to move forward regarding the model of sustainable development and reach the Integrated Landscape Management, we are applying its precepts into practice in projects that are likely to be a reference to the world.



THE INTEGRATED LANDSCAPE MANAGEMENT AND CLIMATE CHANGE

FILIPÉ DUARTE SANTOS

INTRODUCTION TO THE PROBLEM OF ANTHROPOGENIC CLIMATE CHANGE

The anthropogenic climate change, which is, caused by some human activities, is a major global environmental challenge in the XXI century. The risk lies more in the medium and long term, in the order of 50 to 100 years, although there are already signs of climate change and impacts of those changes in some socio-economic sectors and biophysical systems, for example, terrestrial and marine ecosystems. Climate change is caused by anthropogenic emissions of greenhouse gases (GHGs) in various human activities (IPCC, 2007). The major GHGs are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). Of these three the one that causes a greater radioactive force in the atmosphere is CO_2 whose emissions result mainly from the combustion of fossil fuels - coal, oil and natural gas - and deforestation (about 20-25% of global CO_2 emissions). In most industrialized countries the sector that accounts for a greater volume of GHG emissions is generally the energy and transport sectors, due to heavy reliance on fossil fuels. In other countries such as Brazil and Indonesia, the largest amount of emissions results from changes in land use and deforestation. In Brazil about 75% of CO_2 emissions results from changes in land use as transport contribute only 9% and industry in 7%.

It should be noted that the planet Earth, since its formation, has been the scene of natural climate change over the period, of around 100 000 years or more, whose causes are relatively well known. On those, overlap now, anthropogenic climate

change, whose time scale is, currently, in the order of 150 years (IPCC 2007). For the purpose of simplification of text will be here referred to as climate change.

Climate change manifests itself mainly by an upward trend in global average temperature of the lower atmosphere or troposphere. This temperature increase is not spatially uniform, being more pronounced in the Polar Regions and in continental regions than in oceanic regions. The increase in annual average surface temperature on a global scale since pre-industrial to 2007 was of 0.8°C . There is a clear acceleration in the increase of global average temperature. In the 50 years, from 1956 to 2005, it was 0.13°C per decade, almost double the average increase per decade in 100 years, from 1906 to 2005 (IPCC, 2007).

The other important feature of climate change is the tendency to increase the intensity of extreme weather and climatic phenomena such as heat waves, droughts and heavy rainfall in short periods, causing floods and landslides. In the case of hot flashes there is not only an increase in intensity, but also of the frequency as the overall average temperature is increasing.

Beyond these aspects, there are still to be considered the rise in sea level caused, indirectly by climate change. This increase results from the expansion of ocean surface waters driven by increased average temperatures, melting of mountain glaciers and to a lesser degree of melting glaciers and ice fields situated above sea level in the Polar Regions. The average sea level rose, globally, about 15 cm in the twentieth century. This rise is currently accelerating. In the period 1961 to 2003 the average sea level rose to an average annual rate of 1.8 mm whereas in the period 1993 to 2003 the rate increased to 3.1 mm (IPCC, 2007).

According to climate models that simulate the Earth's climate system and get future climate scenarios, it is likely that the trends observed in recent decades become worse. Consequently, climate change will tend to increase the average temperature, alter precipitation patterns worldwide, increase the intensity of extreme weather and climatic phenomena such as heat waves, droughts and heavy rain in short periods and also to increase the average level of the sea.

For quantitative projections of these future climate change is necessary to use climate scenarios derived from climate models called general circulation of the atmosphere, that simulate the global climate system, including atmosphere and ocean. Note, however, that the projections of these models, usually made until

2100, depend on the evolution of global emissions of greenhouse gases, i.e., emissions scenarios. These, in turn, are obtained from the socio-economic scenarios, often being used the IPCC's (SRES, 2000). The SRES scenarios are based on four families of possible narratives of socio-economic future - A1, A2, B1, and B2 - including consistently the demographic, social, economic and technological factors.

Climate change has, above all, in the future, and will have more or less one-ous impacts on the natural and social systems such as, water resources, coastal zones, agriculture, human health, forests, biodiversity, fisheries, energy, urban areas, tourism, insurance, etc... The degree to which a natural or social system is affected by a positive or negative climate stimuli, characterized its sensitivity to climate change. The adaptability of a system reflects its ability to adapt to variations in the average and variability of the variables that characterize the climate, moderate damage potential and take advantage of new situations. The vulnerability describes the degree to which the natural or social system is capable of supporting or not the adverse effects of climate change, given its level of exposure, its sensitivity and its adaptive capacity. The vulnerability to climate change varies according to geographical location and the social, economic and environmental conditions. As already mentioned, climate change has a high probability to be accentuated during this century and have, generally, negative impacts on the natural and social systems, although some may be positive, especially in the short term.

MITIGATION AND ADAPTATION

Given this risk there are essentially two types of responses: mitigation and adaptation. The first is to attempt to stop the increase in atmospheric concentration of greenhouse gases by reducing emissions, and the development of potential sinks for those gases. Adaptation is a process response that seeks to minimize the negative effects, and enhance the positive effects of climate change impacts. It can be independent, such as an organism that adapts spontaneously to a changed environment, or, as the result of planned actions programmed and implemented with the objectives of adaptation.

While mitigation is a global objective, although it is practiced locally, nationally, regionally and globally, adaptation has a distinctly local objective. It should

be noted that mitigation and adaptation are complementary responses that are, each time, more closely related. Some adaptation strategies may and should be developed, in conjunction with mitigation strategies, for example, with regard to the water and soil management. On the other hand, the choice of mitigation options should take into account the present and future vulnerability to climate change and adaptation measures planned. It is very important to combine regional and local implementation plans for mitigation and adaptation, as these two types of response to climate change are complementary. For the optimization is necessary to take into account the multiple interactions between them, and define a coherent and integrated plan of action on two fronts.

Municipalities play a truly central role in the combat of climate change, especially with regard to adaptation. At the municipal level is very important to link and combine the strategies and plans for mitigation and adaptation. This integration allows rationalizing and making more understandable to all citizens the responses to climate change. It is essential to have strategies and national plans for mitigation and adaptation. However, their practical implementation requires effective cooperation with the Municipalities through the development of strategies and integrated plans for mitigation and adaption to local government level. These strategies and plans should be planned, developed and implemented in close collaboration with the Federal and State Administration and enterprises. They should also welcome the active participation of nongovernmental organizations and the public in general.

ADAPTATION TO CLIMATE CHANGE

There are many choices and options held locally and by sector that contribute to the adaptation to climate change but do not have that objective explicitly or exclusively. Often the adaptation integrates into existing policies for prevention and risk management, as is the case of natural disasters, management of water resources and coastal areas. There are, still, other very important sectors that need to integrate adaptation to climate change such as land use planning, urban development, rural and regional health services and nature conservation. But there are specific

measures to adapt to climate change, that require the development of an adaptation strategy capable of taking into account the multi-sector aspects, and in particular, the synergies between impacts in the various sectors, such as, for example, water resources and agriculture (SIAM I, 2001, SIAM II, 2006).

It should be noted that adaptation to climate change is essentially a process with an undefined temporality, whose aim is to improve the ability to adapt and implement effective adaptation measures that can reduce vulnerability and increase resilience (resilience). The selection of adaptation measures should be based on a cost-benefit analysis taking into account the time scales involved, and the need to seek to ensure the irreversibility of the expected end result.

It is clearly advantageous to develop the ability to adapt to regional and local government, given the eminently local adaptation to climate change. In this process it is desirable to involve at the outset, the public institutions and local sectors, as well as enterprises and non-governmental organizations.

Improving the ability to adapt to climate change is a process that involves significant uncertainties in impact assessments, the identification and selection of adaptation measures and socio-economic scenarios that let you set the frameworks future in various sectors. For the process to be successful, it is, therefore, necessary to subject it to continuous assessment and assume its cyclical nature. The fundamental principles of process management to improve the ability to adapt to climate change are shown in Figure 1. It is necessary to start first start by defining an adaptation strategy in the medium and long term and set the priority sectors for adaptation. Then follows, the implementation of the measures of sectors adaptation, with participation, as active as possible, of the different actors (stakeholders) involved both public and private sector. As the adaptation process is implemented, it is necessary to monitor and evaluate the results of adaptation and correct the course followed, whenever this proves necessary. Completed this phase, it is natural to restart the process considering that the climate scenarios at regional level will be more reliable, there exists new data and knowledge on the impacts and adaptation measures, and the social, economic and environmental situation also evolved.



Figure 1 - SIAM I, 2001; SIAM II, 2006

CLIMATE CHANGE MITIGATION

Mitigation is a process that takes place at local and regional levels in different sectors of socio-economic activity, but whose purpose is clearly global. All mitigation initiatives, carried out anywhere in the world, are important, but their ultimate goal to begin to stabilize and then reduce global emissions of greenhouse gases into the atmosphere, especially CO₂, can only be achieved through a concerted international sharing responsibility for reducing emissions. The Kyoto Protocol is based on the principle of shared responsibility, but differentiated from all countries with regard to mitigation measures. It sets quantified targets for reducing greenhouse

gas emissions for industrialized countries, listed in its Annex I, to be completed in the period 2008 to 2012, when finishes the first commitment period. However, it is important to note that all countries that ratified the Kyoto Protocol have a shared responsibility to combat anthropogenic climate change by means of appropriate policies and measures, especially through the implementation of new technologies in energy, transport, industry, forestry and agribusiness.

The European Union (EU) adopted the Kyoto Protocol commitment to reduce its GHG emissions in 8% by 2008-2012 compared to 1990. Within the U.S. there is a differentiated responsibility for reducing emissions determined on basis of the level of socio-economic development and GHG emissions per capita of each country. There were developed national plans for mitigation with a set of policies and measures aimed at reducing GHG emissions. With regard to a number of facilities strongly emitting GHGs, each EU member country has a national plan of emission license that is part of the European Emission Trading Scheme. In Portugal the main purpose of these plans is to fulfill its commitment to limit the growth of their GHG emissions in 27% in the period 2008-2012, when compared with base year 1990. The fulfillment of that goal obviously depends on the coordinated implementation of policies and mitigation measures that take into account the specificities of different sectors where there are emissions, especially with regard to energy, transportation, infrastructure, agriculture, forestry and waste.

For the analysis of sector policies and mitigation measures at the municipal level, especially with regard to energy and transport, it must use a methodology based on regionalization of socio-economic scenarios (SRES) of IPCC (IPCC, 2007) that allows the project evolution of the various indicators in the medium and long term, such as the population of the municipality, the characteristics of housing, energy consumption and use of various types of transport.

Currently one of the possible methods of mitigation is called carbon capture and sequestration (or CCS), which consists of separating CO₂ from flue gas of a thermal central of fossil fuels and sequester it underground in geological structures that will not allow it to escape into the atmosphere. The geologic sequestration requires special geological formations such as deep saline aquifers, coal seams without commercial interest, abandoned oil fields, etc..., confined by impermeable layers. There should also be considered the biological issue of sequestration of CO₂. By photosynthesis the plants absorb CO₂ from the atmosphere, which is partly lost

in the breath, but the remainder is stored in chemical compounds containing carbon, such as cellulose. Thus, while the plant grows, the carbon is being removed from the atmosphere. At maturity, the plant stops accumulating carbon, and then, whatever their final destination - rotting, burning in a forest fire, cut wood or wood products, etc... Sooner or later, the carbon is returned to the atmosphere, or in the form of CO_2 or CH_4 . However, in the case of rot in some cases it is possible to incorporate some of the carbon in the soil, which becomes richer in organic matter.

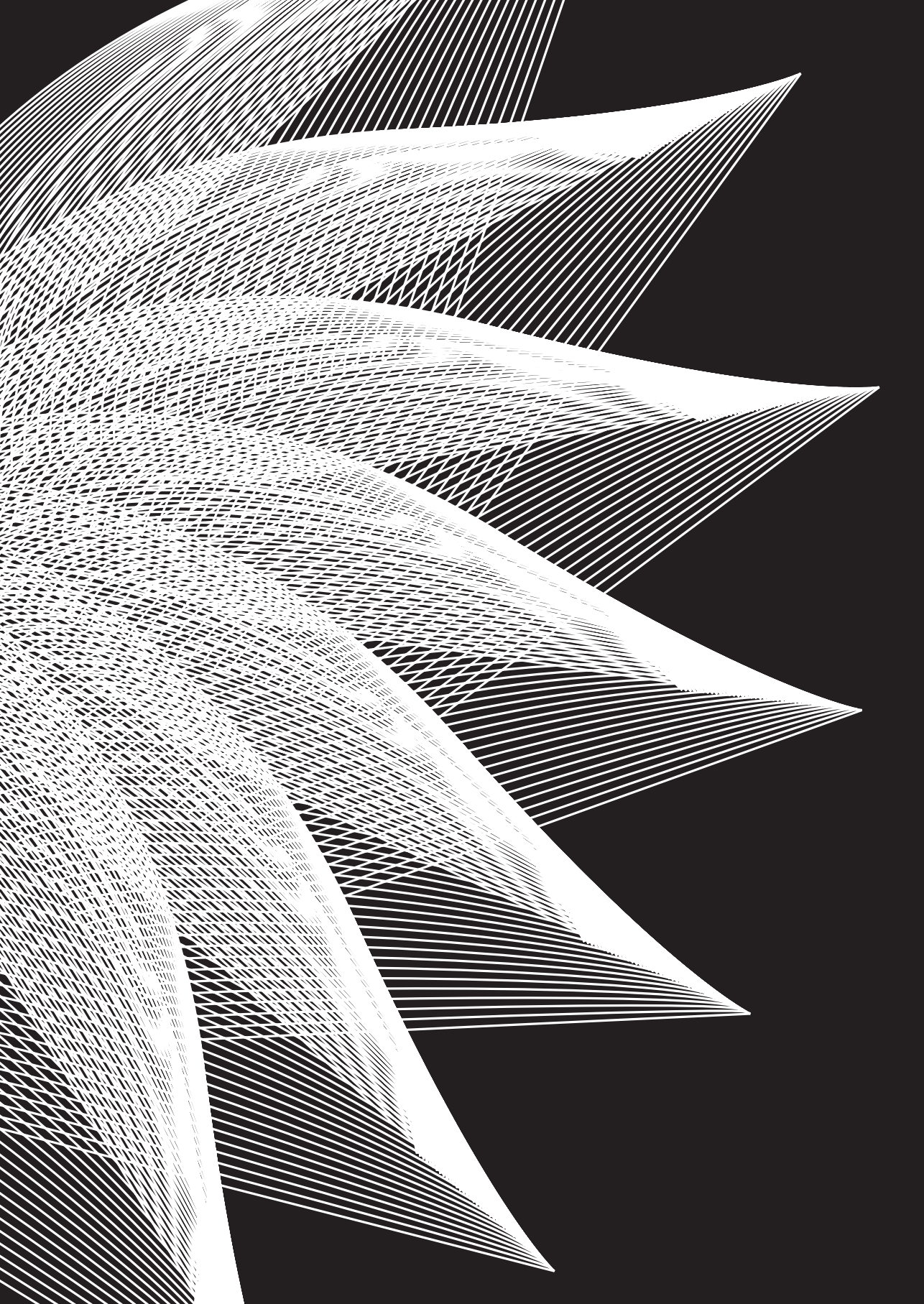
In Brazil, the biological sequestration of CO_2 is of a particular relevance because the most of this gas emission comes from deforestation. Currently the National Plan on Climate Change includes the reduction of deforestation in the Amazon in 70% by 2018, thereby avoiding the emission of 4.8 billion tons of CO_2 . In the same plan Brazil foresees to eliminate the net loss of forest coverage by 2015 and double the area of forest plantations to 11 million hectares in 2020, that being, 2 million hectares of native species.

Climate change, both with regard to mitigation and adaptation are clearly multi-sector and necessarily involve the interaction between the various socio-economic sectors and natural systems. The establishment of a strategic plan for climate changes at the municipal level requires the combination of sector plans of strategic nature existing at national, regional and municipal levels. The integrated management of land at the regional scale should include a strategy for mitigation and adaptation to climate change for this region, established and implemented in coordination with the national plan on climate change.

It must be recognized that this hierarchy of instruments at national, regional and local level are not always fully converged, partly because they are made in times and with different time horizons and by poor coordination of responsible agencies. Yet, they are key elements in the framework of a local strategy to tackle climate change. It should be noted that one of the most important contributions to this strategy is to address climate change and the challenges they pose, in the implementation of measures in the various existing plans at regional and local levels. It is necessary to implement measures whose final results will serve both the objectives of sustainable development, competitiveness, land management, environmental protection and enhancement of natural and cultural heritage and combat to climate change.

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RISK MANAGEMENT AND TERRITORIAL PLANNING

FERRUCCIO FERRIGNI

URBANISTIC PLANS AND RISK MANAGEMENT: STRUCTURAL AND METHODOLOGICAL ISSUES

All over the world, general urban plans discipline the territorial use. That is, they set the “rules” in which the territory can be utilized and transformed (consented or vetoed activities, height of the buildings). And if a part of the territory is exposed to risk (inundation and collapse), the urban plans limit its use, or submit it to special prescriptions. Having as its objective the governing of territorial transformations, the urban plans would be, in this manner, very effective instrument to prevent disasters, or at least, mitigate its effects.

In reality, urban plans not always, not everywhere help to prevent or mitigate disasters. Defining the utilization (or the non utilization) of the various zones, the urban plans determine, in fact, a distribution of more or less value, generating in this way, conflicts during the stage of composition, and resistance in the stage of implementation. Inhibiting the use of a certain area, because there is risk, finds therefore the hostility of the players involved (or of the politician who seeks their consent). On the other hand, the perception of risk weakens in time. Only when the river overflows and causes death, the elders remember that in their time one such area was always flooded. But if a flood zone in the past was not built, it was not only because it was at risk, but also because it was far from the city, so, of little value. But if the expansion of housing is appreciable, the opportunity to take advantage

of it becomes immediate. The risk, on the other hand, becomes remote (or perhaps forgotten).

The increment of value of areas at risk and the reduction of risk perception by the community are two structural factors that contribute to greatly limit the effectiveness of urban planning in what concerns risk management.

Some methodological limitations of the urban discipline also join the structural factors. While analyzing the disciplinary system of the urban planning, there is a general practice of using the input of various disciplines, including some humanistic, that explain the economic, social, historical and cultural causes of a particular structure of the territory. That is, that may relate the current characteristics of the territory with the past behavior of the various stakeholders. But the criteria used in the analysis stage are soon abandoned in the project stage. The proposed land use, in fact, tends to ignore the behavior of stakeholders. Instead, the plan assumes that their behavior is always in your compliance or moved by a single criterion: the interests of the community are privileged, even if it conflicts with the singular interests. It is a position which still has little foundation, be it historical, or methodological. The balanced order of the historical territory – that is, the territory tested by all disasters occurred in the course of centuries – is actually the result of interventions, always seeking particular advantages. Why, from now on, are the "engines" of the system ignored? More than that, why are they reversed?

Innovate the production methodology of urban plans – from the propaedeutics analysis to the formulation of the "rules" of land use – is, therefore, necessary to result in effective tools for risk management.

SPECIALIST STUDIES: NECESSARY, BUT NOT ENOUGH

A system of territorial occupation, mainly the limited extension that may be defined as a "location", may be analyzed through many aspects. First of all, it may be described by the methods and instruments of geography. Of a given territory for example, one may analyze the orography, hidrography, climate, nature of the soils, or the characteristics of occupation: concentrated, sparse, linear, or even,

the distribution of the space and the productive activity, of the cultivation, and the financial activities. However, be it in the scope of physical geography or economy, the geographic approach provides mainly a static image of the system. Even when it illustrates the evolution in time, it registers only the final result of the transformation action operated by the community to adapt a territory to its own needs.

Studies of occupational systems using economy models, by contrast, aim explicitly at dynamic aspects. For example, the powerful English urban development in the eighteenth century was analyzed as a result of investments and profits connected, on the one hand, to the taking advantage of coal resources, on the other to the extraordinary flowering of inventions, and especially the speed with which they were applied to production. Relating the various cycles of development and decline with technological innovations that are in their origin – or from where they are derived – and with the parallel adaptation action undertaken by the community, the economic analysis, go deeper into the causes of the transformation of the territory. Thus, it enables a diachronic reading, with a more complete representation of the system's evolution.

Studies with social character are strictly linked to economical analysis. Indeed, in the socio-political approach, territorial changes are seen as a product of the strength relations among the various components of social and political decisions derived from them. For example, in Italy the practice of marshes culture in the south of Rome (in Agro Pontino) was a choice determined by the fascist regime, being it to solve the problem of evictions that were made after the First World War, or to increase the domestic production of cereals and reduce the dependence on imports. Such studies take time and the succession of events as essential elements of analysis consider the economic implications as needed support in order to validate policy decisions and social conflicts in a proper perspective. Not always, however, the socio political analyzes of the occupation systems give fair weight to the specific physical locations.

Obviously there is not a perfect optimal reading. A correct analysis of territorial occupation systems require that it be used and integrated into the various approaches. On the other hand, an analysis of the territory, by habit, is never an

end in itself. Or is part of a study that will deepen particular aspects of the system, or analyze it to solve general problems, or is, still, an investigation to tripping of transformation. The best analysis to take place is the one that, concerning the purposes of the study or the goals of the intervention, provides more accurate, more numerous, more useful information.

In this perspective, if the purpose of analyzing a system of occupation is to describe it in a particular aspect, all analyzes in relation to the particular repeatedly defined aspect is good. If, however, the analysis aims at the management of disasters – that is, whether the transformation serves to govern the future: individualize the intervention of the subsequent transformation of the territory, which are not only more convenient to the demands of the community, but also compatible with the context – the reading is developed with a different cut.

But the overall process of adaptation of the territory cannot be known only by multiplying the specialist reading. The addition of several analyses does not address the complexity of the object. It is necessary and useful, that the analysis method is homologous to the analyses process.

In this perspective the “historical echoes” approach proves to be very useful. History as we know it is built predominantly on written sources and monuments. The systems of occupation, in contrast, are a result of the actions of transformation of the territory operated continuously, but “silently”, by the great number of actors who used it to bring them an advantage, or just to survive. In short, the territory can be considered a document not only of the action of conducted transformation, or conditioned, by the powerful and dominant groups, but also by the lower classes, those who have not entered the chronicles, unless they disturbed the powerful and were not able to celebrate with monuments or large environmental interventions (Pierotti, 1994).

The eco historical reading considers the territory, whether as a document of the relations of strength between social classes, whether as a result of the demand for a more “convenient”¹ transformation. It is, therefore, an integrated and cross-

1 The “oikistes” (we prefer to use the original Greek name, than to translate it into Portuguese) was the most important character of the groups of Greeks who left to found a new colony. To him it was entrusted the duty not only to choose the place to establish the new city, but also to give any family a lot and a portion of urban land.

disciplinary analysis, with mutual criteria and methods of the various approaches: geographic, economic, socio-political and anthropological.

AN INTEGRATED APPROACH TO DEFINE THE COMPATIBLE USE OF THE RESOURCES OF THE TERRITORY

Disasters are rarely due to a single cause. Usually, there is a triggering event, but what makes this event a disaster is the joining of other factors. A rain, even if torrential, produces no harm if the slope is wooded, but if the mountain was cleared, it will generate a collapse, causing a disaster if the underlying area was built. And if local authorities have tolerated the building in a risk area, if the buildings were made with poor material and techniques, if no one was preoccupied with elaborating a water drainage system, the disaster becomes a tragedy. And usually it is only after the event, that the locations remember that in that area landslides have already occurred, the local community already knew about the danger of the place.

On the other hand, the territory is a set of finite resources. Once safe areas are occupied, the expansion of activities leads people to also use the risk areas. Especially because with time, the community weakens their perception of risk, and very dense areas cost less than secure ones.

The place of installation was always close to a large arable field, offering sheltered harbors from the main prevailing winds, and easily defensible. In fact, the cities of Magna Graecia appear in prominent mountains in the sea, with beaches on both sides (so that at least one is always walled), or on a plain between two rivers, between a river and a pond. The Field is divided into portions whose extensions are sufficient to provide an adequate income to the family who cultivate (and thus, of varying degrees according to soil fertility). The city is divided into subdivisions, whose dimensions are multiple.

It is therefore obvious that the occupations of Magna Graecia was extremely "regular" but their "regularity" is not so much in the clear geometry of the urban and agricultural area that surrounds the city, but in the "rules", accurate and evident, with which the territory was adapted for the better enjoyment of their resources.

The approach to risk management must be necessarily integrated. That is, methods used are not only of knowledge of the various physical sciences, but also of humanities. To define the future uses of the land it is essential to recognize how the community in the past guarded or consumed the land resources to meet their needs, from the material, intangible, and financial resources they used to the techniques that have been adjusted or modified based on experience.

It is, in short, the critical analysis of the ways in which communities in the past appropriated the territory, ensuring their balance or adapting themselves continuously to changing requirements of evolution.

THE SPEED VARIATION AS A STRUCTURAL CAUSE OF THE IMPROPER USE OF TERRITORY

From two, three centuries ago, the transformation of the territory did not endanger the environmental balance. Either because the available technology did not consent a serious impact, or because it was always possible to modify the technologies that were not adapted to the context.

The needs that were in the source of transformations, in fact, had little modifications in the course of centuries. There was plenty of time to observe the effects of an intervention and, if necessary, correct them. But under the impetus of technological innovations and large migration flows there was the "industrial revolution" (XVII-XVIII), the evolution of necessity had quick acceleration. When the negative effects of transformations and technology came about, the needs that led to their creation were no longer current. Transformation and technology, which in previous centuries were modified little by little, were instead abandoned, replaced by others who responded to new needs. In this way, the feedback that in the past had produced the accumulation of knowledge was interrupted. The transformation of the territory becomes potentially dangerous; the system community-territory was no longer in balance.

The difference in speed between the evolution of needs that requires transformation and evidence of the effects of interventions is therefore, a structural cause of the difficulty of preventing disasters. Even when the speed with which we changed the needs were not faster than that in which the territory can be adapted

(and see the effects), the occupational system was the largest and most obvious expression of material culture of the community. The manufactures thus became "historical", only because it survived all the disasters that have occurred locally. They document, therefore, a knowledge that, even if not codified in treaties, is not, therefore, less valid. To define the transformation compatible with the territory, the territory's readings listed above, therefore, also joins the anthropological, especially regarding locally available resources and their influence, their relations and events.

In the integrated management of territory, echo historical analysis – with its intrinsic anthropological, economic, social and environmental components – has proven to be very useful, especially for the prevention of natural disasters. It is, indeed, evident that in regions regularly subject to natural disasters, local communities had necessarily to select the most effective technologies against specific local disasters and adopt specific behaviors. To recognize them – and check their effectiveness – can therefore help to identify the compatible transformations or to not eliminate the manufactures tested favorably by the disasters of the past. Recognizing the durable effectiveness of a construction technique, or a soil system, however, is not sufficient to protect the system. It is also necessary that the technical knowledge translates into consistent behaviors. And not always the requirements of an urban plan are sufficient to induce virtuous behavior. The prohibition of building on a slope in unstable balance has solid scientific reasons, but if the slope is in an area where land is inexpensive (or is illegally occupied), the prohibition formulated by the plan will not prevent the emergence of a slum.

In integrated risk management, the role of urban planning is defined not only in what concerns its contents, but also in the use that the community will make of it. The plan shall, therefore, certainly provide indications of the territory use deriving from various specialized studies. But in order to become an effective instrument of disaster mitigation, it must also have validated prevention in what it concerns "convenience" that may bring the various stakeholders to its application. One cannot, in fact, ignore that many useful tips that may reduce the impact of disasters (prohibiting the use of an area, forcing that the construction has given characteristics) have positive effects in the long term, but may instantly generate outstanding value loss. And because the "political life" of the decision-maker that

depends on the creation and respect to the plan, is somewhat shorter than the time that the beneficial effects will come about to potential electors, its efficiency in risk management depends more on the political context in which it was produced or executed than in the technical competence that drafted it.

The objective of this model of RISK MANAGEMENT AND TERRITORIAL PLANNING is as follows:

- a. Provide the criteria about which the eco historical analysis of a territory may obtain indicators for a production of an urban plan that facilitates the integrated management of risk.
- b. Illustrate the methods in which the effectiveness of the plan may be preventively verified, simulating the behavior of the various interested artists.

In the first part, after a summary of the main concepts used in the management of risks and possible executable policies to make risks preventable and/or predictable, we illustrate some examples of territories whose morphological and functional characteristics derive from technologies and behaviors adjusted along the centuries to protect them against locally recurrent natural disasters. Then it is illustrated how, especially in "historical territories", the risk is not derived from frequency and intensity of locally recurrent natural phenomena, but from the methods of land use; in particular the over/under use of procedures for congestion or abandonment.

The second part of risk management is analyzed in regard to specific development plans. In particular regarding the structural causes of the ineffectiveness of the usually proposed rules by giving some examples of self ruled plans ie, to induce the various stakeholders to operate changes which, even in order to obtain particular advantages for those who make them, also generates collective advantages and in particular, helps to reduce the risks deriving from natural disasters. The second part is concluded with the illustration of the methodological paths that in an integrated approach proved to be useful. On the one hand to recognize and validate the still effective techniques for using the territory, on the other to produce urban "rules" capable of inducing various actors' behaviors with the objective of risk reduction.

Attached are some documents used in the field experience. Annex A illustrates in detail the procedure of drafting the self ruled plans and the main technical innovations that characterize these urban plans. Annex B illustrates the sequence of production of urban plans that remain more effective for the prevention of natural hazards through the adoption of participatory methods (that favor the recovery of the "Local Culture of Risk") and preventive analysis of the interests of various stakeholders and their predictable behavior (which facilitates the implementation of the plan).

RISKS AND MANAGEMENT

1. Base concept on risk management

1.1 Danger, vulnerability, risk

Earthquakes, landslides, and floods are phenomena that have long occurred in some territories; sometimes regularly, sometimes sporadically. In recent decades the growth of human and material losses caused by disasters stimulated the scientific community to coordinate the knowledge to prevent disasters or at least reduce their impact. The first result of this growing scientific interest was the systematization of concepts hitherto not precisely defined. Particularly in the late 70s of the twentieth century, major international organizations have promoted studies and agreements to reach a single righteous definition of "disaster", "vulnerability" and "risk" (UNDRO 1979).

Distinguishing these three concepts is extremely important in risk management policy. The probability that a territory is subject to a catastrophic event, in fact, not necessarily makes that it becomes a territory "at risk". An earthquake of strong intensity targeting a desert area leaves only a trace on the ground, but produces no damage or casualties. Vice versa a historical library positioned at the edge of a river is "at risk", because any overflow would flood subterranean deposits, producing untold damage that could be significantly reduced if the deposits were located at a level higher than the maximum of the probable flood, or still, if it were

deposited in the cellars only books of little value or superfluous copies, that is, if the library were less "vulnerable".

These two examples show that a territory is "at risk" not only if it is exposed to disastrous events, but is also vulnerable. And the vulnerability depends not only on the relevance of physical damage which may occur, but also on the value of damaged goods.

In literature, it is distinguished in the following way:

- "dangerousness" (P) (amenaza, hazard), understood as the probability that in a certain place and in a certain period of time an event with a given intensity is verified;
- "vulnerability" (Vln) (vulnerabilidad, vulnerability), understood as the relevance of an intrinsic harm (that is, it depends on characteristics of a given element) produced by a disastrous event with a given intensity;
- "exposed value" (Vex) (valor expuesto, exposed value) the value (economic, cultural or social) of the elements (physical, social, environmental) involved;
- "risk" (R) (riesgo, risk), which is, a probability that the effect of an event, of given intensity, in a given place, and in a given period of time, for a given level of harm.

However, it was observed (Cardona 1990): that, indeed, the relevance of the damage that an element may suffer depends not only on their physical, social, and environmental characteristics but also on its value. Assuming, then, that vulnerability is the intrinsic damage that can support an element, is its value is. The risk depends on the probability that there is a harmful event and on the vulnerability of the elements exposed to the event. In a formula:

$$\mathbf{R = f(P, Vln)}$$

The risk reduction depends, therefore, on the reduction of one or of both factors. A policy of "risk management" an intervention on the danger or the vulnerability. It was observed, however, that the danger can be reduced only in some cases and in some events (a flood can be prevented with defense hydraulic constructions, but an earthquake is not otherwise avoidable). Also "physical" vulnerability can be reduced with reinforcement work, while social vulnerability requires a program of strong commitment and of a long period. It is almost no longer possible to reduce

the exposure value (the frescoes of a baroque church cannot be transferred without losing much of its meaning).

To the intrinsic difficulty of reducing vulnerability a "structural" difficulty is added: various factors cannot be estimated once and for all. In fact, P and Vln develop in time, either by natural processes or by human actions. The function R is therefore a typical "convolutional" function. To reduce the risk level of a territory it is not enough just to define what are the permissible transformations in all given areas, which is the typical content of an urban plan. It would also be necessary to continually revise the allocations provided for use by the plan, which is difficult a process. In fact, urban plans are defined as instruments of the government in a long-term. To manage a convolutional function through instruments that cannot adapt continually to changing system conditions is, therefore, inherently difficult. To make the urban plan an effective tool in risk management it is therefore necessary – and certainly more useful – to produce plans that allow validating the admissibility of a transformation based not so much in what it concerns some geometrical parameters (volume, height) but in what it concerns the "compatibility criteria" with that particular territory, that particular intervention at that moment, in that context.²

1.2 *Policies, plan, program, management*

The above equation shows that for reducing the risk one may intervene in danger, or in vulnerability. To define the procedure in which you can operate such interventions, it is also necessary to further deepen the analysis of various risks and, above all, the effectiveness and implications of current policies.

Indeed, to reduce the danger it is necessary to act on the possible causes of a disaster by intervening on the territory (stabilize sloping land, sistemyze water courses) and have a strict control on the action of natural transformation initiatives (such as vetoe uncontrolled deforestation that facilitate landslides and floods). To reduce the vulnerability it is not only necessary to protect the territory (perform flood barriers, build earthquake-resistant constructions). It is also essential to pre-

² An example of such plans will be illustrated on paragraph 6 and Annex A

vent that human action does not increase the value above (to build a neighborhood at the foot of a slope, develop a flood zone).

To eliminate or reduce risks requires that public entities commit themselves to carry out economic interventions necessary to reduce the hazard, and to the strict control of the changes made by private parties, that affect vulnerability. But to raise funds to protect the territory means subtract them from other interventions and consent or veto constructions in given areas generating means of more or less value. It is necessary, therefore, to decide the allocation of resources and which interests to favor. Definitely, so that a development plan can become an instrument of prevention and mitigation of disasters it is necessary, to define a policy. That is, which interests to favor.

But that is still not enough. If the Plan, at the end, is not integrated with an indication of the actors who should run it, the resources that may be used, and especially the deadlines, it will have little effectiveness as an instrument of government of the territory. It will be nothing more than the design of the (desired) future of the territory. Moreover, it is only if preventable defined actors, resources

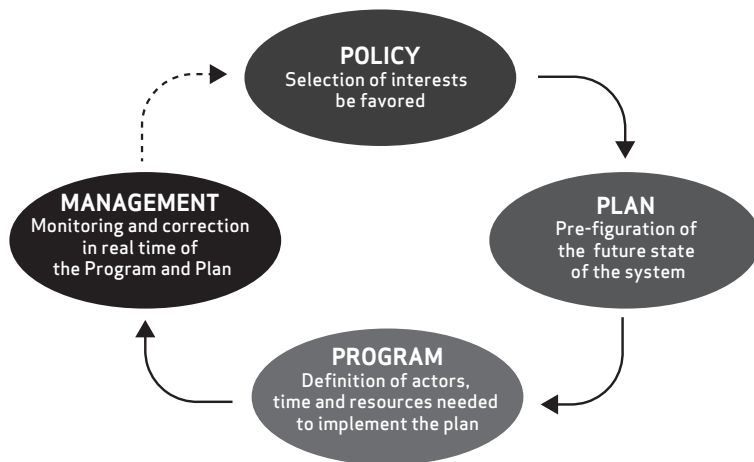


Figure 1 – The cycle of land government. To the territorial government's the plan is not enough. IT's need to integrate upstream with the definition of the policy objectives, downstream with indication of actors, resources and timetables for implementation. Only thing you can monitor is implementation, what is to manage the system

and deadlines (with the related indicators of success) appear that it is possible to monitor the progress of interventions. That is, to manage the plan and, if necessary, redefine the political objectives. Figure 1 illustrates the cycle of government of the territory in which an urban plan is inserted.

1.3 *Preventable risks, predictable risks*

A policy of risk reduction cannot ignore the definition of strategic objectives (acceptable level of risk, protection of human life or property), or fail to take into account that some disasters are preventable and predictable, and that others are much less or not.

Reducing vulnerability involves the reduction of human and material losses, which can be achieved through prevention and prediction of disaster; with one difference. The protection of property requires investment from the public or private sector ie, it depends largely on the effectiveness of prevention; While protection of human life depends mainly on the prediction. In a flood alarm it is possible to save many lives, but very few assets can be saved.

On the other hand, not all disasters are preventable or predictable. The floods are predictable, but hardly preventable. Forest fires are preventable, but only predictable in some cases. Earthquakes are not predictable or preventable. The following table illustrates the extent to which various types of disaster are predictable and preventable. Table 1 has a general character, it is obviously defined with restrict reference to the systems of local territories, but provides guidance on policies to be applied. It is indeed a useful support to make decisions, because in a cost/utility logic, the level of predictability can guide policy makers to prioritize warning systems, its predictability may guide to the reduction of vulnerability of the territory.

TABLE 1

DISASTERS	PREVENTABILITY				PREDICTABILITY			
	null	low	average	high	null	low	average	high
			X					X
COLLAPSE				X			X	
FOREST FIRES				X			X	
HURRICANES	X							X
VOLCANIC ERUPTIONS	X							X
TSUNAMIS	X							X
EARTHQUAKES	X				X			

It is therefore, with reference to the danger of the location and the level of preventability in which urban plans are constructed. Prevent local disasters, attest and formulate rules in relation to their level of preventability is precisely the specific area of action of urban plans. That, however, has intrinsic limitations, such as support for policies to reduce risk, since:

Dangerness and vulnerability develop themselves with continuity and in a much more frequent manner, while the plan may only be revised in a medium/long term period.

Inhibit the use of risk areas pressures strongly their value, with consequent difficulties of formation or plan execution.

Another difficulty, often not considered in literature, is added to the one of regulating a convolutional function with a hard instrument such as the urban plan and make decision-makers and stakeholders agree on the limits necessary to reduce the vulnerability of the territory. This would be the approach in which planners and technicians deal with reducing the vulnerability of the territory. In fact, today the prediction of disaster is based solely on theoretical models that have no regard for the experience of the local community; contemporary technologies are adopted

and applied uncritically, while the old rules of transformation of the territory and traditional technologies are considered obsolete; One approach which has not been unfrequently denied, in a crying or dramatical way, in many recent disasters.³

2. *Historical Territory and Local Culture of Risk*

2.1. Historical Territory: all together fragile to guard or source of knowledge?

It is already a general conquest that the cultural patrimony of a community is not only the monuments and works of art, but also of all products, which, in many respects, document the culture, particularly its evolution over time. Gradually they became part of cultural patrimony under the historical centers, the first industrial occupations, the old mills, the typical rural houses, the local crops of a local agricultural landscape, traditional crafts, and objects of material culture.

The multiplication of the elements that make up the cultural heritage has also determined an obvious dilution in the territory. Beside the traditional "art cities," they always talk about more "diffuse cultural resources."

The fuzzy set of cultural resources is usually defined as a minor patrimony, even if in reality it constitutes the nerve of the everyday culture of the community. The "minor" documents are frequent products of local authors, while the "monuments", often, and are the work of foreign artists, built with imported materials that reflect distant languages and cultures as well. A careful examination of the minor, however, allows the documentation of the cultural context in which the "monuments" are situated and allow a better assessment of the context in which they were generated, and the impact they had on the local culture.

3. On the occasion of the Tsunami in December 2009, in some coastal towns the inhabitants fled to the interior as soon as they saw the sea retreat. While the guests of the tourist resort remained to enjoy (and film) the show ... until they were devastated by the wave. Despite the high magnitude of the recent earthquake in NE Japan, the buildings stood well, but the highest number of disaster victims and the central Fukushima were a direct consequence of the intense urbanization of the coast and forecasting models that provided a wave height far below effective.

Beyond terminology issues – always exciting- there is no doubt about the factors which contribute to form the smallest, and its mainly documentary value. The analysis of the consolidated forms of the territory, of the dissemination of certain forms of vernacular architecture⁴, or of private cultivation techniques, allow scholars to reconstruct the history of the community in all its components, not only through palaces, churches and castles, often made by the powerful, also helping local communities to recognize the continued use of their territory and the specificity of their own way of being.

In fact, the UNESCO Declaration of 1992, introduced the "Cultural Landscape" (CL) term in the categories that constitute the World Patrimony Site. In the international sense, however, the term CL defines always a territory of high historical documentary, landscape, or morphological value. While the elements forming the minor, have almost an exceptional value. Indeed, its value derives primarily from what they represent to the territory, that what the old part of the city is in the entire urban organism: the memory of an amending action operated by past generations to adapt them to evolving requirements. On the other hand, as the value of the historical center does not derive from the architectural quality of buildings, but the consistency of urban deployment, recurring types of buildings, spaces, views and materials, ie the set of smaller documents (vernacular churches, towns and deployment of ancient cities, irrigation and drainage), also areas of a significant value (geomorphology emergencies, typical crops), consolidated traditions or traditional products, can result in a value, even if the landscapes are not worldly renowned. And soil systems and construction techniques found in traditional areas regularly exposed to natural disasters, are now the only "file" of empirical knowledge rarely written in documents, but thoroughly tested by all the disasters that occurred through the centuries.

4. Spontaneous architecture, as opposed to the architecture of the author, being a poor architecture, but wise, made with materials found in the surrounding environment, in a synthesis between climate, form and matter, historically classified as a minor architecture, confined to the limits of social anthropology, gained interest in light of its increasing attention to environmental and social issues. Latin: "vernáculus" indicated slave Born in my house, home, after indicating the language of the mob, the vulgar tongue. (Translator's Note)

It is not, therefore unfounded to consider the minor cultural patrimony the "historic" face of the territory, a document of the community's culture that for centuries has been transformed and adapted. Better yet – especially to the correct use of urban plans for reducing the vulnerability of the territory – talk about "HISTORICAL TERRITORY" (HT) as a source of information, as an additional instrument of knowledge.

To guard the HT serves, therefore, to preserve the "archive" of knowledge tested in centuries, or not to change an aspect of the territory proved effective in preventing disaster.

The enhancement of HT, however, requires an approach (cultural, scientific and methodological) totally different from that used to protect monuments and historical centers. HT, in fact, is hardly subjected to control of the institutions, the general object of minor interventions, followed by non-specialized technicians, being little known, rarely accessible. And in any case, it cannot be treated as a monument.

What we now perceive as HT is – and always has been – the product of conscious adaptation to contemporary needs of the territory, in an action of continuous transformation, always compatible with the context; an adaptation action rarely aimed at a single scope. In areas exposed to natural disasters, soil constructions and systems could not ignore the risk of the location. Furthermore, if a vernacular architecture, a soil system of crops made "typical" of a place, were not demonstrated effective against locally recurrent natural disasters, today we would not have HT.

The cascade of houses in the harbor of Procida is not only a fascinating urban landscape: the only way to build on the narrow strip of land available, is a smart tripping escarp consolidation, ramp and stairs inevitable to walk through the various levels, are also formidable in defense. The cultivation in terraces of the Amalfi Coast, the Five Lands, Provence or Cina, in some of the strongest elements of the landscape is also the more effective "machine" way to transform the abundant solar energy available in food and the systematization more efficient to protect sloping land.

2.2 *The guardianship of the Historic Territory as a preventive action of natural disasters*

It is well known that in risk areas there are many construction techniques, systematization of land, and location of specific habitats determined by locally recurrent natural event. For example, archaeologists and experts from vernacular architecture in seismic zones have proven that the recurrence of earthquakes produced the tune of building techniques of clear antisismic value (Ferrigni, 2005).

On the other hand the vulnerability of territorial systems depends not only on the physical parameters of the territory, but also how well you know the local community and the behaviors of the various stakeholders (which, as we saw above, play a role in the remarkable evolution of vulnerability).

Therefore, to reduce the vulnerability of territories, it is not enough that urban plans receive expert analysis (limitations on the use of high hazard areas, special construction requirements). For a plan to be effective, it is necessary that scientific and technological aspects, in its production and execution, planners and administrators acknowledge e still two political and anthropological issues:

- How to transform the specialist contributions in a diffuse knowledge of the community
- How to induce various stakeholders to apply the indication of the specialists received on the plan.

These are not new questions and ignored by planners and urbanists, but often acknowledged only after the production of the plan. To transfer information to the community and induce them to respect the plan, it is usually necessary information campaigns, awareness raising and others. However, past experiences have shown that such campaigns are not always effective, because frequent indications of specialists conflict with consolidated interests, because the risk is not correctly perceived, because not all the governments are credible.

Vice versa, it was experienced, especially in areas where disasters intervenes with some regularity, the behavior of the various stakeholders can be more effectively directed toward actions that reduce the vulnerability of the system, if the plans acknowledge rules of transformation of the territory consolidated locally, the effectiveness of traditional building techniques, and the intelligence of typical

local crops. And so, the critical recovery and the necessary upgrade of traditional techniques, knowledge of the old criteria for the location of occupations, or farms, strengthen the awareness and the correct behavior, which in the past mitigated the impact of disasters. In short, help to recover what we define as the "Local Culture of Risk" (LCR).

Talk about a "local" culture however, does not mean that it is a culture of less value. HT, in fact, even constituting a strong element of local identity it has an intrinsic transnational dimension. The morphology of HT, in fact, changes from one region to another, but the "rule" with which the community has used the resources available to satisfy their own material and cultural needs – and especially to reduce the impact of natural disasters – does not change much, since farms, mills, villas, terraced crops were carried out to the edges of the Mediterranean or in Central Europe, Latin America or Asia. Referring to a particular LCR, the "Local Seismic Culture" (LSC) was relieved (Ferrigni, 2005 / b) that earthquake resistant building techniques of the Mediterranean are based on solid masonry, arches and buttresses, and tablets of wood embedded in masonry, the Asian resist seismic shock with its deformability, the Anatolian, with a mix of resistant/deformable structures. The buildings are very different among them, but all reflect a single "culture": the energy discharged by the earthquake, the building is "metabolized." In the Mediterranean, it is by increasing the size of the structures, in Asia through its deformation, in Anatolia with both techniques.

LSC is recognized not only in construction techniques, we found documents also evident in its urban level. A survey conducted in medieval villages, a region of northern Italy, showed that the characteristics of "urban fabric" (the set of full and empty), was in close correlation with the different seismic hazard in the region. It shows how the earthquake resistance of the urban fabric – essentially determined by the number and relevance of the connections between buildings, which make them work together – grows by increasing the seismic hazard (Ferrigni, 2005/a).

3. Risk as a result of the over/under utilization of territory

The existence of one or more elements that document a HT or a LCR, however, does not mean that the territorial system is intrinsically safe. Either because the growth

or modification of the offer of land usage induces populations to occupy progressively also unsafe areas or because the territory will be modified for purposes other than those that generated the HT.

The Basilicata is a region of southern Italy with lands exposed to landslides. It is not by accident therefore, that Rivellino, delightful "minor" historic center, occupied the summit of the relief, the only stable part. Then it grew over the crinal. But if housing was not extended further along the slope it was not because the LCR prevented, but because migration between the two world wars emptied it of inhabitants, accelerating the provision of housing, which fed the massive building on the hill (Cina), with buildings of height and of cut widely diverse than the oldest.

It is not only the quantitative increase in the offer of transformation that moves the local community to increasingly occupy unsafe areas. It is mostly a modification of the transformative process of the territory that now inutilizes the presence LCR and increases the vulnerability of the territorial system. The houses of the village or Rivellino (Hani, Cina) were elaborated by the inhabitants themselves. It is therefore logical that they were built with the safest techniques proved over centuries. And also some villages were, perhaps, built by specialized companies, but by a single contractor. In both cases the goal of building the territory was to ensure to the owner the best possible habitable conditions in relation to its resources, the characteristics of the place. The house should be inhabited forever by those who built (or would build it). Who built it, was to meet his/her primary needs.

The entrepreneur who built them did not enjoy the necessity of living in it, his purpose was to seek profit. The result is necessarily different. Sure, buyers can appreciate the quality of buildings, but rarely have the expertise and information necessary to evaluate the safety of the place. Sure, the authorities should know that the area was at risk of collapse, but the interests are often prevalent to knowledge. Moreover, it is considered that as the gain was carried out in the arc of 2-4 years, the probability that the manufacturer must account for the choice of location is almost zero. And yet an event is remote in time.

The only guarantee of those who buy a home that they don't see on the street because of a disastrous event is given – or should be given – by the urban plan, that for every single part of the territory indicates compatible changes. But plans cannot al-

ways escape the conditioning of the interests of various stakeholders and are rarely produce participatory processes, the only ones which ensure that the knowledge accumulated from risk areas by local communities can be used (obviously with the necessary verifications).

To turn urban plans into effective instrument of risk management it is appropriate that:

- I. The destinations of the use and rules of transformations be that to guide the inevitable and physiological search for profit by the various stakeholders in order to find a general utility for intervention (that is to induce the self ruling of the system)
- II. Rules and destinations of use are defined with the participation of the local community.

Self ruled plans⁵, produced with a participative procedure are, therefore, essential on the risk management, but its use is diverse, and there is also a diverse importance, on the many stages of risk management.

URBAN PLANS AND RISK MANAGEMENT

4. Risk Management: before, during and after the disaster

In disaster management it is convenient to individuate three phases: prevention, rescue and reconstruction. In prevention are included all interventions and actions that can reduce the hazard and vulnerability of territorial systems. The management of emergency includes to relief and rescue people, and also the necessary interventions not to cause a "chain of disasters" (closing the network of gas to avoid fire, emptying hydroelectric dams which are damaged, to avoid flooding). The reconstruction includes a first phase of securing the territory (rickety buildings, damaged bridges), which follows the reconstruction itself.

5. For the definition and the procedure of compositions, see paragraph 6 and annex A.

Regarding the duration of various phases, it is obvious that prevention includes an indefinite time, until the disastrous event. The emergency phase is, instead, conventionally fixed within 72 hours after the disaster, but may extend substantially in individual cases (as with the nuclear power plant in Fukushima, in emergency for more than four months after the event). The reconstruction is a phase whose duration depends on the "resilience" of the system territory-community, ie the ability to recover from the shock produced by the disaster. It is therefore an extremely variable duration and, as the system structure and the phase growth/decline in what it was found in the time of the disaster, can lead to an irreversible decline or to an accelerated development.

Also the expertise in the management of disasters varies greatly by country. In general, prevention is managed by local entities or by the central government, according to the relevance of the intervention (an education campaign in schools can be held by municipalities, but a general program for the prevention of earthquakes through the structural reinforcement of the schools should be necessarily made by the central government).

Figure 2 outlines the phases and durations of risk management and also provides an indication of the stage where planning controls results more effective: prevention. Whether because prevention of urban planning and production are both activities by the municipalities, or because the plan is propaedeutic to whatever action to reduce vulnerability is taken.

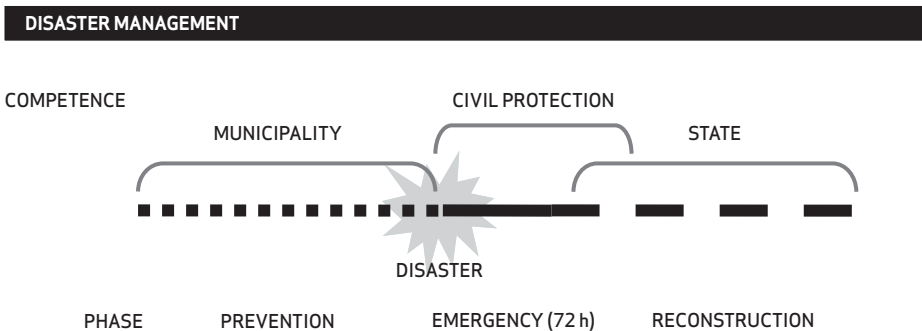


Figure 2 - In the cycle of risk management there are three phases. Urban planning can reduce the impact of disaster, especially in the prevention phase. In the reconstruction is the disaster that affects the plan

5. *Risk and Urban Plans*

5.1 *To reduce the risk, a plan is necessary, but not enough*

In recent years the frequency of major natural disasters has increased significantly, deriving a great impetus to the development of the "science of risk." Today's specialist studies and refinements of simulation models to assess with great precision how dangerous a place is, in many cases also provides a potentially disastrous event (see Table 1). Whereas in almost all countries, development plans must contain "risk maps" predisposed by specialized technical services (seismic hazard, risk of landslides, wetlands) and that the admissible transformations in the various zones are precisely defined by urban planning, one could conclude that this is the ideal instrument for the prevention of risks.

The reality is often very different. In defining the permissible changes in the various parts of the territory, the plan distributes capital gains and capital loss. And the consistency with charts of risk determines notable limitations to the use of territory, even is to veto any modification. It is therefore understandable that the various stakeholders tend to condition the writing of the plan to obtain transformability also in areas of high danger. The difficulty to receive the limitations in development plans resulting from risk maps, are in addition deriving from the management plan. In socio-political systems in which the government is credible, and strong, the plan is respected, limitations on the use of endangered areas reduce the vulnerability of the system. In systems where the government is unreliable, the limitations of the plan end up being ignored, with the inevitable consequence of natural events, just out of the ordinary, turn into disasters.

The strength of the government determines the "shape" of the territory until a distant time. The orthogonal network of roads that extends from the rural areas to the urban area of Marcianise (a town north of Napoli, Italy), was still drawn by the Romans, 2300 ago. Planimetry in the historic center of Aosta, a city in northern Italy the trace shows the extremely regular urban plan made and executed by the Roman imperial power. But with the weakening of central power in the Middle Ages, the "plan" was always less respected, some roads were interrupted by buildings, others moved away from the original track, almost all have wide irregular clue, the latter did not respect the private line from the city of Rome, invading the road. The central power was not in position to safeguard the public space.

5.2 Stakeholders, interests, plan, vulnerability: a difficult equation

Historical analysis and current experience show that it is illusionary – except in societies with strong and credible central government – to reduce the vulnerability of territories through the limits in urban plans; at least, even when plans are drawn up without taking into account the behavior of all stakeholders; That is worth remembering, are not necessarily willing to run it.

On the other hand, the genesis of HT shows that the territory has always been transformed by people to take advantage of it. The citizen who made the terraces of the Mediterranean or Asian rice paddies did not spent energy and resources to create a landscape. His goal was one: to make a slope that was not productive, into a productive one. Sure, in that time, everyone was very knowledgeable not only of the techniques to take most advantage of the soil, but also the cumulative effects of multiple drifting interventions. The demand for particular advantage thought of it as a limit on the interest of the community.

Today, knowledge is specialized; the old "rules" of compatible transformation are subrogated by urban instruments. The plans, however, oversee the general interests – including, of course, the primary risk reduction – almost exclusively through the inhibitions or limitations, based on the criteria that individuals must accept limits to ensure an advantage of the community. This imposing of urban discipline not only ignores the physiological behavior of decision makers and stakeholders, but also does not meet the most basic rules of economics. The system will no longer be in equilibrium if the costs are bore by some and advantage for others.

A rule that seemed contradicted by the observation is that in some countries many shares of utilities (cultural activities, scholarships for university entrance) are supported by private funding through foundations. But it is not the case, for companies that finance such activities return to themselves an immediate benefit in the form of tax rebates that exceed the allocations they made.

Moreover, in economics the demand for private benefits is recognized not only as ethically correct, it is considered a feature of the system used to guide the behavior of the various stakeholders toward the goals of general utility. Can we apply the same criteria for urban planning?

It was precisely by the criteria of economical sciences of the production of the "rules", using game theory to simulate the behavior generated by the plan in a participatory manner and defining the modalities for the transformation of the territory, that in Italy development plans were produced, these proved to be effective for achieving goals of general utility, through the actions of individuals to obtain private benefits. Obviously such experiments (with limited number) cannot be a model for other cultural, regulatory, economic, systems however, to analyze the methodology and results can help determine whether the mechanism of self ruling that characterize such plans can be used in risk management.

6. An integrated approach

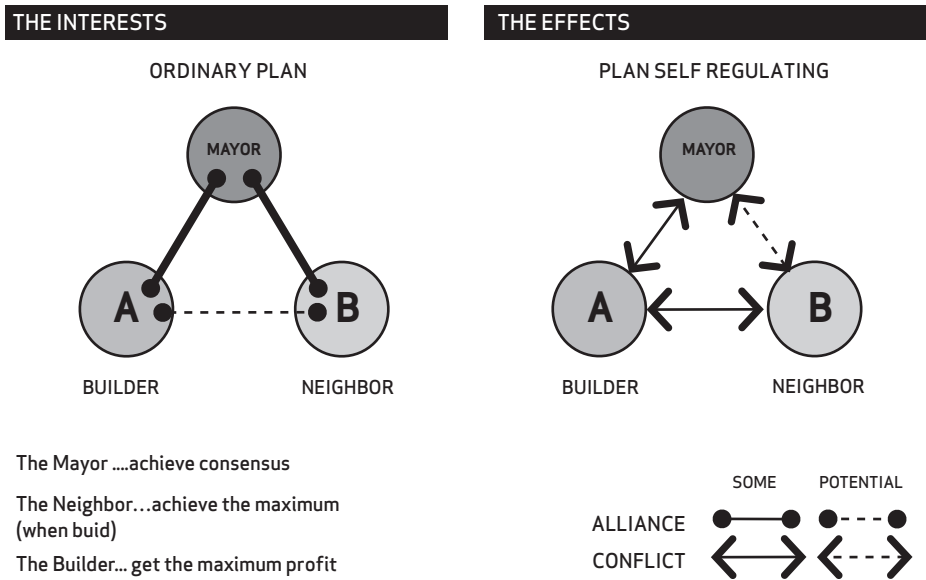
6.1 From the analysis of abusiveness to Selfruled Plans

After the earthquake that in the 80 targeted Napoli and Campania (the seismic catalog: Irpinia 1980) in the reconstruction phase new ways of organizing health and social services in the territory of activation have been tested. In the context of such trials and the completion of research-tripping developed by the University of Napoli in collaboration with international organizations, numerous instruments were produced with totally innovative instruments of urban planning, either on the procedure of training and management, or in the content.

The main innovation of the plans derived from a contribution of urban discipline that one could define as "full systemic." That is, in the production of the plan not only the territorial system to plan is analyzed, but also the behavior of the various stakeholders that in the past used the resources available locally to adapt to their needs to the territory and that in the future may implement the plan. The analysis of "historical" behavior in fact, is confronted with behaviors induced by urban planning, with particular attention to the anomalous behavior, such as abusivism. The analysis of illegal urban behavior revealed that many were caused by "rules" of the system (urban standards, general legislation, community culture) that not only induce the breach of the plan, but that generate a convergence of common interests of various stakeholders, which become "allies" in disrespecting the plan.

On the other hand is precisely whether or not to respect the requirements of urban plans specifically targeted to reduce the vulnerability of the territory, which determines the effectiveness of the plans as instruments of risk management. It is therefore appropriate to examine the process that leads the community not to meet the requirements of the plans and illustrate the integrated multidisciplinary approach that allowed adjusting urban instruments capable of contrasting such behavior and encouraging a self-regulation system of the future of the system of the territory / community.

In Figure 3 are outlined three actors in the implementation/breach of the development plan: A), the builder, B), its neighbor and C), the Mayor. Always in the process, assume that A is interested in increasing the value of their property by building more and consents to the plan, B's interest is to make one also, and the Mayor's interest is to increase the consensus between them. In Italian law the right of the each citizen to see the national development plan being respected is a "diffuse right" whose protection is demanded to the Mayor, which represents the whole community. If A does not respect the rule of the plan B, therefore, has no title to use in court, and can only make the complaint to the Mayor. This, then, needs to get consensus between both calls A) to accelerate the work and promises B) to be tolerant if he were to decide to build. The system therefore establishes a perverse convergence of interests, a synergy of behavior that undermines the perception



that compliance with the plan is a universal right and makes the violation of the plan a widespread practice.

The historical analysis of the behaviors, however, makes evident that while the violations of the general requirements were very frequent, hardly ever the rules were violated on a distance from the boundaries of properties or buildings. That is, those that focus on "real rights" (legal term that indicates rights related to property). Because the stakeholders and their interests were always the same, it appeared evident that the different behavior depended on the different legal protection among the diffuse and real right (the first overseen by the Mayor, the second by the judiciary) or, more importantly, on the diverse cultural perception of natural rights (linked to the property) and the community (represented by the urban plan).

We then defined the new "rules": The entire territory was divided into "compartments" and each was marked by a certain amount of "builder's rights." Then it was introduced a rule that automatically determines the reduction of "builders rights" of B) in case of violation of part A). In this way, three effects were obtained:

- Violation of part A) generate a harm in part B);
- B) may go to the judge before denouncing the Mayor and hope that he intervenes;
- The mayor favors A), harms B), it is convenient to acquire general consensus contrasting with violation.

The new "rule" does not eliminate the demand for the particular advantages of the various stakeholders (physiological tendenc), but requires profound changes in their behaviors. Before generating a convergence in the violation of urban planning requirements, it creates a conflict of interest, which translates into a reciprocal control with respect to the plan. That is, it determines the "self ruling" of the system and the plans produced that were precisely defined in the literature "Self ruled Plans" (PAR) (Bellaviti, 1995).

6.2. The prevention of risk generates less value. How to accept it?

The absence of quantitative requirements in development plans (volume, height) is certainly a major cause of its ineffectiveness in the management of risk, but not the only one.

The areas destined for public use (roads, parks, gardens, parks) besides providing a satisfactory quality of life for residents, help to reduce the anthropogenic load in the territory, ensuring the balance of the system. If they are not performed, they are occupied by resident abuse, and the balance set is changed. Even more serious is the absence of limits imposed by the plan for the use of high hazard areas (unstable slopes, wetlands). The occupation of improper areas of public use and the use of unsightly dangerous areas going against the requirements of the plan are the promise of a disaster.

If the plan is entrusted only to coercive or mandatory requirements, (expropriation of areas, veto the building), the predictions abounded of public use areas and extent of restrictions on land use, it does not contribute to reduce the risk. Allocations for public use, and limitations on the use and vetoes generate, in fact, a remarkable loss of value in the given areas. Accordingly, the unlawful conduct of the various stakeholders becomes almost "physiological" (at least in systems in which public power is unreliable). Areas banned because they are dangerous or intended for public use, are, in fact, offered in the market at prices considerably lower than those legitimately transformable areas. It is therefore natural that the smaller city-dwellers acquire possessions, whose limited availability of capital, leads to approximate building technologies, without taking into regard standards for reducing vulnerability (antisismic structures, deep foundations, hurricane-resistant ceilings), without infrastructure areas (sewer, water protection barriers). And the first weather event causes an intense disaster.

To adjust the "rules" that eliminate the capital loss generated by the requirements to reduce vulnerability of the territory is therefore essential to improve the effectiveness of urban planning in the management of risk. The effectiveness is even greater if the "rules" create a "convenience" in applying the requirements of the plan. That is precisely what is experienced in PAR, in the acquisition of areas of public use, whether in the allocation of capital loss generated by the limitations to the use of risk areas, or in the entire community.

The difficulty of management in the acquisition of public use areas slows down the implementation of the plan, especially in the areas of collective interest (roads, parking areas, common areas, or those vetoed by dangerousness). The difficulty is partly caused by the chronic lack of public funds needed for expropriation, partly

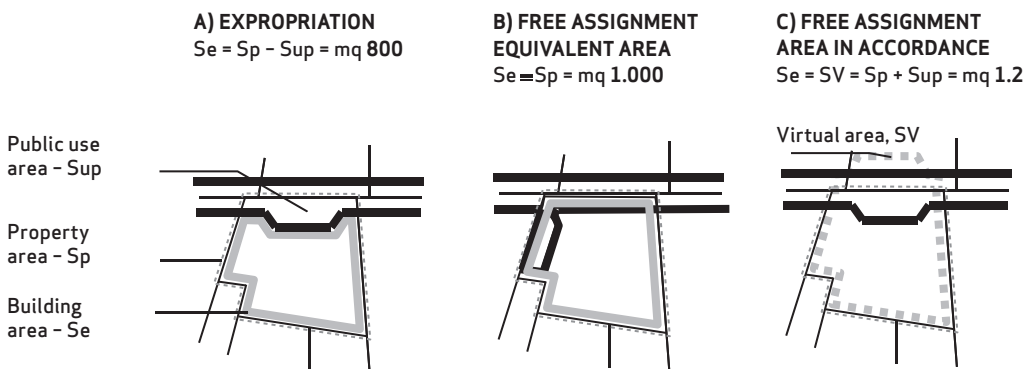
by the reluctance of administrators to penalize only a few townspeople, regarding expropriation even if the advantage is of everyone else. Again, the analysis of behavior showed that the difficulty of implementing the provisions of urban planning to reduce the vulnerability of the territory, derived from the natural conflict between the interest (owners, politicians) and the community. Innovative experiences in the cities appeared, and then it is appropriate to define a norm that cannot only eliminate the conflict, but to use the demand for natural advantages as the "engine" to achieve the objectives of general interest.

In the PAR it was therefore introduced a rule that governs the procedures for acquisition by the municipality of public use areas that would not only prevent expropriation, but that makes it "convenient" to the owner his free transfer. The rule provides, in fact, that if an area is of interest of public use (road, parking, garden), to the owner are offered three options (see Figure 4):

a) can meet the expropriation (and notice the relative compensation) in such a case the area to which they apply the indices that define the buildable volume, $\underline{Se}$, is the property Sp , purified from the public use Sup : $Se = Sp - Sup$;

b) if the area reported in the plan makes it difficult to use the residual part, the owner can give an equivalent area, in which case the Sf is not cleared of Sup : ($Se = Sp$);

c) can give a free public area on the form and position provided by the plan: If in such a case Se not only cleared by the Sup , but increased public use of courtesy, becoming therefore a "virtual surface" SV ($SV = Se = Sp + Sup$).



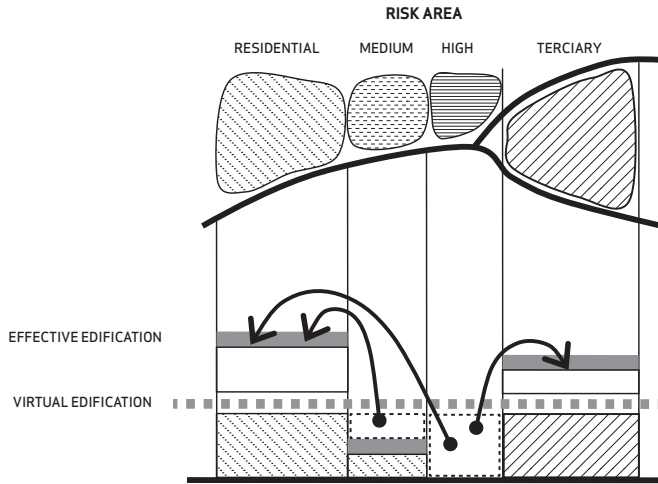


Figure 5 - The equation for the protection of risk area

In essence the rule makes the transformation that the owner wants to accomplish, more "convenient" for itself when it is more advantageous for the community.

For areas which the utilization is limited or inhibited, the "rules" are different, but always respond to the same criterion: make the implementation of the plan appropriate.

For example, to avoid that highly dangerous areas are used to construct housing, it can be attributed to the area in question and to all other residential areas a degree of "virtual" possible construction. Currently, the plan assigns to the residential areas an "effective" possible construction higher than a "virtual" possible construction and the risk area a degree of zero possible construction. The owners of residential areas can therefore perform effective construction not only acquiring buildable areas, giving them the city and transferring "virtual" construction to their residential areas. In such a way an equitable mechanism, this distributes over all areas of capital loss generated by the limitations of the use of dangerous areas (see Figure 5), reducing the violation of the plan and thus making it a more effective instrument in risk management.

The above examples, show that, with timely analysis of the causes of harmful behaviors and standards that eliminate these causes, it will be possible, to generate

conflicts of interest that make it difficult to violate the plan or to guide the search for physiological advantages towards private objectives of general utility. That is, triggers a process of self-regulation system, essential for the development plans become effective tools in managing risk.

But it is not enough that analyzes are accurate and the "rules" smart. It is important that the "rules" are the product of planners with the active participation of all stakeholders. A prerequisite for the "rules" to be adapted to the local system and the requirements of the plans are absorbed and felt "useful", becoming therefore elements of Local Culture of Risk.

6.3 Participative production of urban plans: potentialities and decoys

The production of PAR develops itself always with participatory procedures. Not only and not so much for the verification requirements of democratic choice, but rather because they saw that to define a project that the community felt like their own – a necessary condition for the plan to subrogate the diffuse knowledge that allows the appropriation of the environment and that the community respects it – it was important to overturn the logic of plans in a "cascade" (the regional, city, neighborhood).

In the participative PAR⁶ the content and procedures, in fact, are defined from the basic issues of the townspeople (distance between buildings, over-elevation). This is what the current urban rules prevent to satisfy but which are felt legitimate in the local culture (for example, because it is quite evident in the old urban fabric). After the advance of production, particular questions are aggregated into homogeneous blocks of problems solved by defining new rules (borrowed from the ones recognizable in the "historical territory") of which derive global needs, then the outline of the Plan. A subsequent check of congruence with the environment and internal system (zones, existing municipal plans, programs OO.PP) ensures – with the inevitable feedback – balance, respect for law. The applicative simulation (conducted before the plan is submitted to the City Council) closes the production of the Plan, but with a systemic intervention

6. So far produced 20 PAR were produced for small municipalities (3,000 ± 25,000 inhabitants), all in Campania

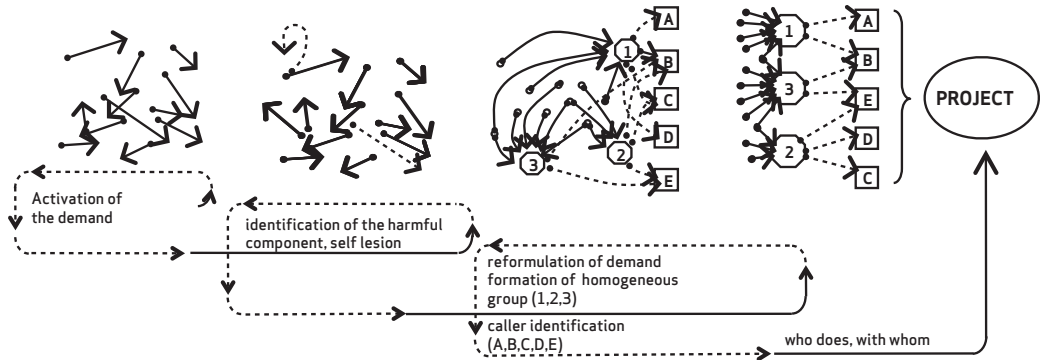


Figure 6 - The construction of a participatory project, with the method of needs analysis

In fact, the origin of the production procedures of plans, rules were defined to eliminate the appearance of conflict between the planner and their users. At the end, rules are proposed to adapt continuously the "design" of the territory to the future evolution of the system.

The participatory practice, however, showed that it is not enough to listen to the concerns of the townspeople, to draft an effective and self ruled plan. Indeed, the loss of ancient local culture of risk and the tendency of people to request what they think they can get, makes the production of participatory plans a route where there are many pitfalls and mistakes. Figure 6 proposes a flow chart of a typical participatory procedure based on the theory of "needs analysis"⁷ and used in the production of PAR.

7 A "needs analysis" is not the most accurate classification of system requirements. It is much less, a dialectical process that involves part of the users, other coaches and other decision makers. The first bearers of issues, the latter responsible for providing an answer. If users know that the technicians are available, they agree to discuss the paper itself, the usual forms of the profession, develops a course of progressive and reciprocal clarification of the requirements of each other. It is known, in fact, that the issues, rather conditioned by the system, not always express needs. On the other hand, the answers are almost always predefined. Debugging the initial questions of evil and harmful content and to formulate new answers surrounding them, is very close to a project of rendering maximum satisfaction to all stakeholders. A process that has many analogies with what occurs in therapy of psychoanalysis.

Formulated and theorized the origins of the Prague school of sociology (illite, Heller), the methodology of needs analysis was adopted in numerous socio-sanitary experiences devel-

6.4 *Preventive evaluation of the plan's strength*

The production of a participatory urban planning and formulation of rules that leads to "self-regulation" of the community are necessary conditions to make the plans effective instruments of government in risk management. But they are not enough. The interests activated by the use of the territory, consented or disallowed in a plan, are relevant enough to hinder the integration plans of limitations to the use of risk areas, prescription of safer techniques of transformation but also more costly. Or, make it able that in the execution phase, the constraints are met and the requirements applied.

To proactively evaluate the "strength" of a plan – that is, estimating the extent to which the plan will take place, for how long, with the support or hostility of stakeholders – in the experience so far made, it has been shown particularly useful not only to receive the information from risk specialists, but also simulate the behavior of various stakeholders for the purpose of the "rules" introduced by the plan. A preliminary construction of a "Map of the actors and interests", adopting simulation procedures based on game theory, estimates that the behavior of various stakeholders generated by the development plan regulations.

An example may help illustrate the methodology. In Figure 7 it is reported the plot of land values which, that step by step distances from the city center. The "dromedary" curve outlines the typical progress against war, with maximum values at the center and decreasing toward the periphery. While that "dromedary", expresses the values recurring in many cities today, like Latin America, where the old center is generally degraded, with a crown of residential neighborhoods inhabited by more classes, with progressive reduction of the values that move away from the rich crown (with the exception of luxury "urbanization", which, however, appear as almost autonomous suburbs). The growth potential of the values of the central area emerges, but it depends on the one hand of public investment, on the other on the propensity to invest part of other stakeholders (smallholders, the property company); with one difference. The behavior of the public investor is dictated by

oped in Italy in the '70s, systematized and disseminated by the Group of the Center for Social Medicine Giugliano (Napoli) in the 80's it was systematically used in the production of self ruling.

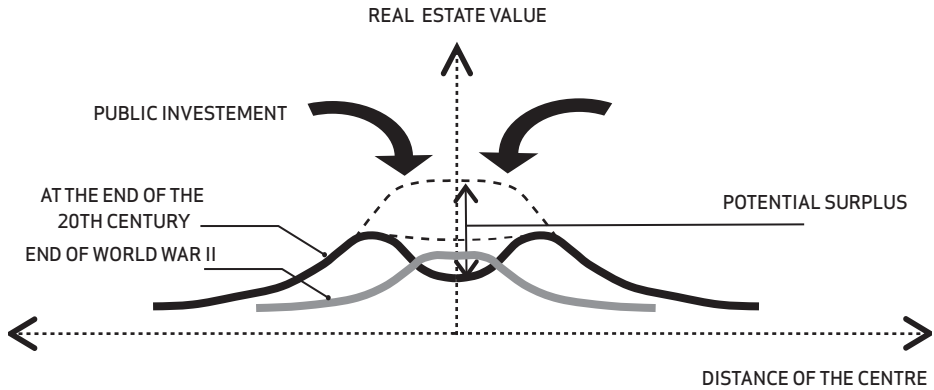


Figure 7 - Camel or dromedary? The significant potential surplus is not sufficient to transform the current structure of "camel" in the old "dromedary," The success of the operation depends heavily on the "rules" of the urban plan

the desire to pursue a particular political objective, of the private depends only on the "convenience" of the investment. Convenience is strongly conditioned by the "rules" dictated by the urban plan.

TABLE 2 – URBAN RULES AND SYSTEM SATISFACTION

LEVEL OF SATISFACTION					
+ 2	Very satisfied				
+ 1	Satisfied				
0	Indifferent				
- 1	Unsatisfied				
- 2	Very satisfied	SATISFACTION			
		BY COMPARTMENT		BY BUILDING	
ACTORS	INTERESTS	Theoric	Real	Theoric	Real
Politicals	Gain visibility	+ 2	0	0	+ 2
Immobilier Groups	Elaborate investments with profits	+ 2	+ 1	0	+ 1
Small constructors	Numerous and Frequent Contracts	0	- 1	+ 2	+ 2
Banks	Safe loans with minimum cost	+ 2	0	0	+ 1
Landlord	Raise property value	0	- 2	+ 2	+ 2
Tenant	Pay adequate rent	0	- 1	+ 2	+ 1
Commerciant	Have numerous and rich clients	+ 2	0	+ 2	+ 1
Urbanists	See the designed plan elaborated	+ 2	- 1	0	+ 2
		+ 10	- 4	+ 8	+ 12

In the example in question there is the hypothesis that the plan may propose two modes of intervention: by compartments or real estate unit. The first formula ensures unitarity of results, but it is not feasible for smallholders, who are hardly able to create a consortium to act globally. Real estate companies though, would have advantages because they would be the only ones who could buy from individuals, and then intervene in the entire compartment. Thus it determines a condition of market imbalance, with a clear reflection of the prices offered to the owners. Instead, the formula of intervention in the real estate compartment allows the owner to intervene – or sell the estate without subjecting himself to extortion – but does not guarantee the architecture result.

Analyzing the interests of all other stakeholders involved and estimating with any numeral scale the “convenience” generated by one of the formulas, one can evaluate the global “satisfaction” generated by the two methods of activation, or of any stakeholders (Table 2).

With such a procedure the phrase “per compartment” is removed and in the system would it generate a “satisfaction” of (10 +) than the “per unitary” (8 +). The Italian experience in post Sisma showed, instead, that it is impossible for owners to intervene directly, the difficulty of an agreement to act in the whole compartment and their reluctance to sell, made the system freeze. The reconstruction was blocked until the rules were changed. For many stakeholders the real “satisfaction”

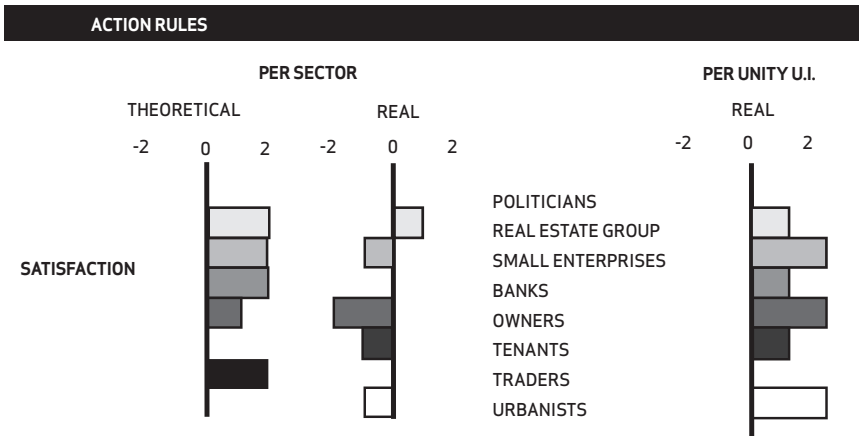


Figure 8 – Action rules for the recovery and satisfactions of the stakeholders

took negative values, and overall system performed lower than the theoretical (-4). Figure 8, shows the difference between the effects generated by the theoretically correct formula in a technical way (interventions by compartment) and those who, it actually produces. The analysis of convenience was therefore easy to simulate the behavior of various stakeholders, outlined in Figure 9 in the form of alliances and conflicts, potential or certain.

The illustrated example refers to an intervention retraining a degraded central area, but it is evident that the used methodology can be applied to any of the predictions or prescriptions of an urban plan. In particular one observes that the "Map of the actors and interests" can be used as a tool to support decisions, either as a procedure to support the projection. The diagrams of Fig 8 and 9 in fact, shows not only the predictable reaction of the "rules" of the urban plan, but also the consent to individuate groups of stakeholders that had "satisfaction" low or negative. They allow thus to preemptively modify the plan, building the formula to improve their levels of satisfaction.

The "Map" for the evaluation of a preventive "force" of the plan is therefore a very useful tool, either as decision support (graphics of conflicts/alliances are always greatly appreciated by politicians), and either as a criterion to adjust the ur-

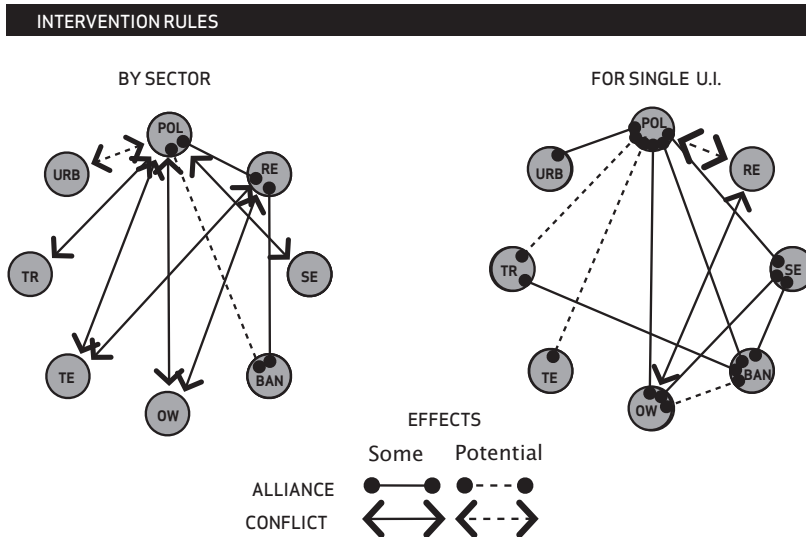


Figure 9 - Rules of operation and the "force" of the plan

ban plans. For these the respect of all stakeholders is essential to be an effective in risk management.

ANNEX A

THE SELF RULING PLANS: PROCEDURE AND TECHNOLOGICAL INNOVATIONS

The entire production process of participatory "Self Ruled Plans" (PAR) develops according to a precise and defined sequence preventively inserted, by habit, in contracts with municipalities that trust the charge to planners outside the Administration. It is a procedure borrowed on one side of parallel experiments interventions in social/sanitary sectors on the other it derives from the "strategic planning" proposed by economists in Italy in the 80s and the "program trading" that has established itself in the 90s.

The novelty of the PAR is not so much in the model with which the content of the development plan is defined, but the way the contents assume. In recent years, in fact, it appeared evident in Italy that the urban plans – understood as representing the future state of the system and, therefore, changes to reach this state – were structurally not fit with the necessary speed and flexibility the rhythms imposed by the market and user requirements. Therefore, the proposal for "flexible plan" was made, the "interventions in derogation" of "urban project". All are formulas that actually consented to the Public Administration to hire the transformation of the territory directly with large investors; with adverse consequences on the concrete level, incoherent from the standpoint of methodology.

With the advent of "urban contractor" in fact, the interventions of a strong impact – that determine the structure of the city (large equipment, whole administrative districts) – can be performed in derogating from urban planning, small – covering very little in structure of the city – should instead continue under the rigid rules of the plan, even when they would be convenient for individuals and the collectivity (expand housing, reuse sub-ceilings, intended to use several existing manufacturers). It was argued thus, a flashy paradox of discipline: interventions strategy should not comply with the strategic choices, the connective tissue of interest to the city does not alter its structure, and they are closely regulated. In

short, the exact opposite of the process recognizable in the historic city, where the elements formed strong invariants of a long period, while the current built tissue is the result of continuous additions and modifications.

Obviously for the actors who gave life to "urban contracted", a conceptual coherence is irrelevant to the power and the advantages that the procedure offered. In the Italian debate of the 90's, said by many, therefore, that the current of thought that theorized the "flexible plan" was found encoded in development policies. In fact, from those years are the laws in Italy that have also introduced the "Urban Complex Programs" (PUC), interventions transformation of the territory which provided for the public-private participation and that they should necessarily indicate actors, time and resources utilized. And that has a common characteristic: they can all be executed "by derogation to the urban instruments."

In short, the law itself sanctioned the development plan as an obstacle to development (at least in Italy)!

To overcome the ineffectiveness of the plan as an instrument of government, but at the same time, prevent the transformation of the territory it was initiated a research program that gradually transformed the urban plan of a "design of the soil" – formed from the requirements of destinations of use and the morphology of manufactured – in a set of "rules of procedure," capable of:

- a. Conjugating the certainty in the medium to long-term adaptability of smaller interventions of the evolution of the territory, the market and the needs of people
- b. Creating a conflict of interest between those who violate the plan and other stakeholders
- c. using the advantage of search, which always animates the actions of individuals, to guide them to achieve the transformations that generate, in addition to their benefit, benefits for the community. The set of such standards is therefore in a degree to generate self-regulation territory (hence the name "Self ruled Plans" as reported in the literature), to make the plans more effective regarding risk management, a convolutional function which changes rapidly.

The rules for the implementation of PAR are designed not only as morphological or geometrical parameters, but as "rules" that the community recognize as their own specific culture (the territory of dwelling, risk). Of such "rules" are removed, then the "standard protocols" that evaluate the compatibility of the changes, whether public or private with the territorial, economic, cultural, political context.

The "rules" are defined with the active participation of various stakeholders with a sequence that develops in three stages:

1. Analysis of past evolution of the system to recognize the "rules" (socio / economic, building, use of territorial resources) that guided the interaction between community/territory;
2. analysis of possible perverse behaviors of the system (ie, behaviors of various actors, moving in search of particular advantages, produce not only damage for the entire system but also for themselves) to recognize which are induced by the existing standard of urban instrumentation;
3. Set "new rules" to favor self-regulation system, or at least, eliminate or reduce the perverse behavior (using the method of simulation gaming).

The group of urban instruments produced had more a form of a statute which governs the future action and the adaptation of the territory to the evolving demands of the community. In such "statute" of course, the Implementing Rules have a dominant role. They are formulated with the intent to retrieve the "original" value whatever the rules are. For example, before prescribing what each one can "do" in your property, NA indicate what is "not done" to others. The rules allow, in fact, the owner (relatively) to be free to perform the transformation that best suits him, but rigorously define Rights (spatial, functional) of neighbors and the community who are not injured by the intervention. Beyond that, normal contents are defined:

- New indicator or procedures to use, control the territory usage (urban cargo, compatibility verification);
- The general rules to accompany the utilization of resources of the system (clearly identify the interests to privilege, favor the interventions of small relevance, and rigorously control the more consistent ones);

- The options that the plan defines once and for all, but that the owner may exercise in his own options every time that the areas are interested as destination of public use;
- the ways in which the "design" of the plan can be corrected during its progress (different depending on the relevance of the modifications);
- the mechanisms with which it is guaranteed that the overall charge on the land does not exceed the one prescribed;
- the standard features that designers must self-evaluate is compatible with the tripping of the environmental context and the ways in which the study is done by the Administration;
- the ways in which the private sector is encouraged to carry the equipment prescribed by the Plan and to be convenient to use them privileged by the municipality;
- the interventions favoring the immission in the housing market agreed price, produced by private and managed by the Administration;
- The ways in which a capital loss generated by the limitations on the use of risk areas are "distributed" in the entire community.

ANNEX B

THE PARTICIPATIVE PRODUCTION OF THE SELF RULED PLANS FOR THE RECUPERATION OF THE LOCAL CULTURE OF RISK

The involvement of the local community on the projects of territory usage is always auspicious; either because of the obvious requirements of democracy, or because in such a way, one can reduce the conflicts in the allocation of finite resources.

To involve the local community since the early stages of production of urban planning is absolutely necessary to have effective tools for risk management. To set standards that induce self-regulation system is the best guarantee for the requirements of the plans to be met. The productions of participatory self ruled plans enable to achieve the following:

OBJECTIVE

Provide local communities⁸ involved, instruments of knowledge and evaluation that allow them to reinforce risk conscience, even after the produced plan.

Involve the local community since the beginning and in all stages of plan production and in the diverse specialist studies, on the one hand enables urbanists to acquire empirical knowledge and information of the local sedimentary risk, on the other, valorizing empirical knowledge reinforce Local Risk Culture, eventually still present;

The involvement of the community is a way to make all actors of the system to feel as they are co-authors of the proposition, which is, step by step define, and that becomes more probable that the expected interventions take place and that its rules are respected

METHODOLOGY

An effective protection of the risks of the system always requires sacrifice (waiver to build a certain area, larger expenses for strengthening buildings and lifelines). Adopt participatory methods to retrieve the Local Culture of Risk may help to overcome the physiological reluctance of many actors, whether to recognize the risk, or to accept the interventions that are made to reduce the effects of an occasional anomalous event.

8. A rigorous systemic approach requires people's reaction (to catastrophic events, to requirements of regulations, to those actions indicated by the authorities) as inputs to the project and not as anomalies or as unexpected. The set of decisions, individually or institutionally, determining the "behavior" of the system-community territory is, therefore, a scientific and operational reference. **"Local Community"**- consists of administrative institutions, associations, coaches, owners – and **"Group of Local Decision Makers"** are the terms most commonly used to define it. The first is therefore used because it corresponds to that adopted in the programs of major international agencies to define a very precise level of intervention.

For a participation to be effective and, above all, plans be effective in field trials, it has always proved to be very useful to:

- adopt rigorous methodological schemes, based on a theory of "needs analysis" (see paragraph 6.3, footnote 6) either to design, or to lead the actions.
- enable experts who, in addition to having a complete standardization of their subject, are able to review it receiving stimuli that always emerge when one decides to define responses (technology, services) arising from the needs of the land before it issues standards and of the solutions in current literature
- use self-assessment protocols to monitor in real time the progress and effectiveness of actions

DEVELOPMENT

The production of a participatory urban plan specifically targeted at risk management that is carried out with a very precise sequence, can be summarized as:

1. identifying all actors at various levels and in various sectors use the land and determine its modifications;
2. identifying their needs and / or interests;
3. analyzing the behavior induced by existing urban rules, with specific reference to the impact of such behavior on the level of risk;
4. organizing preliminary meetings between local community and experts from various disciplines, to jointly analyze the level of knowledge of risk on the part of the community and local knowledge on the part of experts;
5. common projection of actions to improve local knowledge of risk (Community production of risk maps, programs of relevance that involve schools);
6. confrontation of historians and technicians (construction, agriculture systems, the water regime) to re-meet the criteria and traditional protection technologies;
7. critical analysis, validation and eventual upgrade of knowledge, thus recovered;

8. collective definition of the letter of dangerousness, produced by experts with the active contribution of the inhabitants, especially the elders;
9. interventions analysis and / or limitations on the use required to reduce the danger and the vulnerability of the system;
10. simulate the behavior induced by the new "rules" for land use and modification to reduce its negative impact on the risk;
11. evaluation – with the methods of multicriteria analysis or similar – the requirements that reflect the urban successes of the analyzes to the point desired, and priorities of interventions;
12. definition of indicators needed to monitor the risk level of the system;
13. systemize and publish critical cronohisotry of the entire action to remove from it primarily methodological ideas (avoided conflicts, mistakes to avoid).

ORGANIZATION AND STRENGTH

The production of a participative self ruled plan requires a team with a strong multidisciplinary integration, which should be structured in this manner:

- a coordinator, with experience of participatory actions in the field of enhancement of local and urban culture;
- an urbanist;
- an expert on prevention and emergency management;
- a communications specialist;
- an expert in group psychology and analysis of necessities;
- an expert in economics and local development;
- a specialist in environmental and earth sciences;
- specialists in subjects interested in the characteristics of the local system (geological, agronomic, hydraulic, forestry).

Obviously the size and composition of the team will depend on the type of system to govern the resources available, the specific problems and local risks. In each

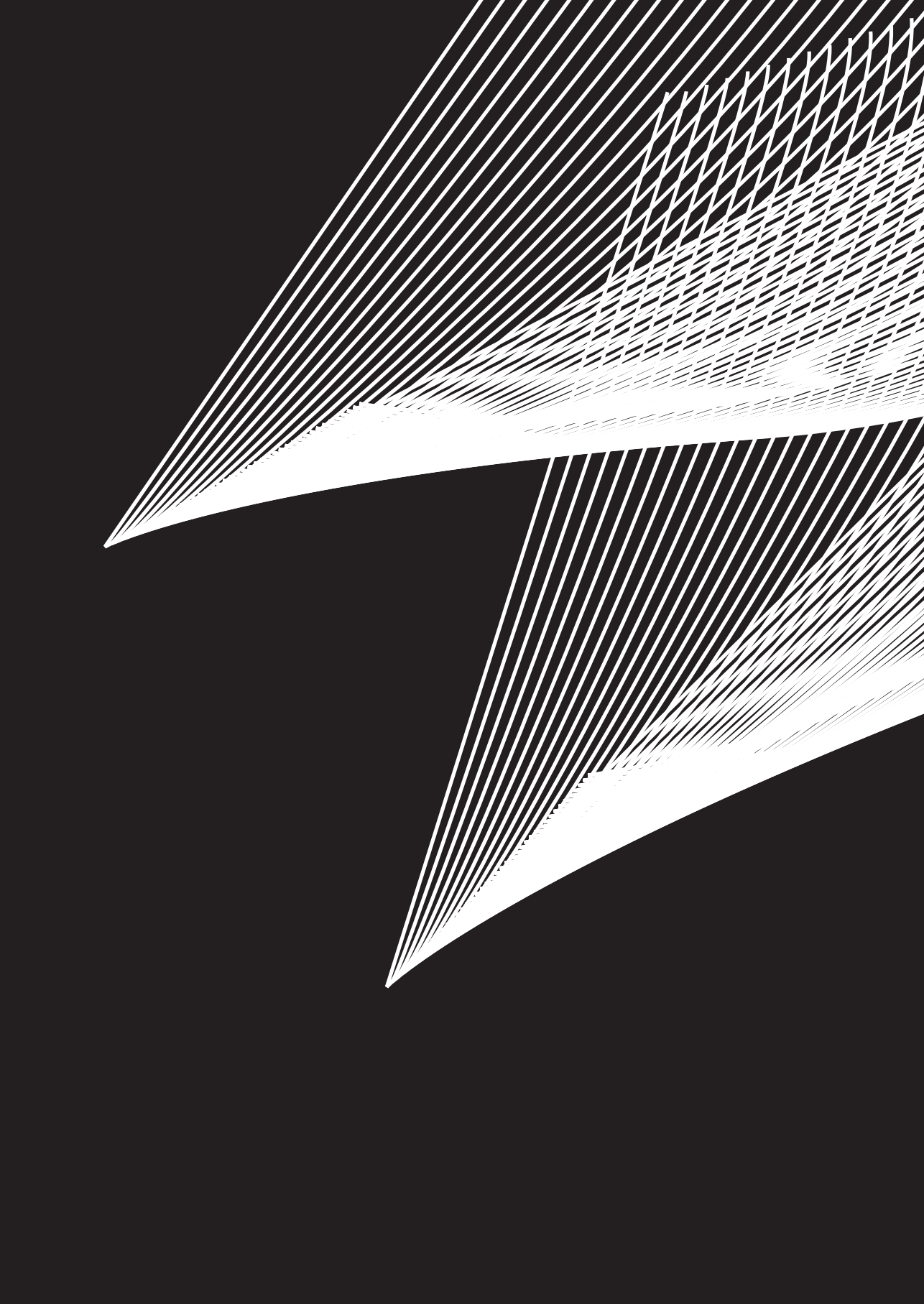
case, all experiments showed that a good level of "versatility"⁹ is the skill needed to lead a team committed to the participative production of instruments of territory government.

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9. Versatility is not understood as a preparation in various disciplinary fields. A versatile technician is not "holosapient" he is just a specialist in a specific subject that know criteria and principles of other subjects in a sufficient way to be just to the specialists in that area.

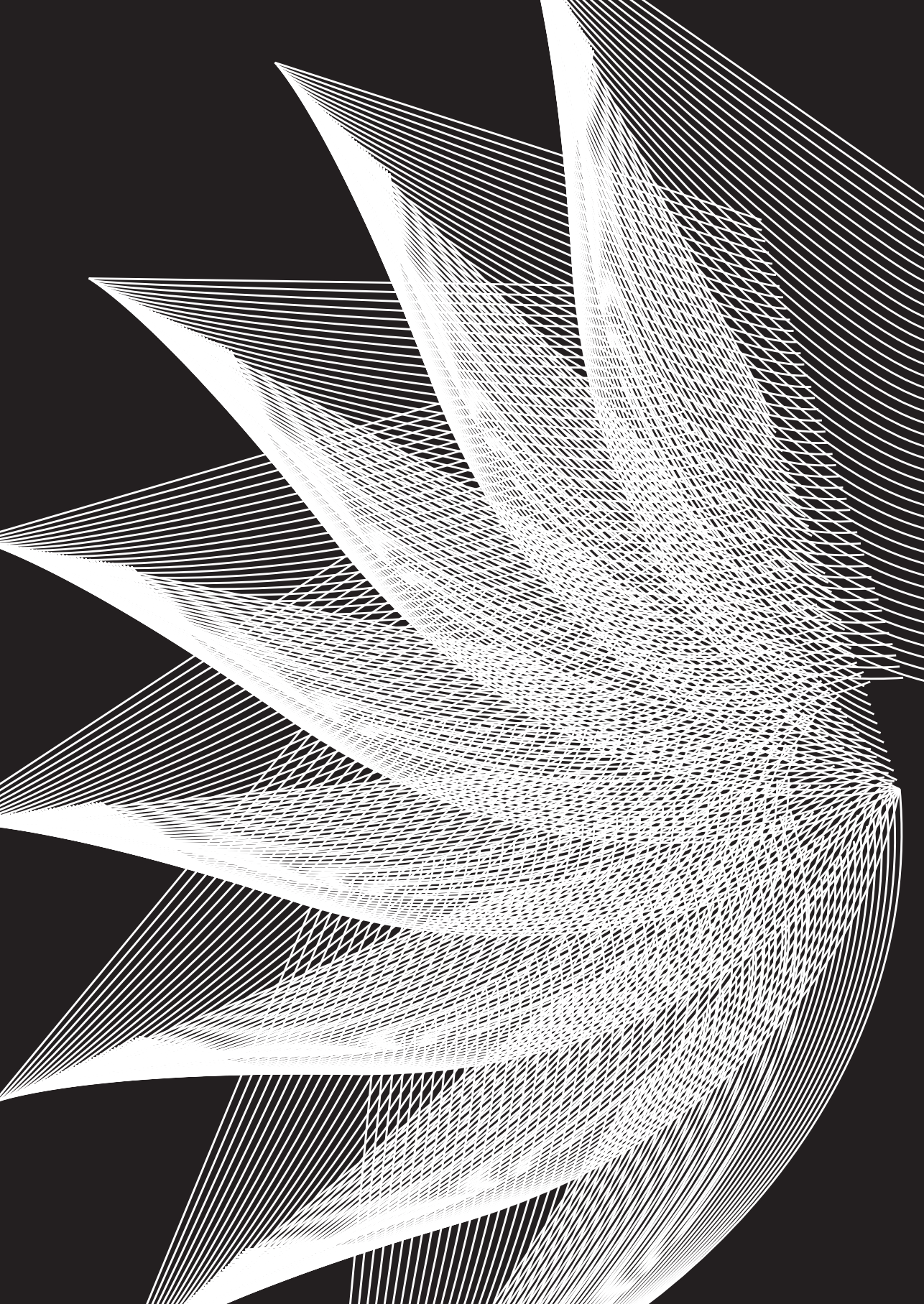
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PART II

*Determinants and instruments
of landscape management*



TERRITORIAL CERTIFICATION

INGUELORE SCHEUNEMANN

JAMES ALLEN GOMES DE CARVALHO

JOSÉ ÁLVARO PIMENTA

THE CHALLENGES OF THE TERRITORIES

Present society is characterized by increasing degree of urbanization, high degree of connectivity - through widespread use of Information and Communications Technologies (ICTs), intensive use of pervasive technologies, such as ICTs previously mentioned, nanotechnology and genetic engineering¹, and mobility and access that is widespread via transport networks, new working relationships, and the fragmentation of the production process into several countries.

While millions leave the poverty level, around the world still remains the problem of misery and the disparities between rich and poor becomes even deeper, as well as educated and uneducated, skilled and unskilled. Meanwhile, the obvious limits of resource management and environmental services are felt - with local, regional and global effects. New identities emerge, colliding with old ones. With so many simultaneous challenges, the presence of the State is required to resolve the territorial problems and dilemmas.

It so happens that the State has a limited sphere of action: global issues depend on supranational instances; local issues are dependable on municipal governments that often are unable technical, financial and administratively to solve them. Nevertheless, several local and planetary issues have mutually reinforcing dynamics that occur in at an intermediate level, supra-municipal level, where the instruments of governance shows some development.

Citizens are then encouraged to participate in decisions (when not pushing for it). But, the organizations that socialize and form individuals are weakened, and those, often lack basic training.

Privatization, the emergence and diversification of nongovernmental organizations (NGOs) have added to this scenario the vectors of increasingly complex governance, where governments, businesses, civil society and its institutions sometimes act beyond its scope of classic assignments. This range of activity is multipurpose and takes place in various geographies (physical space), but still lacks a trans and multidisciplinary approach.

In short, a complex and multifaceted reality, which requires a systemic treatment and measures to evaluate the territories objectively and subjectively, based on different interactions and temporal dynamics. This is the proposal of the methodology we present in this chapter: Territorial Certification.

SOME HISTORY: THE BOOM OF WEALTH AND FRAGMENTED REALITY

The human adventure in the universe goes back seven million years, when the first hominids appeared. However, it would take a few million years for the ability to create and use stone tools to be developed. *Homo habilis* was the precursor of our economic history, a history of two and a half million years, which in cosmic terms, means nothing: less than 0.02% of the time of the Universe.

This economic history has a linear trajectory, almost unchanged for 99.4% of its time. Until 1750, global GDP per capita only doubled, reaching 180 dollars². And in 1800 the population was of 1 billion people.

But, here we are; seven billion people, a global per capita GDP (2010) of, approximately, 10,000 dollars. A tremendous exponential growth, almost 60 times as much, produced and catalyzed from the Industrial Revolution.

In just over two centuries, a civilization was built based on the consumption of colossal amounts of energy, on division of labor, multimarket business models, capital accumulation and intensive use of environmental goods and services, to name a few features.

This *modus operandi* has produced a great variety of products and services (greater than the number of species on the planet) and contributed to increase life expectancy of people, but not without scars: increased emissions of greenhouse gases, ecosystem degradation, and social inequality.

The effect of larger impact of this dynamic, however, is symbolic. The common idea is that the material progress of people would be the measure of the extent of its development, and this is used as basis of comparison. This material progress would be endless and would solve all the problems on a long term, and could be achieved regardless the environment, income inequalities and living conditions. It was enough to follow the example of countries that have the greatest material progress. Hence, the notion arose that there were fields of reality that should be solved in an isolated and sequential manner: the economic area, social and environmental, among others.

THE FACES OF DEVELOPMENT

If, on the one hand there was a vision of a fragmented reality, there was an even more deleterious notion that the economy was predominant over other areas and that among them there was contradictions and conflicts. The truth is that, the social and environmental issues were not constituted as such, until the second half of the twentieth century.

With the end of World War II, the Bretton Woods Conference had set the foundations of the world economic system and the former colonies became independent countries. In this context, the newly created United Nations (UN) assumes the development as one of its main objectives, and takes as reference the industrialized and developed countries. For the independent countries, former colonies, the development went primarily through the process of promotion of economic growth and wealth generation. Therefore, the development, in its original conception and mainstream, until the 1960s, merged with industrialization, efficiency and transformation of production structures³. The measures of excellence to evaluate this progress would be GDP (created in 1930s by Kuznets) and GDP per capita.

The period of intense economic growth in the 1950s, was succeeded by two decades marked by macroeconomic and social crises in developed countries. Despite the economic expansion and wealth creation in peripheral countries, internal disparities deepened, and the gap between developed and developing countries became greater. Meanwhile, the GDP is accompanied by the first social indicators in education, health, labor, equity and income. The economic process was no longer dominant, but it was the sole legitimate means capable of producing desired social outcomes.

If, on the one hand, the economic and social factors already had theoretical structure and own metrics, environmental issues were not considered. This begins to change at the United Nations Conference on the Human Environment in Stockholm, 1972. On this occasion, it was recognized that the development and the environment were not incompatible. In this conference, through his secretary and first director of the United Nations Environment Programme (UNEP), Maurice Strong, the term "ecodevelopment" emerged." This notion, however, would be supplanted later.

SUSTAINABLE DEVELOPMENT AND THE NEW METRICS

Almost twenty years have passed since Maurice Strong proposed Stephan Schmidheiny to coordinate ECO 92, in Rio de Janeiro. At that time, when visiting the Carajas Project, developed by Eliezer Batista as President of Companhia Vale do Rio Doce, they faced economic, environmental and social aspects, applied simultaneously in a single territory⁴. From this observed practice, Schmidheiny theorized Sustainable Development, extending the concept of emphasis on environment that was coined in the Brundtland Report in 1987.

The concept of Sustainable Development - a pleonasm, in the recent words of Batista - brought two key issues: the need for the establishment of intra and inter generational covenants and a cohesive vision of dimensions: the economic, social, environmental and the institutional.

With this assertion as basis, in the last twenty years, several metrics emerged: the Human Development Index (HDI), environmental assessment metrics (bio-

capacity, pressures, eco-efficiency) indicators to measure governance and social values, metrics for citizens' perception, indicators of access, for cultural infrastructure and the consumption of cultural goods, and the HERITY System Quality Certification of Material and Cultural Heritage, that incorporated the views of citizens in the process of evaluation, and communication elements that provided visibility and easy understanding of results .

THE TERRITORY: CONCEPTS

A reflection on the metrics mentioned above, points to an intriguing fact: they all seek to assess the cities, regions, countries, but are presented as quantitative and qualitative measures of normative concepts, which function as orientation for conducting policies, projects and investments. All of them capture different and isolated aspects of reality, which is the territory. But, what is the territory?

The territory is an appropriated geographical area by humans through the expenditure of energy and information (work), and whose product, registered in relations to power, would result in boundaries that define the physical space of other countries and administrative units⁵.

The definition of the territory varies depending on the approach applied. In information science, it is treated as a diffusion area of the media; in Communication and Sociology, as a reticular system centered on the practices of the actors and their identities. In economics, the territory represents a spatial unit of work, composed of functional areas supported by flows of supply and demand established in multiple geographic scales⁶. Other authors emphasize the notion of territory as an entity constructed to demarcate boundaries, and control access and flows (information, financial capital, goods and services, people, etc...).

Notwithstanding the different approaches, Champollion and Piponnier⁷ assert that "no territory exists, including immaterial territory, without the collective projection of his actors to structure a common future, which generates the identity and the symbolic."

The Territory is a human construction, endowed with natural, cultural, social, economic and institutional features, limited to a geographic space established

from drawn borders and submitted to time; an amalgam of physical and symbolic reality that produces effect on the actors that takes part in it; an instance that generates multiple affiliations, from insertions in different geographic scales.

Under these terms, the Territory anticipates principles, models and regulatory measures; it is a universal element, regardless of historical period or culture. The Territory requires the integrated measure of its constitution elements, including perceptions of the citizens who inhabit it, regardless of geographic scale of analysis.

TERRITORIAL CERTIFICATION: CONCEPT AND METHODOLOGY

Based on this assertion comes Territorial Certification. Developed by the Territorial Certification Institute (TCI), the method allows measuring, evaluating and reporting, in an integrated and participatory manner, the universal elements of the territories. Without underestimating internationally validated indicators and measures and through simple visual representations, it seeks to highlight the degree of development of territorial components, and confronts these results with the individual and collective perceptions, making people aware of the challenges of their location and of the contrasting views that build them.

Thus, unlike the widely adopted certification systems that work with lists of conformities and nonconformities, underlying management processes, subject to the legal, institutional and cultural of the countries, the Territorial Certification is based on rates and scales of values that characterize each dimension of the Territory, exposing the results of strategies and interventions.

The methodology of the Territorial Certification is supported by extensive research in the fields of land management and metrics and evaluation systems of places, among which, stand out the Integrated Landscape Management⁸ and HERITY system of Quality Certification of Cultural Heritage Material. From the first, the concepts and principles of territory and integrated view were obtained. From HERITY, reference notions of citizen participation and the reporting of results, was taken⁹

The methodology is structured in two complementary phases: one of assessment and another of communication. The evaluation phase, in turn, is subdivided

into two steps: the measure of the state of the Territory and the measurement of perceptions of the Territory, each generating a set of specific results.

The evaluation focuses on two indicator systems that refer to different milestones, theoretical constructions based on the state of the art of Territory concept.

The phase of communication provides for the dissemination of results to give broad access to them, and allow information to reach the stakeholders, especially citizens.

Territorial Certification provides the same components for the two territorial systems of indicators and evaluation phases. The following components are evaluated:

- Territorial Planning: Facilities and public services offered to the population; natural resources essential to human life, consumption patterns and the pressures / impacts on the environment.
- People: quality of life of the inhabitants (health, basic education, equity and poverty) and demographic aspects.
- Business and Economics: balance of government finances, the factors that facilitate or constrain the development of business, the sophistication of companies and local economic performance (growth, income and employment generation).
- Know-How and Competencies: the stock of local knowledge and technical and scientific capacity in terms of structural conditions and practical results.
- Culture and identity: the sense of belonging, the subjective well-being of citizens, social capital and shared values.
- Image and perception: the perception that citizens have of their territory as a whole, including: satisfaction, attractiveness, future perspectives and collective image.
- Governance: the dimensions of governance according to the World Bank¹⁰: voice and accountability, political stability, regulatory quality, government effectiveness, rule of law and corruption control, nationally and locally evaluated.
- Global Connectivity: mechanisms and networks that interconnect the territory, globally: foreign direct investment, remittances, international trade and human mobility.

The representation of the results is made in two ways. The indicators and intermediate levels of landmarks are displayed in the form of a thermometer, a common element in people's lives that allows the display in a single way the lower and upper limits on the reference scales, as well as and the results achieved by a locality.

As for the territorial components, they are displayed all at once by a single identifier symbol, so as to give a sort of "fingerprint" or "brand" of the place. To illustrate it is used an eight blades propeller, each symbolizing a part of the Territory.

At the end, the Territorial Certification produces two blades propellers, showing the situation of the Territory and the perception of its inhabitants. All results are communicated through reports, booklets and media in public spaces, such that subways, airports, bus terminals, square and public buildings.

TESTS AND RESULTS

Territorial Certification is parameterized and prepared for use in any geographic level (micro, meso and macro scales), as evidenced recently by a case study in the region of sub-basin of the Ribeirão do Boi, which covers the municipalities of Bom Jesus do Galho, Caratinga, Entre Folhas and Vargem Alegre, located in the state of Minas Gerais, in Brazil.

The region of Ribeirão do Boi is characterized by a recent historical occupation - mid-nineteenth century - and by a high degree of anthropized landscape, having less than 8% of the area of native forests preserved. The total population is around 110,000 inhabitants, according to the 2000 Census, and three integrated municipalities - Bom Jesus do Galho, Entre Folhas and Vargem Alegre counted, together, with less than 20 000 inhabitants. In the municipalities the population is predominantly young people (40% are under 20 years) and human development is medium-low (between 0.657 and 0.754). Gross Domestic Product is mainly composed of the trade and services, but there is strong presence of farming.

Because of these characteristics - the contrast of urban and rural, small population, territorial extension - and proximity to businesses and cities of industrial vocation and more wealth, as Ipatinga, Timóteo and Belo Oriente, this region had

been selected, in a context of intervention projects conducted by companies and non-governmental institutions.

The perceptions of citizens, in general, are satisfactory, being negatively affected by the offer and quality of infrastructure and public services, as well as the issues in the labor market.

Regarding the status of the territory, Ribeirão do Boi showed average result. The spatial planning component shows a good environmental quality with respect to emissions of greenhouse gases and the organic load in water courses. Attention is called to the high carbon intensity of the regional economy, which demands investments, processes and practices with less expenditure of energy and fossil fuel consumption. Deficiency and low accessibility to infrastructure was pointed out, while public spending on health and education were less than ideal; the health facilities are few to meet demand; the penetration of Information and Communications Technologies (ICTs) are weak, the connectivity is basic and intra-regional; the services of water supply and sewage are not universalized.

On the other hand, the component People reached the best indicator. The highlights were the low exposure to infectious diseases and epidemics such as AIDS, tuberculosis and malaria, as well as good coverage on basic health and child nutrition. Crime, poverty and income inequality are negative aspects.

The component Economics and Business reinforced the need for articulation of local governments with the state and federal authorities towards reducing bureaucracy and improving the business environment as a whole. The public administration of the region studied suffers from heavy reliance on current transfers.

At the same time, the know-how and skills component demonstrated the need to decentralize higher education infrastructure, to enhance accessibility to this level education and turn secondary education universal, while the national and international context requires greater integration between the region academia and the productive sector, and further development of science and technology projects. The system of science, technology and local innovation are weak and almost irrelevant.

As to Culture and Identity it registered a great sense of belonging of the community, a high level of subjective well-being and the strength of social ties between

families and friends. However, community participation is weak, and there is low trust among citizens.

With respect to the topics of Image and Perception, despite high levels of satisfaction with the city, with local quality of life, with its history and optimism about the future, the desire to remain at the locality is low.

For Governance the results was less than ideal, with negative highlights for law regime and control of corruption at the national level. At the local level, stand out, negatively, the perception of transparency, effectiveness and regulatory quality of public administration. The results indicate a concern with more abstract issues related to governance considered at higher levels, and greater weight on aspects concerning the day-to-day lives of people when related the municipal government.

The Global Connectivity component synthesized poor results that confirmed the low regional competitiveness, still dependent on an export list of low aggregated value and centered on agricultural commodities that are vulnerable to fluctuations in prices and of supply and demand.

In general terms, the case study of application of the methodology could attest to the developed and underdeveloped territorial valences of the municipalities and the region mentioned above, as well as the resilience and capacity of the same to meet the minimum standards of data integrity.

CONCLUSION

If the last two and a half centuries produced unprecedented wealth, the last twenty years made the world a little more diffuse, complex and multi polar. In other words, a space defined by multi-territoriality.

We do not refer to the polarities of geopolitical power, but the overlap of numerous territorial logics. To the continuous areas of nation-states, were added: the logistics networks, circulating capital flows, the real and virtual spaces of research and innovation, productive clusters, terrorist organizations network, the slums and refugee camps (excluding clusters), the market of commodities and securities, sites of natural and cultural heritage of humanity.

There are points, physical and virtual networks, flows, pockets and continuous areas that share the same geographical space, but in different time frames, and with multiple uses and affiliation - local, regional, national, global - producing and reconstructing identities, deconstructing models of established power.

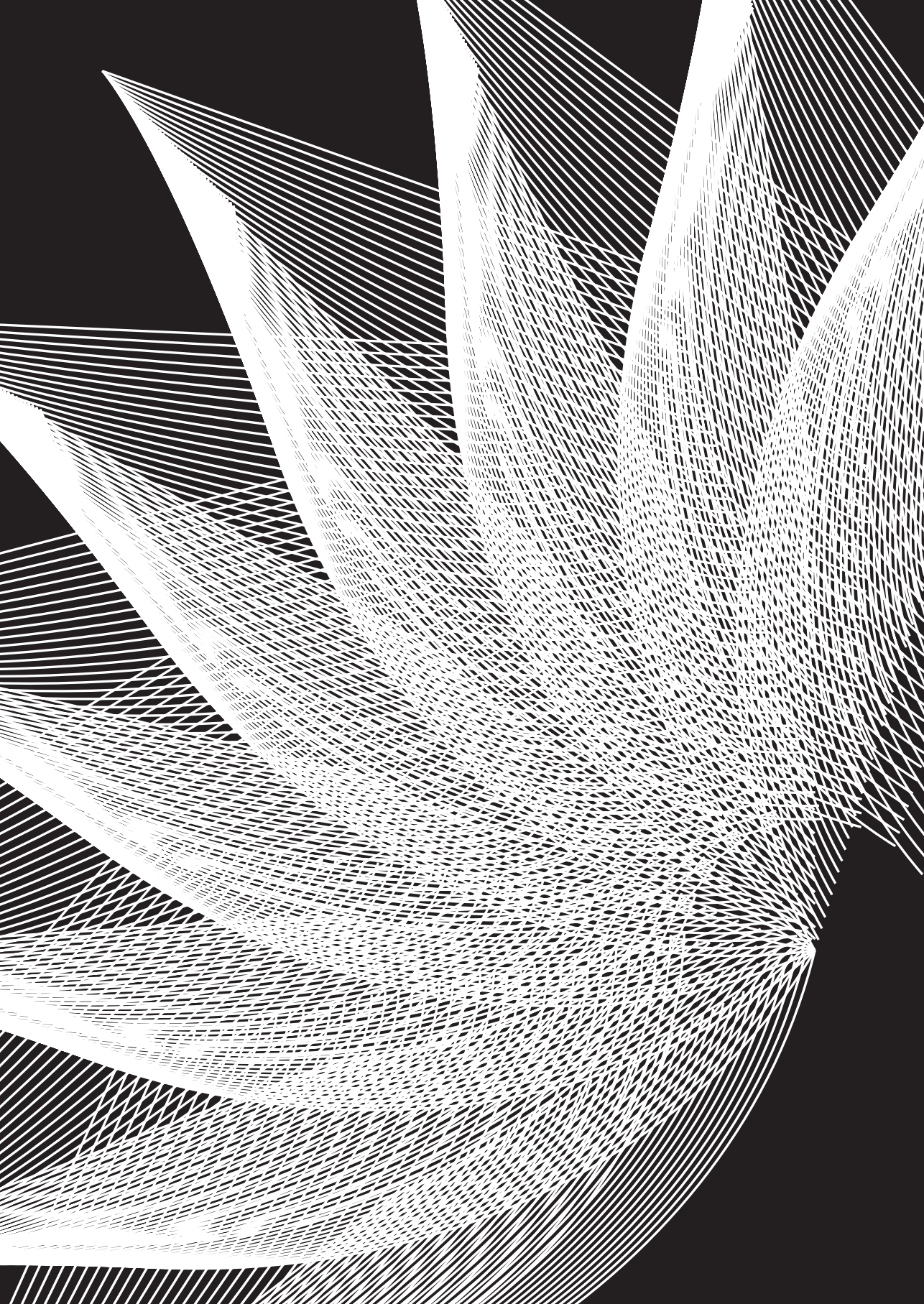
It is the governance of all these instances that is the object of discussion: how to use the structures existing today (and new ones) to respond at different levels of space and time, to the demands of individuals and collectivity, without accumulating and transporting entropy (referred to, here, as a disorder) to others and to nature.

Governance, however, is not a panacea. It is simply an organizing framework that lacks conceptual and ethical references, and, of course, clear evaluation metrics, *ex-ante* and *ex post*.

Is in this last field that Territorial Certification is positioned. It does not intend to supplant or replace other metrics already established, but rather, to take advantage of these and integrate them to produce a result that is easily understood by all stakeholders - governments, enterprises, investors, academia, Third Sector organizations and, especially, citizens - so they are aware of the strengths and weaknesses of the territory and can, from this, overcome the dichotomies and make proper choices. Thus, the Territorial Certification appears as a new compass, to guide government investments and projects, enterprises, and human mobility, towards a feasible and integrated development.

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PHYSIOGRAPHY

PIERLUIGI ROSINA

BASINS AND WATER SYSTEMS

A watershed is the area's natural topography to capture water from precipitation or thawing of glaciers. This area is bounded by topography across ridge lines or watersheds (interfluves), separating a basin from the contiguous; usually it is a closed and well defined line, but in some cases they can be opened and difficult to determine (in proximity of the coastline for example).

The ridge lines are drawn joining the higher points, around the considered basin, perpendicularly to the contour and without any cross watercourse. The water is drained into a main water course - or a lake - by gullies, channels, tributaries and effluents which together constitute the river system.

The main water course gives the name of the river basin. Most of the basins can be divided into sub-basins, each corresponding to a tributary of the main river. As the flow of water basins can have:

- Exoreic, drainage to the sea, they are the largest.
- Endoreic, closed basin (lake or pond).
- Areic, infiltration of water into aquifers.
- Cryptoreic, leakage or evaporation of water.

All surface water drained (exoreic basins) will go through one section; in this section is measured the hydraulic load of the basin and its water course. This means that all the water that falls within a basin has a single point of runoff.

Differences towards the river basins, at the hydro geological basins are considered beyond the surface water network, the flow of groundwater. These may have a splitter table (underground hydro geological limits) that sometimes does not correspond to the watershed.

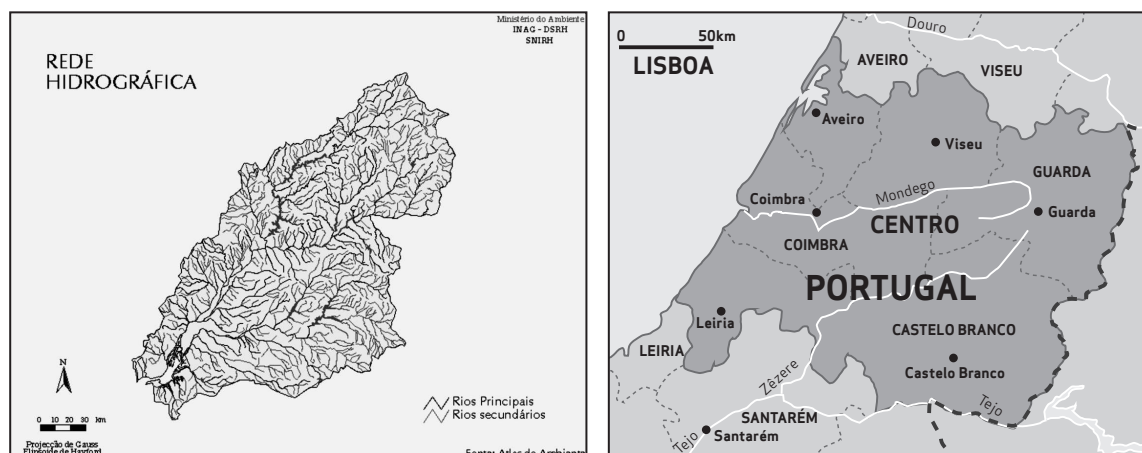


Figure 1 A/B - Hydrographic basin network of the Tagus in Portugal

The major river basins of the world:

- Rio delle Amazzoni-Ucayali 7,050,000 km²
- Nile 6,695,000 km²
- Congo 4,374,000 km²
- Mississippi-Missouri 3,778,000 km²
- Rio de la Plata-Paraná 3,140,000 km²
- Volga 1,360,000 km²
- Danube 817,000 km²
- Huang He 752,000 km²
- (Tagus 80,600 km²)

The dynamics of a watershed can be influenced by multiple factors that relate to:

- Morphology: relief, pending, development of the hydrographic network, etc..
- Lithology: geological formations, faults, diaclasis, etc..
- Pedology: texture, thickness, infiltration, surface area and volume, etc..
- underground aquifers: sources and exsurgence, exchanges with other basins, etc..
- Land Use: agricultural practices, forest use, level of coverage etc..
- Erodibility: the nature and sediment production, transport capacity, settling areas, speed of erosion.
- Climate: temperature and humidity, evapotranspiration, precipitation.

DESCRIPTION OF A RIVER BASIN AND ITS NETWORK:

For the description of a river basin multiple parameters are used that serve to define the change in the behavior of the basin and its network in relation to the rains, the seasons, the periods of drought, flood risk, soil erosion, etc.

The measurement of these parameters is the task of applied Geomorphology. The delimited portion of the territory at the ridge line is called drainage area; their limits are the perimeter, while the length of the basin can match the length of the main water course.

Shape and geometric features of the basins

One of the most significant is the extent and form of shallow basins. In fact, the times of water flows depends on the length of the watercourse and its pendency. The basin may have a more elongated or more compact shape.

R_f Roundness factor: ratio of the surface drain (A) and the surface of a circle that has a perimeter (P) equal to the performance of the ridge line of the basin.

$$R_c = 4\pi \frac{A}{P^2}$$

R_u Uniformity ratio: ratio between the perimeter of the basin and perimeter of a circle with the same basin area

$$R_u = \frac{P}{2\pi\sqrt{A}}$$

F Form Factor: ratio of basin area and a square with side L equal to the length of the basin

$$F = \frac{A}{L^2}$$

E Stretching ratio

$$E = \frac{2\sqrt{A}}{L\sqrt{\pi}}$$

The altimetry of a basin may be illustrated with the isographic curve (or topographic map) obtained by putting in a Cartesian diagram the values of the quotas and surfaces (in percentage).

The shape of the resulting curve provides an indication of the degree of evolution of a basin. Further, it is possible to obtain an average height (the mean value of the absolute difference of the quota in the scope of the basin) and median height (altitude corresponding to the average value of areas). Another parameter is the relief, corresponding to the difference between the quota and the highest point of closure section. The gap in the in relation to length of the river and the area represents its pending.

Altimetry: It is usually expressed in percentage, representing the various portions of land quota.

Average Altitude: The average value of the absolute difference of quota within the basin.

Median Altitude: corresponds to the average value of the shares of surfaces.
 Pending: Elevation in relation to length and the area

Characteristics of the drainage network

One of the most significant parameters is the drainage density (Dd) - $Dd = L / A$ - in which the length of the water courses are set in relation to the surface.

A high density indicates a well-drained ground, often made by impermeable rocks. The hierarchy of the river system allows the analysis and classification of the same. An order to waterways is assigned. There are two ranking methods: one from upstream to downstream, the other downstream of the upstream.

In the first case, the parts that come out of the sources are the Ith order, the sections that result from the junction of two of the Ist order are of IInd order, joining two of the Second order results in a section of the IIIrd order, and so on.

In the second, the main water course is the of the Ist order, tributaries from the right of third order, etc..

The first is more useful to understand the degree of organization of the network, the other is the widely used for cartographic and digital (GIS) representation and is therefore very useful for planning.

Other values that are very significant for understanding the development of the river system are the number of segments and nodes, the relation of bifurcation.

Geological and geomorphologic characteristics

The geological characteristics of an area affect the development of the river system and the structure of the basins. In fact, water systems - and their watersheds - can be influenced by tectonics and the bedrock.

The lithologic diversity is reflected in different erosive action of the water network and, consequently, the dynamics of the river incisions. The rivers have greater

erosive power in the bottom, but the softer rocks and less consolidated (eg. sands) are also subject to strong lateral erosion, providing the extension of the valleys. On the contrary, the more resistant and compact rocks (eg the quartzite) favor the sinking of valleys with the formation of gorges or canyons.

In addition to the morphological and structural reliefs, which determine the shape of the basins, the presence of tectonic phenomena (mostly failures) is mainly reflected on the direction and alignment of watercourses. In consequence, the valleys tend to repress the morpho-tectonic progress in the regions.

The geomorphology and topography resulting from the processes above represent the main factors for the dynamics of the landslide.

Obviously, in the case of dynamic processes, the influences on the topography, morphology, and tectonics of the substrate vary over time (juveniles or mature forms).

The analysis of the geometric characteristics of a basin and the respective streams allows evaluating the influence of the substrate and / or of the tectonic.

Biological Conditions

The vegetation, primarily related to climate and human activities, turns out to be a determining factor for the dynamics of a basin, in particular by the processes of erosion / deposition. Therefore the land use is a significant parameter in the analysis of the evolution of river basins.

THE RIVERS AND RIVER DYNAMICS

One of the most important aspects is, undoubtedly, the flows of the rivers:

- Flow rate (volume / time - m^3 / s) = width (m) x depth (m) x velocity (m / s)

It is a parameter that can be extremely variable according to variations in climate, rainfall, the streams, seasonality, etc... The relationship between maximum load and minimum load gives information on the water regime of a watercourse.

When this ratio results higher than 100, it indicates a system stream, typical of rivers that are subjected to drought and flooding.

Another essential parameter for the control of the streams is velocity. Velocity = distance / time (m / s)

The factors that relate to the velocity are, essentially, the pending, the type of banks, the load. The pending determines the total potential energy of the river, but when the flow increases, more closed in sections also increases the speed.

Pending changes in the topographic profile along the rivers permit to determine the subdivision of the routes in the High, Medium and Low. High refers to the first section with the bigger pending, when the river leaves the relief areas it enters in its middle section, the lower end portion is on the even flatter than the foregoing, in the proximity of the flat coastal areas. The different parts (channels) of the rivers can also take different forms depending on river dynamics associated with the substrate, climate, tectonics, etc...

According to the channel type, classified as:

Meandering: flat areas, marked sinuosity, formation of lakes horseshoe
Anastomose: multiple channels, fluctuations in discharge, flat areas.

Interlaced: multiple channels separated by movable bars, areas with marked pendency and relatively soft substrate.

Rectilinear: usually related to rocky substrate and / or fault zones.

The rivers mouth depends on the relationship between marine processes and river solid load. Where the processes of marine erosion (waves and tides) prevail, mouths form estuaries; areas where marine processes are intense but the sand supply is high delta- estuaries are produced; at the more protected coastal areas the river deposits progress and originate the deltas.



Figure 2 A/B – A The Tagus estuary (Source SNIG-IGEOE) / Nile Delta (source NASA)

The fluvial deposits

The arrangements for transport of material through fluids include entrainment, suspension, solution, fluctuation.

Transport, erosion and sediment deposition is a function of velocity and grain size (Fig. 3).

Deposits resulting from river action are therefore a function of water velocity and the mode of transport: the coarser sediments settle to the bottom of the river-bed and form the filling of the channel (active), the thinner deposits are the plains alluvial (flood deposits), while the bars are mostly sandy. Obviously the relative size of the sediments also depends on the different types of systems: rivers meandering, low speed, lack the ability to transport and deposition of pebbles. However the tributaries and secondary water lines carry coarser material to the beds of major rivers.

The reconstruction of the deposition processes provides an indication of climatic variations and / or environmental changes over time, as a result of natural changes than to anthropogenic activities.

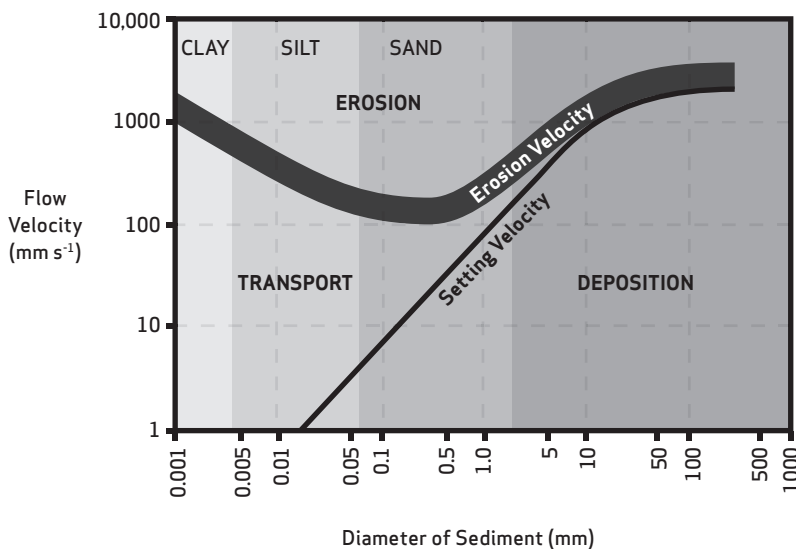


Figure 3 - Source: PhysicalGeography.net

The Hydrologic Cycle and Water Balance

The water cycle described changes in the physical state of the water and where it accumulates. Within a watershed, the hydrological cycle describes the fluctuation of the quantities of water that travel and the reservations available.

For the exploration of water resources the calculation of water balance is called upon, which considers the global variation in the amount of water entering a basin (mainly precipitation and thawing) and the amount of water that leaves the system (surface and subsurface runoff, evaporation, consumption)

- Water balance: $dV / dt = -Q + Q_s$ (change in volume of water related to time = Quantity of output - input quantity).

The risks associated to natural river dynamics

The river basin management concerns the demand for water resources as well as the risks associated with these systems. The main risks are technological (mainly pollution and overuse) or natural (overflows and floods).

The natural hazards can be calculated with different formulas, the frequency, intensity, hazard and vulnerability are the most common parameter used.

- $R = \sum x E P_i \times V_i$
- R – Annual risk (number of human victims, €, Ha, trees, houses), usually expressed in index;
- P_i – Hazard - Probability of section i Severity function (ability to cause damage);
- E – Exposure or elements at risk (set of assets to preserve and which can be damaged by the action of the danger) may be represented by passers-by, residents, facilities, transportation networks, agricultural or natural areas, money;
- V_i – Vulnerability (0-1) – expected loss of an element at risk (function of severity of section i and the existing preventive measures).

Being a complex system with many variables that change from year to year, it is difficult to calculate the risk in fluvial environments, or at least have updated calculations.

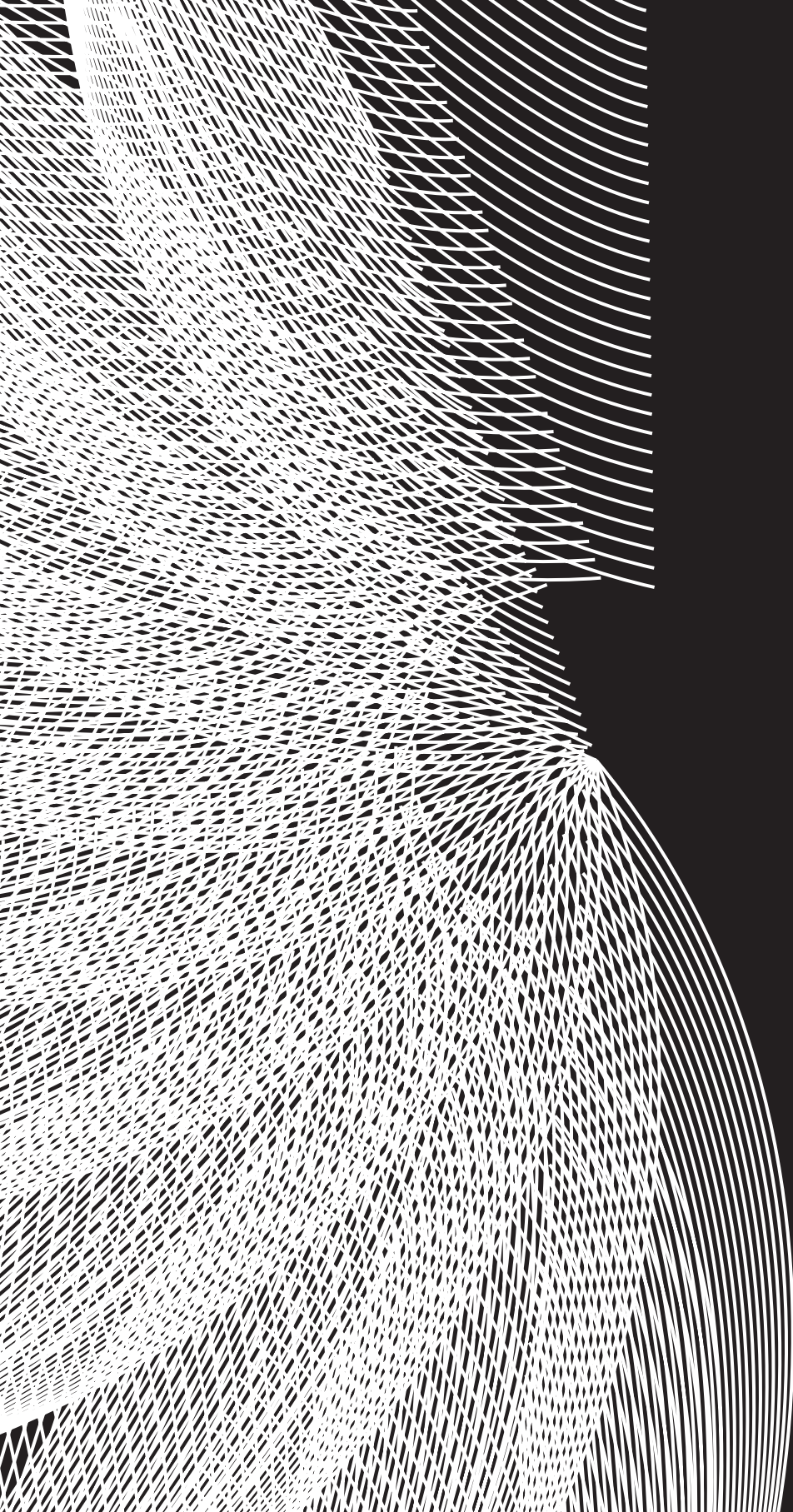
The change of land use, new urban area developments, the construction of artificial river banks, deforestation, mining sediment, intensive consumption of water contributes to change the system and its dynamics. Often, the consequences of these changes are not immediate, but can appear with several years of delay.

The predictions of the floods, which are mainly based on historical data, are the most obvious example of the difficulty of risk and discharges management. Climate fluctuations and the natural variation in rainfall make planning very difficult in riparian zones.

The same address can be used for the prevention, minimization and mitigation: a relatively rapid change (in areas of intense urbanization for example) of the elements at risk, vulnerability, and often of hazard / severity, cause a mismatch between the territorial planning (prevention) and management plans. One of the most newsworthy was, undoubtedly, the flooding of New Orleans where there was an expected (as recorded historically) but whose consequences had not been properly evaluated or updated.

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THE SUBSISTENCE ECONOMY AS AN EXAMPLE OF SUSTAINABLE ECONOMY

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It is called subsistence economy the activity that occurs outside the typically regulated area (health, pharmaceuticals, transport, energy, telecommunications...). It is a type of economy based mainly on agriculture and cattle raising, developed on small family farms with little access to mechanical devices, characterized by its limitation to generate surpluses. Therefore, its production is just enough to feed the family group and the surpluses do not allow commercial trades, but it aims, mainly, to provide exchange with other families and social groups.

The subsistence economy is a way of shadow economy, understood in a general way, as a set of activities performed by a part of the population, mostly unemployed, as a means to survive, paying lower taxes. The shadow economy is very important around the world¹ but especially in some developing countries: it is estimated that it represents more than 70% of Gross Domestic Product (GDP) of countries like Egypt, Nigeria and Thailand. In contrast, the country for which it is estimated the smaller informal sector is Switzerland, with less than 10% of GDP followed by Japan, USA and Australia. But it is also very important in some industrialized countries where the rates vary between 20% and 25% of their Gross Domestic Product, like Italy, Spain or Belgium. According to recent studies², shadow economy increases considerably in size during periods of economic crisis, acting as a buffer when things get harder.

The economy of subsistence has its own characteristics. It has become the only means of livelihood (subsistence) for a significant proportion of the population,

particularly in economies where farmers combine farming activities and cattle raising with extractive activities (hunting, firewood, mining) and handicraft (pottery, sculptures wood, textiles), where most production is destined for own consumption, barter and trade. Maybe the most remarkable characteristic of the subsistence economy is that practically everything that is produced is consumed.

Although it is praised by some environmental organizations, that consider it the only sustainable economic model at medium and long term by its limited impact on the environment, the key question that needs to be answered by the economic point of view is how far the subsistence economy is really viable as a model for social development of the population and how far it can be considered a valid tool for the planning of the territory.

In fact, any economic model that allows generating jobs is always interesting. But the key question is its long-term viability. We will review how the subsistence economy strongly resembles the model of feudalism. And the economic history clearly shows, how feudalism and later, the industrialization, is the key to economic development, is the creation of added value on continued increases in productivity, generating savings and investment capacity and has a direct impact on the living standards of the population.

The subsistence economies only generate surplus and very little added value. This difficulty has to be complemented and there are tools for it. The first tool is the emigrant remittances, which can be used to finance huge investments as well as for immediate consumption demand. Microcredit is also an interesting alternative. Muhammad Yunus discovered that each small loan could produce a substantial change in the survival potential of people with few resources. However, traditional banks are not interested in making loans to these customers because they believe there is a high risk of the money borrowed not being repaid.

In this direction we will evaluate the potential of emigrant remittances and microcredit, in particular, in Brazil, provide to the subsistence economy.

The subsistence economies are also characterized by alarming indicators of poverty. We will analyze also the main international statistics related to poverty measurement.

SUBSISTENCE ECONOMY AND FEUDAL ECONOMY

Before the creation of money, the subsistence economy was the dominant economic system in the world. But even after the widespread use of money, this system had a major presence for many centuries and which still survives in many countries permanently adjusted to the characteristics of religion, territory, time...

As we remember the history of mankind in terms of transcendental events (kings, battles, great discoveries...), we could also make historical references to the subsistence crisis, periods of food shortages caused by bad harvests, the hunger, which in turn led to malnutrition, catastrophic mortality above the ordinary, which already had very high rates, diseases; and on the other hand we have social discontentment and conflicts that extended to the political, military and even ideological spheres.

These subsistence crises were typical of pre-industrial times, on the predominant ways of pre-capitalist production (slavery, feudalism, and Asiatic way of production) and economic activity centered almost exclusively on agriculture and livestock raising. As a consequence, business cycles were determined by natural cycles, mainly climatic cycles, and the use of agricultural land with rudimentary techniques.

Feudalism³ is the political, social and economical regime that reached its peak in Western Europe between the ninth and eleventh centuries, but in some countries it reached the nineteenth century. It is organized around a caste society, in closed and hierarchical social groups, based on relations of dependence and servitude, where the most powerful offers protection to the vassal in exchange for their loyalty, translated into a range of services: the work in their lands and castles, in their armies and the payment of taxes.

The rural economy is absolutely feudal, land-based, with a minimum division of work and very little trade. The economic center is the fief or landlord, with large properties (castles and monasteries) of nobles and ecclesiastics, virtually self-sufficient. Each fief was oriented towards self sufficiency: producing everything necessary for the subsistence of the population (food, clothing, tools ...). It is therefore a subsistence farming economy and self-sufficient, where only the products are not imported from outside the fief and very few products leave the place: the little surplus is sold at the weekly market of the city (town).

With these parameters, the feudal economy develops in a context of deep stagnation and permanent:

- Agriculture between 1000 and 1700 was followed, almost exclusively, with the same energy sources from antiquity: people, animals, firewood, charcoal.
- This is an economy that generates little value, and therefore little productivity growth. The excess is almost non-existent and, therefore, the saving and investment capacity is low.
- The population, partly dependent on exogenous factors and short-term movements, could only increase and raise their living standards by adding new factors, an increase, which sometimes, ended with dramatic declines due to epidemics, crop failures, famine and war, that restored the balance. Examples of changes in the population at this time can be observed in the Iberian Peninsula⁴ (Spain and Portugal), during the Reconquest period.
- This set of characteristics of small populations, slow growth combined with low per capita income, produces a very low propensity to consume.
- As a result, economic growth was almost null for several centuries.

By comparing the characteristics of the European feudal economy with subsistence economy today, we observe how the similarities are more important than we imagine. In both cases, the low-tech, poor communications, the lack of external demand, determine:

- Reliance on cultures of the climate, the natural fertility of the land, the balance between population and resources and the balance between agriculture and livestock raising.
- Inexistence of market or very reduced geographically, with production destined almost exclusively to local markets.
- Most of the production of other goods (tools, furniture, etc...) takes place in homes or on limited farming communities.
- Scarce money circulation. Transactions are mainly in species. Barter.
- Most of the surplus is not plowed back into production.

As differences between the medieval feudal economy and subsistence economy, we can notice that the small surplus is not currently used for the payment of vassals. On the other hand subsistence economies, particularly family businesses, often also record gains, as we shall see in some detail: income by remittances, the money contributed regularly by family members who normally work away from the family unit. It is estimated⁵ that in Latin America the annual remittances of workers working abroad in 2007 were responsible for more than 63 million U.S. dollars, exceeding the revenue from international economic assistance and loans from multilateral banks.

When we analyze the economic growth off the historical development, the main change in the trend is found in some of the countries that today have higher levels of *per capita* income between the pre-industrial and industrial period. This discontinuity occurred between the second half of the eighteenth and nineteenth century, when for the first time, remained a sustained growth rate of GDP, more than 1% annually. This was a radical change in the scenario, because the feudal economy with growth in economic activity only allowed a level of subsistence with minimum consumption and minimum living standards, with a low income level, for the vast majority of the population. The big jump came with the Industrial Revolution, particularly in some northern European countries (Britain, Belgium, Finland...), when there were changes in the prevalence of the secondary sector (industry) and tertiary (trade)⁶ against traditional sectors of farming and ranching. This transformation was extended during the nineteenth century for most of the rest of Europe, the United States, Canada and parts of Asia (Japan).

The societies which started industrialization had striking features that stood out just a few decades after the beginning of the changes.

- The national product is increasingly dependent on industrial production, and later, the services. The process is associated with the urbanization of large masses of the population. The rural economy is a background.
- Disappearance of hunger, Malthusian crisis and devastating epidemics, which increases dramatically the life expectancy of the population (the total mass of the population of various countries).

- Expenditure on food has come to represent less than ¼ the average individual income, while in subsistence economies represents over 50%.
- Continued growth in productivity in sectors with high added value and great development of commerce generates surpluses, savings and reinvestment.

POVERTY INDICATORS

In 1948, the World Bank defined as poor countries with a *per capita* income below 100 dollars per year, after which whole nations and countries are considered poor in the sense that their income is insufficient to meet the minimum needs of their inhabitants.

For decades the concept of poverty refers to the income level and has led to consider that economic growth is the main instrument to reduce poverty. However, from the World Bank, and in the 70s and 80s of last century, the term poverty is reconsidered from a new perspective: human development. So we begin to consider poverty from a multidimensional approach which includes not only income, but aspects such as, education and health for the construction of new indicators. Therefore, in the Human Development Report 1997⁷ is presented for the first time, the modern idea of poverty in the context of development, to be defined as "the inability of people to live a tolerable life"; issues that are part of poverty according to the report, are: to lead a long and healthy life, get an education and enjoy a decent standard of living, as well as, elements such as political freedom, human rights, personal safety, access to productive and well paid work and participation in community life which the individual belongs. However, many of these aspects are difficult to measure, so that measuring poverty is concentrated on quantifiable aspects and generally related to the standard of living.

The poverty standard is based on the level of family resources deemed necessary for a minimally adequate standard of living. So it is normal to say that a person is poor when their living standard is below a certain minimum level.

There are several alternative methodologies and indicators for the measurement. Among the most used and known, the World Bank⁸ uses indicators such as the income share of 10% above, the income share of 10% below or the percentage of people living with up to \$ 1.25 per day. (PPA.)

The United Nations uses indicators that distinguish the developed and developing countries. For developing countries, the Human Development Report uses a "composite indicator that measures deprivations in three basic dimensions of human development index: a long and healthy life, knowledge and a decent standard of living," using data from three indicators: probability at birth of not surviving to the age of 40, adult illiteracy rate, unweighted average of people without sustainable access to an improved water source, and children with low weight for the age standards.

While developed countries define "a composite indicator that measures the need for four basic dimensions of human development index: a long and healthy life, knowledge and a decent standard of living and social exclusion", the formula used to calculate uses the information of the probability at birth of not surviving to the age of 60, the adult illiteracy rate, the population below the poverty line (50% of adjusted family income) and the rate of long-term unemployment (over 12 months without a job).

The 2006 report presents the 18 countries with the highest human development index.

A team of researchers⁹ at Oxford University has developed the methodology of the Oxford Poverty and Human Development or multidimensional poverty index (MPI). This is an innovative system that provides a multidimensional image of people living in poverty. The MPI will be presented at the twentieth anniversary edition of the UNDP in its annual Human Development Report (October 2010) and complements the indicators of income by reflecting, together, the needs that affect people's lives.

The research team¹⁰ has just completed its first estimate of global multidimensional poverty rate calculated on 104 developing countries. The MPI uses 10 indicators to measure three aspects of poverty in households: education, health and life quality. This is direct measurement of health and educational outcomes, or on essential services such as access to safe water, sanitation and electricity, which not only reveal the number of people who are poor, but also the characteristics of poverty. The MPI also reflects the intensity of poverty: the weighted sum of the difficulties that every family faces the same time. A person who registers needs in 70% of the indicators is clearly worse than someone who logs in 40% of indicators, although they have similar levels of *per capita* income.

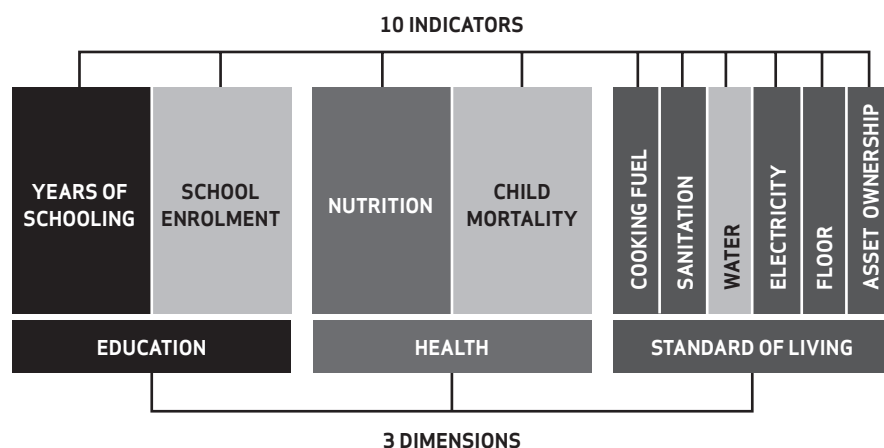
ORDER	COUNTRY	HPI-2	PROBABILITY AT BIRTH FOR NOT SURVIVING +60	RATE OF ADULT ILLITERACY (%)	LONG-TERM UNEMPLOYMENT	POPULATION UNDER 50% OF MID INCOME
1	Sweden	6.5	7.2	7.5	1.0	6.5
2	Norway	7.0	8.4	7.9	0.4	6.4
3	The Netherlands	8.2	8.7	10.5	2.5	7.3
4	Finland	8.2	9.7	10.4	2.1	5.4
5	Denmark	8.4	10.4	9.6	1.3	-
6	Germany	10.3	8.8	14.4	5.0	8.3
7	Switzerland	10.7	7.8	15.9	1.6	7.6
8	Canada	10.9	8.1	14.6	0.7	11.4
9	Luxemburg	11.1	9.7	-	1.2	6.0
10	France	11.4	9.8	-	4.3	8.0
11	Japan	11.7	7.1	-	1.5	11.8
12	Belgium	12.4	9.4	18.4	4.3	8.0
13	Spain	12.6	8.7	-	3.0	14.3
14	Australia	12.8	7.7	17.0	0.9	14.3
15	UK	14.8	8.7	21.8	1.1	12.4
16	USA	15.4	11.8	20.0	0.6	17.0
17	Ireland	16.1	8.7	22.6	1.5	16.5
18	Italy	29.9	7.8	47.0	4.0	12.7

Other indicators indirectly evaluate poverty, such as global indicators of hunger in World Food Program¹¹. Today, there are 1,020 million undernourished people in the world. This means that at least one in six people do not have enough food to lead an active and healthy life. Hunger and malnutrition around the world are considered the main risk to health, more important than AIDS, malaria and tuberculosis combined.

The main causes of hunger are natural disasters, conflicts, poverty or lack of agricultural infrastructure. Recently, the number of hungry people has increased due to financial and economic crisis. It is 102 million in 2009 compared to 87 in 2007, of which 84 million are women and children.

In addition to the hunger that is felt when the stomach is empty, there is another kind of hunger: the hidden hunger. This is caused by a deficiency of nutrients and makes people more susceptible to infectious diseases, affects the physical and mental development, reduces labor productivity and increases the risk of premature death. Hunger affects not only the individual but also imposes an economic burden for global development. It is estimated that a child whose physical and mental development was hampered by hunger and malnutrition cannot receive between 5-10% of the total income of their life.

Among the Millennium Development Goals that the UN has set for the twenty-first century, tops the list the reduction to half of the proportion of hungry people. (Source: Report on Human Development 2009. PANAMA)



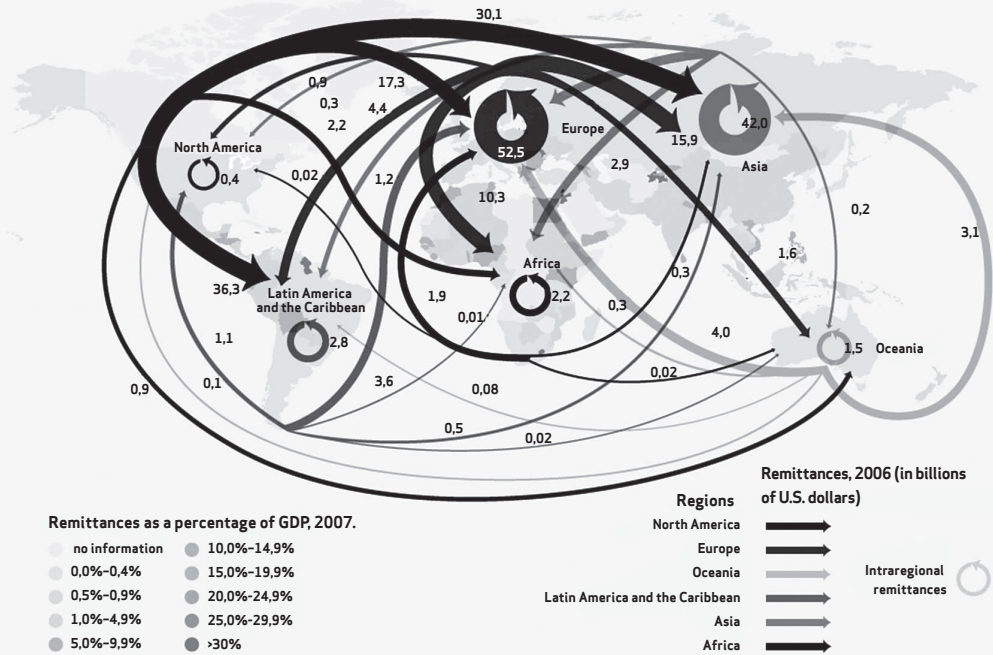
WFP - WFP.ORG/ES - THE WORLD FOOD PROGRAMME				
2007	2008	2009	2007-2009 variations	key figures
MDG ERADICATE EXTREME POVERTY AND HUNGER				
BENEFICIARIES				
86,1	102,1	11,8	▲	millions hungry people in 75 countries (77 countries in 2008; 80 countries in 2007)
71,0	83,9	84,1	▲	millions of women and children
1,9	1,9	2,0	▲	millions of refugees
8,8	9,5	14,1	▲	millions of internally displaced persons
0,8	0,9	2,1	▲	millions of repatriated
QUANTITY OF FOOD AID				
3,3	3,9	4,6	▲	millions of tons of food distributed
2,1	2,8	2,6	▲	millions of tons of food purchased

While good progress was achieved in reducing chronic hunger in the 1980s and in the first half of the 1990s, the numbers in the last decade have increased slowly but steadily.

EMIGRATION. REMITTANCE OF EMIGRANTS

In many developing countries, migration is a strategy used by the family to improve not only the perspective of individual who leaves, but the whole family. In return for the support given to his own family migration, the remittances can be expected once the migrant has been established. The spending with travel expens-

The remittances are mainly from developed regions to developing regions.
International remittance flows, 2006-2007



es often exceeds the income that the initial immigrants may have achieved in their place of origin. Remittances can be used to finance major investments, as well as immediate needs of consumption.

Money remittances are essential to improve the conditions of millions of people in developing countries. Many empirical studies confirm the contribution of remittances to health, wellness, food, nutrition and general conditions at the site of origin. Remittances play an important role: to diversify sources of income and buffer the difficulties such as illness or general commotion caused by economic crisis, political conflicts or natural disasters.

The incidence of migration in poverty reduction is proven by several studies. So for example, in Andhra Pradesh and Madhya Pradesh, India, the poverty rates in households with emigrants decreased by almost half between the years 2001 to 2007 and similar situations are recorded in Mexico and Indonesia.

In 2007, officially recorded remittance flows to developing countries was about four times the volume of all official development assistance. In Senegal, for example, its volume in 2007 was 12 times greater than the total foreign direct investment. Remittances are also very important in some small countries like Tajikistan, where it represents up to 45% of its GDP. In the 20 countries that receive more remittances, the proportion exceeded 9% of GDP in 2007, which means, for example, that migrant remittances exceeded the gains made by the main export product.

As shown in the chart below, migrant remittances worldwide exceeded \$ 370 million in 2007. But surprisingly, the poorest of the poor (countries with lower human development index) practically do not participate in the distribution of the pie, not even 1% of the total.

THE ROLE OF MICROCREDIT IN POVERTY EXIT

Microcredits are small loans to low-income borrowers who do not have access to loans from a traditional bank. Small loans make it possible for many people without resources to finance a project for themselves.

Most people in the world are working in family or independent enterprises. The micro-enterprise, like any other business, need external resources to finance itself, either to survive or grow.

The reasons why conventional banks do not enter this market of high interest rates vary:

- The costs are very high and the volumes are very small.
- The infrastructure needed is complex and costly.
- The risks are very high.

Since people with low income levels cannot access normal credit at a bank, because there is no guarantees, those people and the micro-enterprises search for other solutions; like "loan sharks" or opportunistic creditors, who can charge interest considered as usury by international trade rules (5% to 30% per week per

month). These are short term loans, which last a few days. As a result, the production process in which these individuals or micro-enterprises are involved have to be highly profitable to pay the loan, but profitability is driven largely to the lender. Microcredit is born as an alternative for those charges - usurious loans, with high interest rates and only generating wealth for the creditors.

One can distinguish various forms of impact of microcredit:

- a. From a social characteristic, to increase revenue to improve the quality of life of families.
- b. On the business, because it is specifically intended to promote new businesses or improve existing ones.
- c. The impact on financial markets, to increase the supply of financial products and services, expand the market for financial institutions and subsequently generate economic activity in other sectors.
- d. And of course, it is a proven mechanism to combat unemployment and therefore, has important social implications: either through self employment or wage employment generated by small firms that can develop their businesses through microfinance.

We will refer to different experiences with microcredit. The story of microcredit was developed from the Akhter Hameed Khan proposals, a development activist and social scientist of Pakistan, known for its pioneering initiatives relating to microcredit and microfinance, cooperatives of farmers and rural training programs in developing countries. He promoted participatory rural development in Pakistan, Bangladesh and other developing countries. His major contribution was the creation of a comprehensive rural development project, known as the Model Comilla in 1959. Dr. Khan followed the ideas of the pioneer in cooperative, the German F.W. Raiffeisen, who developed the model of cooperative credit in the nineteenth century, in Rhineland.

Although the Comilla model cannot be defined as successful, it had important implications for rural development in his community and was a valuable precedent for later experiences of cooperatives and microcredit around the world. The program's objective was to provide its beneficiaries, mainly farmers, with mech-

	REMITTANCES			Official Development Assistance (ODA) received (net disbursements) per capita (US\$)	RELATIVE SIZE OF THE FLOW OF REMITTANCES		
	Total revenue (US\$ million)	Total disbursements (US\$ million)	Total per migrant (US\$)		Per capita (US\$)	Per % of net ODA received	
Classification according to the HDI	2007						
Africa	36.850 ^T	4.754 ^T	324	36	44	123,9	
Asia	141.398 ^T	62.220 ^T	1.448	9	36	..	
Europe	119.945 ^T	126.169 ^T	1.990	..	160	..	
Latin America and the Caribbean	63.408 ^T	3.947 ^T	798	10	114	1.649,5	
North America	2.972 ^T	45.643 ^T	..	..	..	..	
Oceania	6.193 ^T	5.090 ^T	..	..	..	..	
OECD	124.520 ^T	165.254 ^T	1.864	..	108	..	
European Union (EU27)	96.811 ^T	88.391 ^T	2.208	..	196	..	
Gulf Cooperation Council	39 ^T	25.044 ^T	2.797	..	..	..	
Very high human development:	86.313 ^T	172.112 ^T	1.845	..	92	..	
Very high: OECD	83.776 ^T	163.592 ^T	1.919	..	91	..	
Very high: countries non members of the OECD	2.537 ^T	8.550 ^T	..	..	..	..	
High human development	92.453 ^T	59.434 ^T	1.705	9	101	..	
Medium human development	189.093 ^T	15.403 ^T	446	12	44	564,9	
Low human development	2.907 ^T	874 ^T	133	51	11	40,2	
World total (not including the former Soviet Union and Czechoslovakia)	349.632 ^T	221.119 ^T	1.540	14	57	..	
World Total	370.765 ^{Ta}	248.283 ^{Ta}	1.464	14	58	..	

(Remittances by percentage of GDP, 2007)

			FLOW OF REMITTANCES ACCORDING TO CONTINENT OF ORIGIN					
	Per % of GDP	Per % of IED	Africa	Asia	Europe	Latin America and the Caribbean	North America	Oceania
			% of total flow of remittances)					
	3,9	0,7	12,2	16,4	57,4	0,0	12,5	1,5
	..	0,4	0,3	45,8	17,3	0,5	32,8	3,4
	2,8	0,1	2,2	6,3	62,0	4,2	20,4	4,6
	..	0,6	0,0	2,7	9,7	6,2	81,2	0,2
	..	..	..	..	..	..	..	..
	..	..	..	..	..	..	..	..
	0,8	0,1	2,0	3,6	44,1	5,2	39,5	5,6
	1,5	0,1	2,7	5,9	58,5	5,1	22,5	5,4
	..	..						
	..	0,1	2,7	5,0	55,3	6,8	22,8	7,5
	0,6	0,1	2,8	4,6	55,5	6,9	22,7	7,5
	..	..	..	..	..	..	..	..
	..	0,3	0,2	9,1	35,8	3,4	49,4	2,2
	..	0,7	1,6	37,8	21,3	1,0	35,9	2,3
	..	0,8	34,7	2,5	53,0	0,0	9,6	0,2
	..	0,2	1,8	21,4	33,2	3,4	36,4	3,6
	..	0,2	1,8	21,1	34,7	3,2	35,4	3,7

anisms that enable them to rapidly expand production and sales, and ultimately, their economic well-being. Its main problem was the lack of adequate local infrastructure, especially roads, drainage systems and irrigation systems. But although the government had the resources to build this infrastructure, it had to create a system that allowed its maintenance. In this case it was essential to the development of local institutions capable of performing this type of maintenance and local management. In addition, the model management infrastructure was complemented by a system of cooperative credit in two levels, with primary cooperatives in the villages and federations of cooperatives at the district level, while the system is complemented by provision of common services to farmers, with for example, freezers to maintain the production.

Another experience, well known internationally, was developed from 1970 after a devastating cyclone that hit coastal regions of eastern Bangladesh and killed 300,000 people. Fazle Hasan Abed's offices in Chittagong became a refuge for victims and some friends formed an organization to help those most affected.

Thus, BRAC¹² - Bangladesh Rural Advancement Committee was born, one of the largest and fastest growing NGOs in the world, making its founder the largest microcredit lender in Bangladesh, reaching disburse up to one billion dollars per year. But BRAC is also an internet provider and has within its organization an university and primary schools.

What BRAC makes is unique. It is its business combination with a particular view of poverty as a way to change society and the mentality of the wealthy. The organization, whose priority is the woman, which represents 70% of children of school age from BRAC, receives 80% of its financing from the operations and the remaining 20% of donations to developing countries.

Three decades after its foundation, BRAC operates in over 69,000 villages in Bangladesh, with interventions in the areas of development, which pass through primary education, basic health care, support for agriculture and human rights, microfinance and business development. It is currently the largest development organization in the world in terms of interventions and, along with Bangladesh, is also active in Afghanistan, Pakistan, Sri Lanka and Africa, Tanzania, Uganda, Liberia, Sierra Leone and Sudan.

Next, in chronological order, underlines also ACCION International¹³, particularly, which is a private, nonprofit organization with the mission of giving people the financial tools - microcredit, vocational training and other financial services - to escape poverty. ACCION was founded in 1963 and issued its first microcredit in 1973 in Brazil. Today, the 21 microfinance institutions affiliated with ACCION International lending as low as \$ 100 to micro entrepreneurs in 22 countries in the Americas, the Caribbean, Asia and Africa. In the last decade, ACCION partners have lent \$ 7.6 billion to over 4.1 million micro entrepreneurs, 65% of whom are women. Currently, ACCION has a portfolio of about \$ 1.2 million loans, with 1.9 million customers.

It is also particularly known the experience of Grameen Bank¹⁴, founded by economics professor Muhammad Yunus, who started his fight against poverty in 1974, during the battle of the famine in Bangladesh.

The Grameen Bank is a social microcredit bank founded in Jobra (Bangladesh) in 1976. Since then, it has become more than one bank. In addition to loans, the bank also accepts deposits and directs textile, power or phone companies. In Bengali, Gramin means "village". The Grameen Bank received the Nobel Peace Prize in 2006 along with its founder, Dr. Muhammad Yunus "for their efforts to create economic and social development from below".

Yunus says that one day, talking to a woman who produced bamboo chairs, he asked if she survived well, as she was very poor. She said no and that almost everything that she earned she delivered to the supplier of bamboo, which in turn, was the one who bought the chairs and who fixed the selling price. Yunus asked around the village and found about 40 people in the same situation. With \$ 27, he gave the first credit to everyone at very low interest rates. And the experiment worked. The people of that village began to have money to eat, educate their children, while manufactured and sold their products.

The Grameen Bank Project became a formal bank under a special law passed for its creation in 1983. It is owned by the poor borrowers of the bank, most of whom are women. This organization works exclusively for them. Borrowers of Grameen Bank now own 94% of the bank's total capital. The remaining 6% are owned by the government.

The Grameen Bank requires no warranty for their microloans, since the bank has no intention of bringing to justice in case of any borrower does not return the loan, therefore does not require the signing of legal documents.

Although each borrower must belong to a group of five members, the group is not required to offer any warranty for the loans of each of its members. There is no form of collective responsibility, so group members are not responsible for paying the debt of a member who fails to comply with its obligations, but the whole group loses the ability to repay new loans if they don't reimburse. This creates economic incentives for the group to act responsibly, so that the bank is economically viable.

The total number of borrowers in 2007 reached 7.3 million, of which 97% are women. The total volume of loans from Grameen Bank since its inception was 6.55 million dollars. Of this amount, 5.87 million were returned. The rate of repayment of loans is 98.35%. Since its creation, Grameen Bank made a profit every year except three. It regularly publishes its annual accounts audited by two prestigious organizations.

The Grameen Bank began offering home loans in 1984. The maximum amount of a loan is Tk 15,000 (around \$ 220) that are returned within 5 years, in weekly installments. 650,000 houses were built with these loans.

Some borrowers are moving ahead in businesses faster than others for various positive factors such as proximity to the market by the presence of experienced men in the family, etc.. The Grameen Bank provides larger loans, called micro-credit for the more agile. So far 1,229,460 members signed loans for microenterprises. A total of 418 million dollars in loans was disbursed in this category. The average loan is \$ 320. Plows, irrigation pumps, transport vehicles and boats for river transportation and fishing are popular items for small business loans.

Each year scholarships are offered to children of members of Grameen Bank, giving priority to girls to encourage them to achieve better academic qualifications. In October 2007, were awarded \$ 760,000 in scholarships to 50,503 children. Students who manage to reach the third level of education have higher loans to study, including classes, living expenses and other school expenses. In October 2007, 19,631 students received loans for higher studies. Of these, 18,394 are studying in different universities, 230 in medical schools and 403 in engineering schools.

Until now, Grameen Bank has loaned to a total of 295.235 people to buy mobile phones and telecommunication services in nearly half the villages of Bangladesh. Since then, the phone carriers have decided to develop their activities in these villages where there has never been the telecommunications service.

About 98,500 people practicing beggary joined the program. The total disbursements reached \$ 1.5 million, with an average loan of \$ 15 a beggar.

According to an internal study, 64% of Grameen borrowers have already surpassed the poverty threshold.

MICROCREDIT EXPERIENCES IN LATIN AMERICA.

In Latin America there are numerous organizations dedicated to microfinance. The reason that these organizations have grown in Latin America is because they cover the shortfall in the market. Not only NGOs are involved in this, but also conventional banks in countries like Ecuador, Bolivia (FIE BANK LOS ANDES, Ecofuturo) or Peru (Banco Solidario, BancoSol and Mibanco), where they grew up through a business model that provides services to the low income population. In Colombia there are several microcredit organizations (Cooperative Entrepreneurship, Finamerica, Foundation Santo Domingo Foundation, etc...). It has been legislated significantly on microcredit in almost all legal systems of each country.

Despite the success of microcredit there are the pros and cons for its operation. So, there are some criticisms, among which are:

- The main beneficiaries are the poorest, vulnerable and excluded in developing countries. This is a discussion between NGOs, targeted to the poorest, and credit unions that accept any type of client.
- It hides the real causes of poverty and underdevelopment and makes the poor directly responsible for their situation.
- They serve to disable international cooperation policies, transforming them into bank policies, converting poverty into eternal debt.
- Debt becomes more vulnerable to those with less.

- For many women, microcredit is to assume a burden in their domestic occupations, which are already enormous, raising tensions in the care and education of their children.

It is true that women are the ones essentially working for the reimbursement of microcredit and are more responsible than men to meet the debts incurred, but are actually men who decide directly on the employment and micro management.

The truth is that the United States, along with Bangladesh, is the world reference in microfinance, especially in countries like Bolivia and Peru, showing high levels of profitability, efficiency, solvency, etc..

But there are interesting experiments, for example, in Central America, the International Action Network or REDCAMIF¹⁵: 96 lending institutions associated with six national networks, with more than 800,000 customers and 728 million dollars in loans.

In contrast, other Latin American countries, the experience is very limited. It is estimated that micro-credit in Argentina will reach 715 million pesos (about \$ 230 million) by 2012 and will go to 540,000 low-income people.

MICROFINANCE IN BRAZIL

The microfinance industry in Brazil¹⁶ is still at an early stage of development. Its potential is too high, since it is estimated that about 70% of the population is excluded from the financial system. However, in Brazil there are being developed some pilot world experiments and there is an institution particularly interesting.

According to a study commissioned by the Brazilian Institute of Municipal Administration (IBAM) in 2005, the demand for potential microcredit candidates was estimated in 13.5 million. About half of the economically active population works in microenterprises - up to five employees -, but it is estimated that only 5% of these companies have access to bank credit.

For references to evolution, microcredit operations mobilized 316.1 million reais in 2001 distributed among more than 200,000 customers, while in 1997 only 39 million reais were granted to about 29,000 customers. In 2002 there were 56 reg-

istered microfinance institutions in Brazil, compared to only nine in 1992. In any case, according to the Ministry of Labor, Employment and Income in Brazil, in 2009 there were over 150 microfinance institutions in Brazil, and yet, despite this, the potential demand is insufficiently supplied.

Microcredit programs are concentrated in urban areas. Public programs are characterized by preferentially attend to the poorest segment of micro entrepreneurs, informal and marginalized, while the private programs in Brazil focus on providing services to micro entrepreneurs autonomous and cooperative.

All programs offer credit for production, but some also diversify their offerings to include insurance and discounts for checks and promissory notes (commercial paper). Interest rates applied are slightly higher than the bank. Only a few programs, both public and private, impose the requirement to train clients.

Usually, micro-credit institutions operate in partnership with other national and local institutions such as provincial and local governments, the Bank of Brazil and Caixa Economica Federal, Banco Nacional de Desenvolvimento Economico e Social (BNDES), the Brazilian Service to Support Micro and Small Enterprises (Sebrae), universities, local business associations, international and training donors, and unions.

There are many interesting private experiences developed in Brazil in the field of microfinance, among which we highlight the UNO program.

The UNO program created in 1973, as Northeast Union of Assistance to Small Organizations, for many years has funded thousands of small businesses in Pernambuco and Bahia and was the main reference for the expansion of microcredit programs in Latin America. It also encouraged partnership activities by helping to create cooperatives of artisans and buying groups. Despite this history of success, UNO disappeared after 18 years of activity, not able to facilitate its self-financing. It is estimated that in the wake of the UNO program were created about 50 microfinance NGOs throughout Brazil, particularly during the second half of the nineties.

Based on the experience of the UNO program, Solidarity Group methodology was applied and spread to other experiences in Brazil. In Porto Alegre, was established the Centre for Support to Small Businesses Ana Terra (CEAPE) in 1987, an NGO that was supported by the Interamerican Development Bank (IDB) to establish an initial capital. The success of this initiative led it to be reproduced in several

REDCAMIF COVERAGE						
Networks	Country	IMF's Affiliates	Customers	Portfolio (million dollars)	% of Women	% of Rural Portfolio
...	Guatemala	16	163,725	90.00	81%	65%
...	El Salvador	11	91,608	136.71	66%	34%
...	Honduras	23	180,821	175.0	68%	36%
...	Nicaragua	19	354,974	234.2	60%	55%
...	Costa Rica	17	19,691	76.68	29%	25%
...	Panama	10	9,558	15.77	37%	43%
	TOTAL	97	820,377	728.4	57%	43%

Source: Estimates National Networks, 2008

states with the support from BNDES, and currently there are 12 centers like CEAPE to support small businesses.

In 1989, the Woman's Bank (section Bahia), with the support from United Nations Children's Fund (UNICEF) and the IDB, also launched a microcredit program that uses the methodology of Group Solidarity. This bank, which initially catered only to women, granted by 2002 more than 9,000 credits. It currently has a network of offices in the states of Parana, Santa Catarina, Rio Grande do Sul, Amazonas, Minas Gerais, Rio de Janeiro and Bahia.

In the progress made by microcredit programs in Brazil, state involvement has been crucial. In fact, the major programs have public participation, directly or indirectly. On the other hand, microcredit programs operated directly by the public sector, account for a preponderant share of almost 66% of total loans.

But in 1996, the national government appropriated 150 million dollars in special deposits to BNDES for the implementation of the Popular Productive Credit Program, designed to support microcredit institutions. BNDES, as an administrator and manager of public funds, transfers it to pre-qualified entities for the granting of microcredit. The terms of loans from financial institutions are established

with a repayment period of eight years, with interest rates of long-term (8% -12% per year), with the grace of two years. Under this scheme, until 2002, it landed 53 million reais to 32 institutions.

BNDES has contributed to the creation of a network of microcredit transfer agents, which includes entities such as cities, NGOs, unions, public finance, development agencies, credit unions, credit societies, credit for micro entrepreneurs and commercial banks.

The system has also been supported with the appropriate legal system: in 2001 it legalized the activities of microcredit NGOs and was established the figure of the Civil Society Organization of Public Interest (OSCIP). Also in 2001, it was regulated the status Credit Societies for Micro-entrepreneur (SCM), which allowed the private sector to act legally as microfinance institutions in the first level and also had allowed the OSCIP to make profit without losing access to public funding (although it passed to be taxed on its profits). During the government of President Lula it was developed a series of actions to facilitate microcredit. In April 2005, was approved by decree the National Program of Oriented Productive Microcredit, which enables access to all microfinance institutions to federal resources of the Fund for Workers Assistance (FAT) and requires that 2% of the deposits of banks to Central Bank are intended to micro-credit. In total it is estimated that these funds are approximately 400 million dollars per year, which ensures a significant and permanent source of funds for microfinance, however, it cannot be granted to an interest rate above 4% per month. It was also created the People's Bank of Brazil, with the goal of extending microcredit throughout the country.

Crediamigo¹⁷, a program launched in 1998 by Banco do Nordeste is intended to provide small loans to low-income entrepreneurs in Northeast Brazil and northern Minas Gerais and Espirito Santo (more than 1,400 cities), one of the areas with the highest rates of social exclusion in Brazil.

It is the only microcredit program implemented only by a public bank. The program runs completely autonomously of bank activities. Along with providing credit, provides management training to the beneficiaries. Until 2002, there were 600,000 operations performed and this year relied on 50,000 customers, making it the largest microcredit program available in Brazil.

In 2007, Crediamigo disbursed a total of 794.2 million reais, distributed in 824,700 micro-loans. This represents 86% of total amount of microcredit in the country that year, with 963.4 million reais. Crediamigo arranged in ten years of operation the mark of 4220 billion reais. These loans are very focused on trade (92%) with 5% in the rest of the service sector and 3% in industry. The average credit granted is relatively high (about \$ 450 per borrower).

For the agricultural sector was developed Agroamigo specific program, that between 2000 and 2005 extended a loan of approximately \$ 500 million.

According to a recent study by the Getulio Vargas Foundation, based in Rio de Janeiro, 60.8% of customers of Crediamigo left the poverty line.

It has been of great importance to the initiative of local governments the creation of People's Banks, including Portosol, established in 1996 in Porto Alegre, Rio Grande do Sul, a model followed in recent years to the creation of about 20 institutions microcredit in regional and local levels. Among these initiatives was the program Confia, in Sao Paulo, launched in 2001 and currently the largest municipal program of its kind in Brazil.

The Brazilian microfinance market, despite recent efforts by President Lula, has not yet been developed to levels similar to those of neighboring countries such as Peru or Bolivia. But developments are ongoing. Therefore, Bradesco, Santander and Banespa provide individual loans of up to 1,000 reais and Itaú up to 500 reais, at monthly interest charge of 2% with payment terms up to 12 months. However, many analysts doubt the sustainability of the system, since the recovery of only 2% per month is not attractive enough for private banks to invest considerable amounts in microcredit.

CONCLUSION

It is clear that micro-loans, articulated through the Grameen Bank model (credits to the poor, especially women) or Latin American (credit unions, without target population) are two interesting experiences that have had very positive results in several developing countries, although there have been notable failures (particularly in relation to expectations). This is an important discussion in the world of

microfinance, with some institutions focusing only on the poorest people, models which reject, in general, credit cooperatives for going against their basic philosophy: the principle 1 of the Declaration on a cooperative states that "Cooperatives are voluntary organizations open to all people willing to use their services and willing to accept the responsibilities of membership, without discrimination as to sex, race, social class, political or religious standpoint."

Microcredit programs face the unsolved problem to balance their social mission - to offer credit to the less fortunate -, and its goal of self-sustainability, which appears as a condition to avoid dependence on public or international subsidies and thereby ensure the continuity of the programs over time.

Although there is great potential of complementarities between microfinance and local development policies, in many cases this interaction is almost inexistent. In my opinion, there are many elements to consider that facilitates obtaining positive and long term results. In the end, the most important thing in the world of small and medium enterprises and self employment is to facilitate the entrepreneurial culture. There are several key elements in this process. Issues such as access to not strictly financial services, human resources training, incentives to corporate culture, the articulation of education and training with the production profile of each area, the availability of adequate credit lines to small businesses, providing business services that enable the availability of information of markets and technologies, promoting cooperation between enterprises, the integration of productive chains, local networks of suppliers and customers, the promotion of collective initiatives of purchasing and marketing, which are among other aspects, fundamental policies to support small businesses.

Microcredit can be an important component of those policies to facilitate access of small entrepreneurs to the financial system. But implemented in isolation, outside the context of development policies and competitiveness, loses much of its potential and, by itself, does not guarantee the success of entrepreneurs, evolution over time and consolidation of stable and competitive companies.

The analysis of experiments in different countries gives the impression that the microcredit is not an instrument that has the ability to generate mass employment, by itself, since the growth of micro businesses are much more simple than the access to financial resources, although this can sometimes be a key issue. But either

way, it is clear that access to adequate and sufficient financial resources facilitates self-employment and generates income to populations not assisted by the financial system. Therefore, microcredits are a seed of economic growth by enabling the creation of new production units and improve the flow of financial resources.

We have reviewed many of the arguments in favor of microcredit, and some of the arguments against it. To point out some more, the microcredit movement has also received criticism from those who think that some loan programs charge very high interest rates. In addition, there are concerns that the funds that are used for microfinance are funds for other needs such as sanitation, water supply or educational programs. Credits may allow the poor to improve their situation, but these loans do not eliminate other basic needs such as infrastructure and social services. Other problems that have been criticized about micro-credit, is the inability to help the poorest of the poor or the dependency that is generated with microcredit.

In any case, the world of microcredit in developing countries, and also to a lesser extent in developed countries, is a reality. The World Bank estimates there are about 7,000 microfinance institutions, serving nearly 16 million poor people in developing countries.

My particular conclusion on all this discussion is that the subsistence economies, like any tool to create jobs and improve the quality of life, are always interesting. But its long-term viability is more than doubtful. Therefore, to articulate territorial development policies on this economic model does not seem a reasonable option, unless they are duly complemented with facilitating models, and micro-credit and an appropriate advice that allows financing production processes that generate added value.

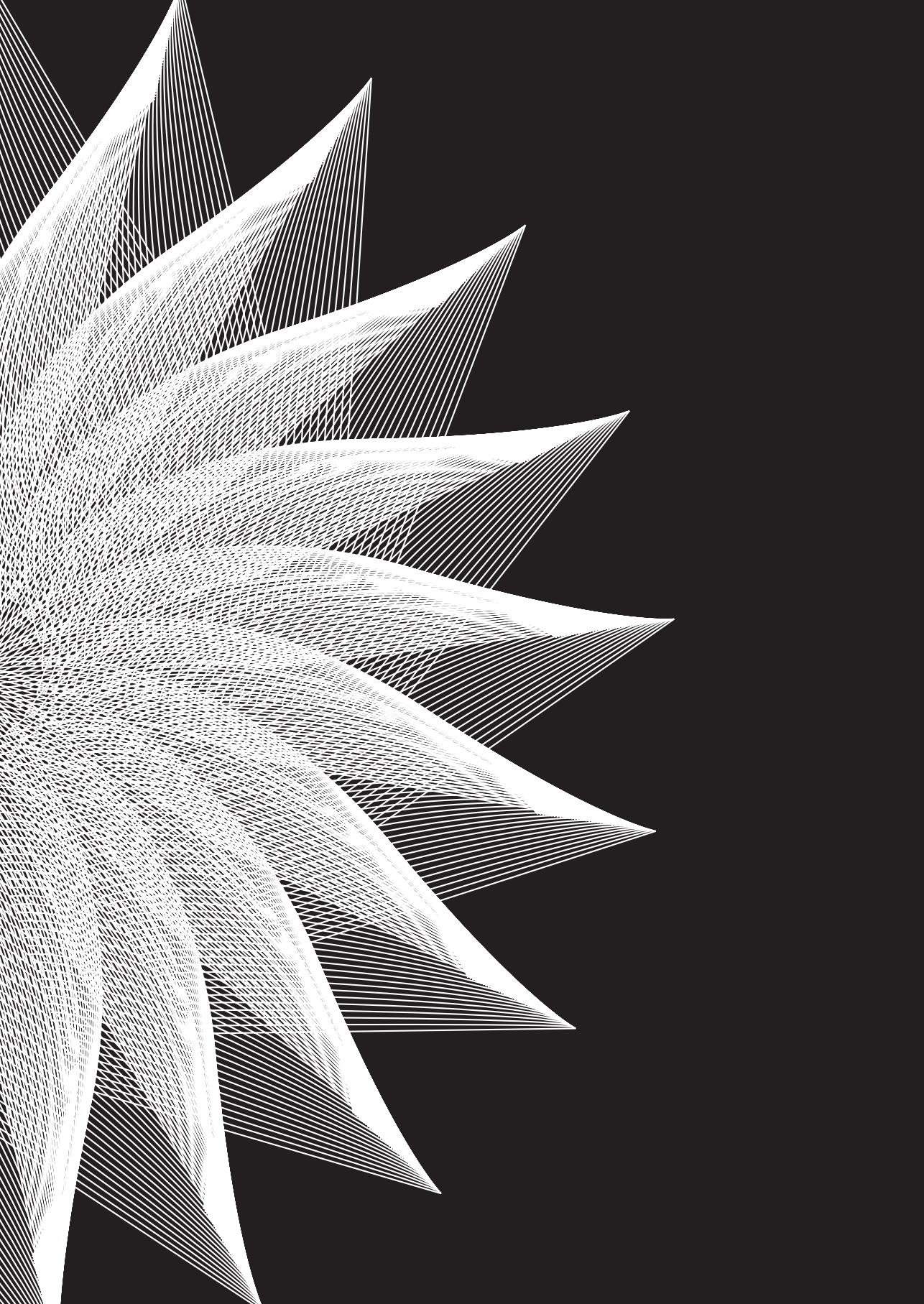
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TERRITORIAL RESPONSIBILITY: IMPERATIVE FOR URBAN DEVELOPMENT IN BRAZIL

LIANA PORTILHO MATTOS

The guiding principles of the Integrated Landscape Management are based on the assumption that urban dynamics is itself complex and encompasses contradictions. To overcome them, a transdisciplinary approach of the urban phenomenon and especially of human intervention on territory is fundamental and must be given in the participatory form. Social conflict and imbalances arising from the environmental management of the territory, whether by a state action, whether by entrepreneurship initiative of private capital, can be mitigated if projects are designed and implemented under a multidisciplinary perspective, seeking a broad understanding their impacts on the urban territory in an integrated manner.

This article proposes to discuss the many facets of urban management in large cities, namely, the need to build a sense of territorial responsibility in urban management from the perspective of urban legislation. The system of rules governing the management of cities in Brazil has advanced in order to absorb the multiple dimensions of urbanization and its impact on the lives of individuals. In the wake of this view was approved a federal law for urban development to regulate the management of Brazilian cities - the City Statute, 2001. Under this law, the management of cities in Brazil cannot afford to stay at the margins of integrated planning and from the ample participation with multiple stakeholders - society, businessmen, other actors and state entities - under penalty of being submitted, including, to financial problems, not foreseen by the implementer, overcharging the action and compromising objectives of the enterprise, as is the case of

expropriations in the public interest, which will be particularly analyzed in this article. Thus, it is necessary to examine carefully the question of the cost of urban land, order to prevent excessive speculation that would impede the implementation of urban improvements and construction of public facilities for society. The recovery of urban capital gains by the Government, although it entails advanced study in other countries, is still somewhat controversial in the Brazilian case law and will be the central object of analysis of this article.

NEW URBAN LEGAL ORDER: 1988 CONSTITUTION AND THE RULE OF LAWS OF THE CITY

The uncontrolled growth of Brazilian cities have generated multiple different impacts on social, economic and cultural life, especially in territory of metropolitan regions, which are characterized by high rates of overcrowding and the use of common services by the municipalities that comprises it.

To fulfill the constitutional rule laid down in art. 25, § 3, of the Constitution, the States must exercise the management of metropolitan issues, sometimes articulating politically, legitimate interlocutor (and therefore privileged) and why not, a mediator and consensus mediator among municipal actors involved in the difficult struggle to give up earnings on the distribution of the burden inherent to the shared use of services and goods in the urban territory.

This brief reference to the metropolitan context aims to boost the importance that the new legal-urban order is given to the issue of mandatory urban planning, territorial responsibility and right to the city – today rights expressly recognized by federal law for urban development (Law n. 10.257/2001 - the City Statute).

The territorial responsibility has long ceased to be a utopian ideal to transform, currently, in a need for public management in tune with the same constitutional principles that require obedience to fiscal responsibility by the Administration. The use and occupation of urban land generate bonuses and burden, not only for the property owner, but also for the residents of the city where it lies and their own political structures. Furthermore, we know that the urban legislation holds, in itself, the capacity to directly impact the real estate market dynamic and hence the cost of access to urbanized land.

Given the peculiarities of the urbanization process in Brazil – intense and disordered - the 1988 Constitution provided the issue of a federal law for urban development in order to “regulate” the principle of property social function already recommended and to establish the goals (“to order the full development of the social functions of the city and property”) and guidelines of urban policy in the country. Thus, it can be stated that the 1988 Constitution and City Statute of 2001 consolidated a new legal-urban order in Brazil, an order founded upon the matrix principle of Urban Law, which is, the social function of urban property.

Understand that a new legal-urban order is in force in the country means recognizing - and give effectiveness - the new legal instruments, as well as revisit older tools and legal concepts, such as the expropriation, joint urban operations, the contribution of improvements and recovery of urban capital gains.

COGENT LEGAL PRINCIPLES IN PLANNING AND MANAGEMENT OF URBAN LAND

With regard to the use and regulation of the metropolitan soil, it is the Member State responsibility to exercise supra-municipal regulation on the subject in order to harmonize the provisions contained in the municipal laws, which are consistent with what national legislation has on the subject (the Statute City, Civil Code and Law no. 6.766/79, above all). This expertise is of paramount importance, especially if we take into account the impacts caused by the absence of urban planning, affecting sectors such as transport, housing and labor, among others.

The management of land use in metropolitan areas requires planning and continued action of the different spheres of government involved. However, it is necessary to understand that it is imperative the management, even without prior implementation of tax planning instruments, above all, involved. Prevail today, several legal principles that, harmoniously integrated, require that the government lead the process of planning and urban management ruled under the imperative of territorial responsibility, and which can note: the supremacy of public interest, legality, morality, efficiency, social function of property, equitable distribution of benefits and burdens resulting from urbanization, the recovery of real estate capital gains, and seal the enrichment without cause.

All these principles are expressed in the Brazilian legal order, and have echoed on further studies, court decisions and administrative practices committed to tackling the serious issue of non-equitable urban development in the country. And in the wake of these principles, urban-legal instruments were also invented or “re-freshed” with the order to give effect to the ideal of equality and social justice that characterize the urban norm. Thus, new studies have been produced on distinct themes, but closely intertwined in the urban setting, as expropriation, forms of recovery of capital gains real estate, urban operations consortium, among others.

Regarding the recovery of real estate capital gains aroused from investments promoted by the government in urban territory, it is a cogent principle, under the City Statute, which implies obligation of the government attend to, whether through specific tax instruments (property tax, improvement fees), whether through “Redoing the semantics” or contemporary interpretation, of legal institutions related (expropriation in this case), as seen from the express statutory provision contained in its art. 2, XI.

XI - Recovery of government investments that have resulted in the value increase of urban properties.

Moreover, in the same article, 2, IX, of the City Statute, is expected another of the cogent legal principles to guide the interpretation of contemporary notion of “fair” expropriation compensation, when determining compliance of “fair distribution of benefits and onus resulting from the urbanization process.”

In other words, from this principle of urban equality, comes the idea of “fair compensation” in expropriation, is far from the individualistic perspective from owner of the property. The fair, here, refers to the public and social interest, considering that the social function of urban property is the structuring principle of all other standards of urban policy as stipulated in the Statute of the City:

Art 2 The urban policy aims at organizing the full development of the social functions of the city and urban property ...

Not only the City Statute, in express, but, also the Civil Code prohibits the distribution of capital gains arising from urban real estate, due to public investments, to be earned by the property owner, for, thinking it otherwise, would be to confirm “social injustice of differentiated urban opportunities “in the words of Sonia Rabello de Castro, which is rejected explicitly in the general law business by virtue of the general principle of law regarding unjust enrichment, when it says:

Article 884. Whoever, without cause, enrich at the expense of others, will be required to repay the improperly received, with the update of the monetary values.

Single Paragraph: If the enrichment has for its object something particular, who received it, is bound to give it back, and if the asset no longer exists, the refund will be made by the value of the asset at the time in which it was required.

Article 885. The refund is due, not only when there has been no cause that justifies it, but if it ceased to exist.

Article 886. There shall be no refund by enrichment, if the law confers the victim other means to compensate the loss suffered.

RECOVERY OF REAL ESTATE CAPITAL GAINS AND EXPROPRIATION

The idea of recovering the capital gains arising from real estate investments performed by the government involves the need to revisit the institution of expropriation and, above all, the notion of “fair compensation”, given that, for strength of that urban principle, it cannot be conceived that this notion corresponds to the value of the property, when such recovery is due to factors beyond owner. In this sense, the principle of recovery of real estate capital gains points out to the need to understand, in its literal semantics, the concept compensation, which is none other than the “restoration of property damage.” If the concept of “compensation” is understood in this sense, it is necessary that it put away any expectation of future earnings potential derived from the property, even if due to the change of urban coefficient, the implementation of new projects, and the realization of mega-events, among others.

Thus, in the context of obedience to the principle of territorial responsibility - Implicit in the new legal-urban order - it cannot be conceived that the notion of “Fair” expropriation compensation is solely dictated by technical norms (ABNT), deprived of cogent nature, that often ignore the existence of this new legal-urban order founded on the constitutional principle of fulfillment of social interest for urban property (art. 5º, XXIII of the Federal Constitution), whose content defines, simultaneously, the very possibility of the exercise of the right of property.

Although the principle of the social function of urban property is laid down in Brazilian constitutional text since 1934, only the 1988 Constitution defined in a more consistent and comprehensive way and even previewed – in its art. 182 -, that a “federal law of urban development” would regulate matter, which occurred in 2001 with the enactment of the Statute of the City, a regulatory mark of the new legal-urban order in Brazil.

Although the City Statute provides tools for recovery of urban capital gains aroused from investments promoted by the Government (joint urban operations, property tax and benefit charges), it is certain that such urban normative policy and cogent cannot be ignored even when the administrator applies to the legal instrument of expropriation of urban land. Even when the government does not to hold the tax instruments suitable for recovery of these gains, it is not relieved from fulfilling its territorial responsibility and other duties inherent to it.

Such liability shall be satisfied if regarding to the constitutional and juridical principles and mentioned, among which it is highlighted the supremacy of public interest. In this sense, the over-valuation of the cost of urban land by investment the public power itself generates unforeseen and equitable onus for the public administration, if understanding takes place that the value of the expropriation should equate to the market value of the property.

From a historical perspective, it is worth remembering that the attribute of “fair” to compensation, was introduced by the Charter of 1934, and it is imperative and critical to inquire if the just term was introduced in the Constitution to equate the value of compensation to market price, or to minimize the market value of expropriated property, for the just recovery of public investment ‘appropriated’ to estate prices?, “as Sonia Rabello de Castro recalls. In that sense, the term can be interpreted, minimum, just from two perspectives: “the dispossessed individual, and that society,

which pays the expropriation through the state. (...) Between these two perspectives, Brazilian law sediment the one that favored the individualist perspective of compensation, paradoxically to the fact that the Federal Constitution of 1934 have introduced, explicitly, references on the idea, that later, came to be summarized in the expression social function of property. “²

It should be registered, finally, that as mentioned, the aggregation of added value to urban property can be derived, also, by assigning to it a more favorable urban index. In this case, in the same way, it is unacceptable that the private owner earn this “profit” with attributed cause, “being certain that, today, not only the government cannot fail to capture this liberality given to some, as it is forbidden, when the expropriations are being paid for. It would be, thus, if continuing to act, a double liberality: first it gives to a private land a free value with a public index, and when it needs to be acquired, it is determined a value be paid, called real, or market based, which incorporates the increased value in question, gracefully! “³

CONCLUSIONS

The constitutional law gives new principle logic content to mark the interpretation of “fair” expropriation compensation, and the mandatory content of the guidelines established in the City Statute, cannot be disregarded, among which stands out the recovery of urban real estate capital gains and fair distribution of benefits and onus resulting from urbanization.

The whole context of axiomatic norms contained in the City Statute and the Civil Code referred to, mean to affirm that it is no longer tolerated by the system, the free increase in value of private property based on external factors - usually social – to the investment of the owner. Admitting this hypothesis is to practice, or let happen, an event always sealed in Brazilian public rights, which is, the liberality regarding public resources.⁴

The inadequate equivalence notion of “fair compensation” with “market price” comes from repeated mistakes throughout the emergence of this notion in the Brazilian order, and was even accepted by the dominant jurisprudence, although not in accordance with constitutional principles and the legal contemporary sense.

The Brazilian city planning must be structured based on public policy aiming to promote and encourage access to urban infrastructure and basic public services - such as sanitation, public transportation, access to housing and decent home. Therefore, it is unforgettable to face the issue of compensation to be paid by the public power, aroused from the expropriation of urban real estate, fundamental to the implementation of this planning. The economic viability of the constitutional exercise of urban planning by Municipalities, States and Union depends on the discussion of the costs of urban expropriations that in Brazil can paralyze public and social projects that are important and prevalent on individual interests, exclusively.

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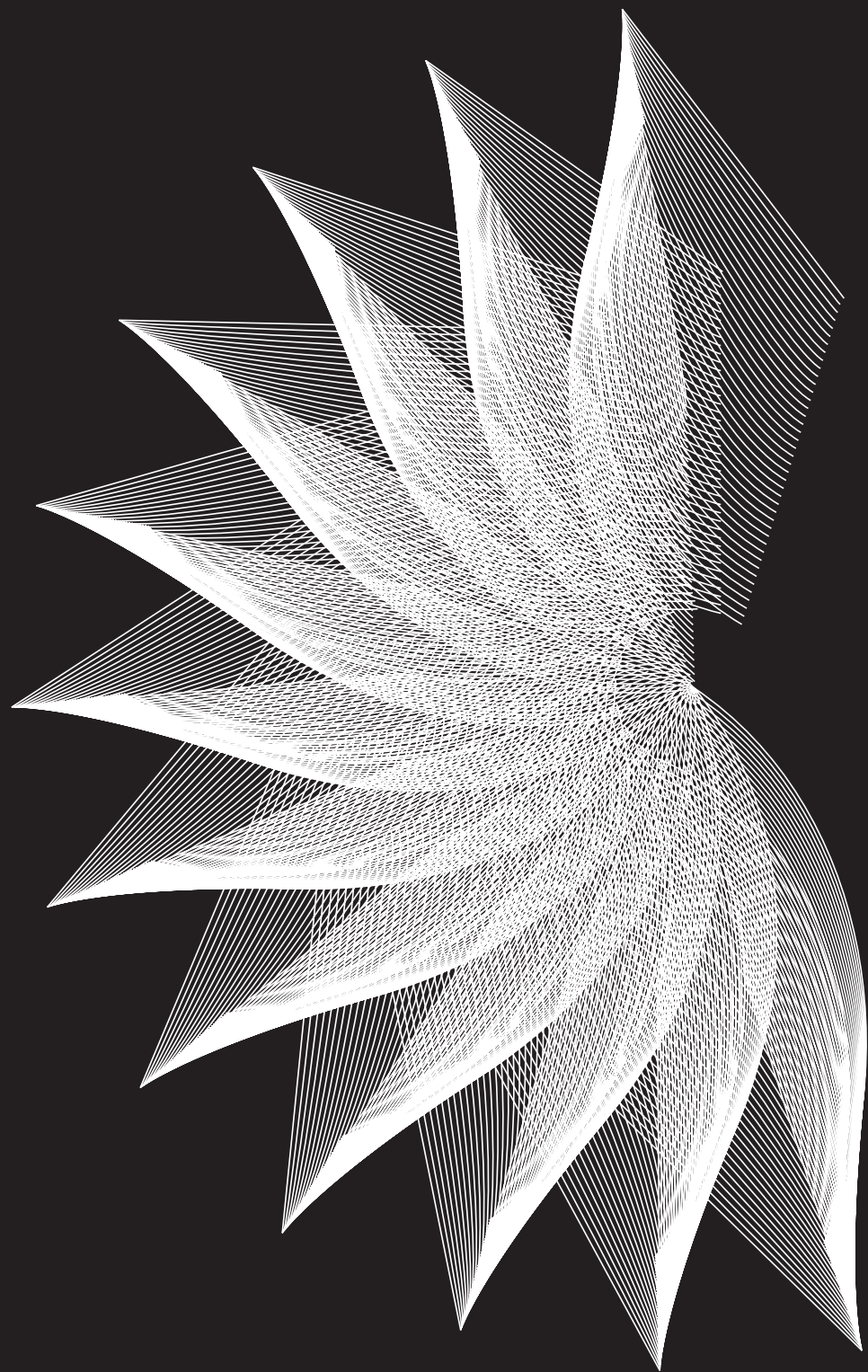
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INSTRUMENTS FOR INTEGRATED LANDSCAPE MANAGEMENT

RITA FERREIRA ANASTÁCIO

The main objective of territorial planning associated with management of the landscape¹ is to program the intervention process, based on previously defined strategic objectives, promoting the sustainability of projects and actions to be implemented within the framework of Territorial Management Instruments (TMIs), which function as regulatory instruments.

The operationalization of these instruments can be made using the technological tools, including those linked to Geographic Information Technologies, which in turn is effectively developed, could serve as instruments of prospective evaluation and monitoring of the territory.

These three types of instruments are then further developed in order to understand its usefulness in the context of integrated planning.

LEGAL INSTRUMENTS

The legal instruments of territorial management are defined by the Law on the Bases of Territorial Planning – Law N°. 48/98 of August 11th, and regulated by De-

1 In the English version of this chapter, the Portuguese word “território” was translated as “territory”, whenever it is focused on the physical characteristics of the territory, or as “landscape” whenever it deals with a more global and comprehensive approach to the territory, including diversity of perspectives, (N.T.)

cree-Law n. 380/99 of September 22nd, that was submitted to five changes being the same reflected in the Annex to Decree-Law N^o. 46/2009 of February 20nd, with a full updated republication.

By law, the territorial management tools identify the public interests pursued, explaining the criteria used in identifying and ranking, to ensure harmonization of the various public interests with spatial expression, taking into account the strategies of economic and social development, as well as, sustainability and inter-generational solidarity in the occupation and use of territory, and also to establish measures for the protection of public interest explaining their effects, particularly, when such measures restrict the territorial action of public or private entities. Identify the following territorial resources: areas allocated to national defense, security and civil protection, natural resources and values; agricultural and forestry areas, ecological structure, architectural and archaeological heritage, accessibility networks, infrastructure network and community facilities; urban systems; location and distribution of economic activities.

They are characterized according to the function they perform and are grouped into four distinct groups:

- Instruments of territorial development of a strategic nature, which reflect the major strategic options for the organization of the territory. Define the principles and guidelines which embody the political guidelines for the protection of natural resources and values, as well as, the environmental protection and enhanced areas to ensure the protection of ecosystems and the intensification of biophysical processes. Examples are the National Policy for Territorial Planning, Regional Plans for Territorial Planning and Intermunicipal Plans of Territorial Planning.
- Territorial planning instruments of a regulatory nature, which establish the system of land use. Establish the parameters of occupation and land use appropriate to the conservation and enhancement of natural resources and values ensuring the compatibility of the functions of protection, regulation and supervision with the productive uses, recreation and welfare of populations. Examples are the Municipal Plans for Territorial Planning - Municipal Master Plans, Urban Development Plans and Detailed Plans.

- Sectorial policy instruments, that program or policies embody economic and social development policies. They have territorial incidence and are the responsibility of various sectors of central government and among various areas the environment is highlighted. Define, like the first, the principles and guidelines which embody the political guidelines for the protection of natural resources and their values, as well as, the environmental protection and enhanced areas, to ensure the protection of ecosystems and the intensification of biophysical processes. Example, Sector Plan of Natura 2000.
- Instruments of a special nature, which provide a supplementary means of government intervention in the pursuit of national interest objectives, with a spatial impact. Establish preference uses, conditional and banned, determined by certain criteria for nature conservation and biodiversity, in order to adjust it to the use by the population. Examples are special plans for land use planning - Land Use Plans of Protected Areas, Use Plans for Public Water Reservoirs, Plans of the Coastal Zone Land Use, and Planning for Estuaries.

The instruments of territorial management are mechanisms and tools that agents can use during the planning process and practice of land management, which requires the existence of operating figures that allow the implementation of strategies and objectives previously defined.

In addition to the tools provided by the legislation, there are others with a broader scope, which are mechanisms of supervision, with implementation recommended as part of good planning.

INSTRUMENTS TECHNOLOGY

The geographic information technologies, including Geographic Information Systems (GIS) are technology tools in the service of territory integrated management. They are tools for decision support, with applicability in various areas of knowledge where geographical nature is present. According to Painho, (1997), are constituted by technology - *hardware*, *software* in an institutional environment (*liveware*), in order to store, manipulate, visualize and analyze data from a spatial nature, ref-

erenced to the earth's surface. However, there are two key factors that make this a complete definition. They are the geographic database (geographic information) and the infrastructure - facilities and other elements of support and skilled human resources.

To build a GIS project is necessary to implement a structured system of spatial and non spatial information, likely to be used in geographic analysis in an integrated manner, enabling the combination of its constituent elements and geographic information needed to associate to them. Because of its strong ability in the creation, automation, ease and speed in the management of geographic databases, they are important tools for thematic mapping with easy updating and management, essential to the management of the territory. It can integrate information of different nature and different origins, for multiple uses and make available powerful tools to support spatial analysis, allow the simulation of alternative scenarios of intervention and the impacts associated with them, as well as, create new information resulting from the interpretation of information base.

They are an important support, insofar as it allows the management of interactions, the physical spaces, human activities and sustainable use of resources in areas, essential components in the process of integrated territorial management. But, for this management to be effective you need access to updated geographic information, as well as, to the means of analysis to guide decisions, and to the whole process of gathering information because it will ensure all the work base, especially in concerns to the acquisition of geographical information that allows, according to Reis (1993) to summarize thematic information through drawn images, graphic and convention symbols, formalized through cartographic representations. These information are translated into interrelated cartographic representations, creating new documents which will support the implementation of specific actions of territorial management, which is characterized, mainly, by defining mapping of areas suitable for specific use and limiting the negative factors and fostering positive factors, although it should be considered that a lot of complex information is far from being fully known due to the dynamics and complexity of the territories. The quality of this type of information should be guaranteed, to obtain reliable results when crossing information and its subsequent analysis.

The use of TMIs enables to meet key objectives in the pursuit of Integrated Landscape Management, such as: a more effective elaboration and implementation of Territorial Management Instruments; articulation among TMIs covering the same space and therefore the rules associated with each class of space; risk assessment of same as to fulfillment of regulatory objectives established in the definition of classes of space;

Through them it is possible to characterize, morphologically, the territory and have updated inventories of land use, activities or functions about everyday life and on the other hand, provide a rational management of resources through interactive processes that enable evolution and simulate alternative intervention. These that can respond, directly, to the increasing need to know and see in advance the consequences of authorized and unauthorized “growth”, preventing that, only after completion of works and consummation of investments, be realized that the reasonable capacity charge was exceeded, or major objectives of planning were not achieved.

They are also, according to Henriques (1990), management physical-financial, economic, social and environmental tools, concerns that are on the actual agenda, as well as, valuable tools for research in that, through geographic models they can innovate and analyze in depth, complex spatial relations.

It is therefore vital that all agencies can be provided, in a time, appropriate information and data about the evolution of their social environment, economic and political as well as the way to cope with, otherwise decisions will probably be bad oriented or even risking not to be taken. This requires a new operational capability, using geographical databases and other modern technology, as well as an effective decentralization of information and to the respective supplies or services. This model has already started in some Portuguese institutions.

The Geographic Information Systems are tools in prospective planning process because through their features, allow to: produce the thematic information in the phases of inventory, analysis and diagnosis for the simulation of scenarios in the stages of generation and evaluation of alternatives and decision of proposed plan; update information for monitoring and evaluating implementation of the objectives set by the Plan and track historical trends for the review stage.

PROSPECTIVE MONITORING INSTRUMENT

The monitoring of the Planning Process and its relationship with TMIs

According to Hellawell (1991), monitoring is a process, not an outcome, that is, not an end in itself, is usually applied to the monitoring of activities that lead to recognition of the potential for change.

When referring to the monitoring phase of an instrument of territorial management, it is convenient that the same should start with the implementation of the plan and define a system capable of meeting the monitoring program previously established, that according to Usher (1991), will have to answer five questions:

- Premise: What is the purpose of monitoring?
- Method: How to achieve this objective?
- Analysis: What data to collect?
- Interpretation: What do the data translate?
- Fulfillment: When will the objective be achieved?

Defined the objectives and methods of monitoring of the instrument for territorial management, is possible to develop applications using the Geographic Information Systems, which facilitate the rapid and efficient monitoring and decision support process in correction of observed deviations. According to Reis (1993), monitoring is the introduction of dynamic process mechanism, by continuous analysis and evaluation, with a view to continuous adjustments and updates to the system regarding the redefinition of objectives and user, and the new verified needs with consequent adjustments in the components of computer system and / or the components of the organizational system.

According to Silva (1994) monitoring arises normally associated with information about the planning process, resulting in an attitude of continuous observation and systematic analysis to be undertaken alongside the implementation of the plan.

Using a systems perspective, the monitoring can be structured at three levels: operational level of implementation of plans, ie, the idea of achieving the desired

future, explained by the plans, which should be done by monitoring the development of the plan, as well as its objectives and actions, related to the articulation of other instruments in force, as well as other initiatives; the level of territory self covered by the plan or that it influences - the reality in constant transformation - should be made in relation to the processes of transformation of territory, state and functioning of the system; level of adherence between plan and territorial system - should be made in both directions, particularly with regard to adherence and mobilization of various agents involved in the territory.

For efficiency in the applicability of the monitoring function is necessary to specify, in advance, the framework of objectives, focusing on the verification of conformity between objectives and results, that is, the correspondence between the original intentions of the plan and the results obtained and hence the performance of the Plan, and the implementation of measures and actions proposed by the Plan.

INDICATORS AND INDICES AS TOOLS FOR MONITORING

Indicators and indices are tools to monitor the territory in all aspects. In general, the main purpose of the indicators is to enable assessment and monitoring of the effects on the territory of projects and management policies, enabling drive or correction the options and policies.

The design of integrated systems of indicators / indices should allow the provision, on time, of information for the manager, which is essential to coordinate efforts and integration of sectors concerns on various aspects, for the benefit of stakeholders and especially of the territory and the environment. It is necessary to understand what types of indicators exist and which models and systems to be adopted on the basis of different realities.

Under the proposed methodology of the UNL (1989), to assess the quality of the natural heritage, and taking into account the physical, biotic and geographic characteristic of a territory, are considered three sets of indicators: Physical, Geographical and Biotic. Associated to each of these proposed indicators it is proposed a form of calculation and after, the aggregation of a set of indicators in sub-indexes, giving place to the final index of natural value.

According Braat, (1991) and Opschoor (1991), it is necessary to take into account a set of requirements in the construction of the indicator framework, so that its use is effective in supporting the decision. Notable, among others, is a clear definition of objectives and the intended purposes; clear representation of the system that aims to describe; sensitivity to variations in space and time, and if possible directly quantifiable measurement of parameters and have predictive power, in order to predict the impact of management measures to be implemented.

The indicators help to anticipate problems, regional and local scenarios, and consequently to find answers to solve critical problems, clarifying the choices for decision support and the type of measures to be implemented.

The definition and calculation of indicators for monitoring the territory and environment are essential, not only to monitor its progress, but to develop measures and actions that go against the unwanted or unpredictable trends with the objectives set by TMIs.

Regarding the definition of indicators is necessary to caution in the definition of weighted criteria, because the process of quantifying the nature and ecosystems can lead to undesirable results due to the inherent complexity. It should also be taken into account in sensitive areas, the minimization of conflicts between nature conservation, tourism and economic activities, as well as consideration of the relationship between the importance of the areas with protection status and their sensitivity.

Using technological tools, including Geographic Information Systems, the calculation of indicators and indices can be optimized, after implementation of TMIs, as a way of more effective monitoring. These have an important role in the planning process, giving it greater efficiency, but should also be understood as tools to support the tasks of monitoring this process and in particular the monitoring of Plans. For this, it is necessary the availability of base information and the processing capacity of same for later analysis.

The integrated management, for example in environmentally sensitive areas, is guided by the need to reconcile economic, social and environmental policies articulated with the conservation of resources. Therefore it is necessary to define, determine and adopt parameters indicative of either the growth or the phenomena underlying the management policies adopted. GIS are tools that enable the ef-

ficient attainment of these indicators and indexes after loading the data necessary for its calculation.

SCENARIO BUILDING

The elaboration of scenarios is not an easy task, depends on the combination of a number of factors and variables ranging from information available to stakeholders and especially the complexity of the territory covered by the Plan.

According to Toni (2006), to construct scenarios is like to analyze a context, but for likely situations in the future, trying to think creatively (or on a set time) on probable behavior. The scenario is always the desired "future utopia," the synthesis between the present and the degrees of freedom that unknown future circumstances conditions our plans, projects and desires.

Firstly it is necessary to define the determinant variables for defining the scenario, according to the scope of the problem, and what are the objectives, strategic guidance and political decision-makers, in order to build at least three scenarios: likely scenario, optimal scenario (desired) and pessimistic scenario (unwanted).

For each variable it is necessary to define its behavioral assumptions, ranking them among themselves as well as define the most critical conditions, for surely they will be that - should they be confirmed in future - to impact on the expected results. To establish precedence among variables is necessary to cross them in a matrix of double entry, identifying the relationships of dependence and mutual influence (Buarque, 2003).

The construction of scenarios allows the identification of probable threats and opportunities ahead, as well as having a strategic vision about the future of the territory, to identify trends and structural patterns of behavior, to formulate a coherent model of relations and views the future with plausibility (Toni, 2006.)

It is then up to the team responsible for developing the monitoring program plan, to implement mechanisms to monitor and understand the variables at each time point where the evolution of the plan and consequently assess the area in what scenario they are in, correcting what is necessary for the optimal scenario to be established.

CONCLUSION

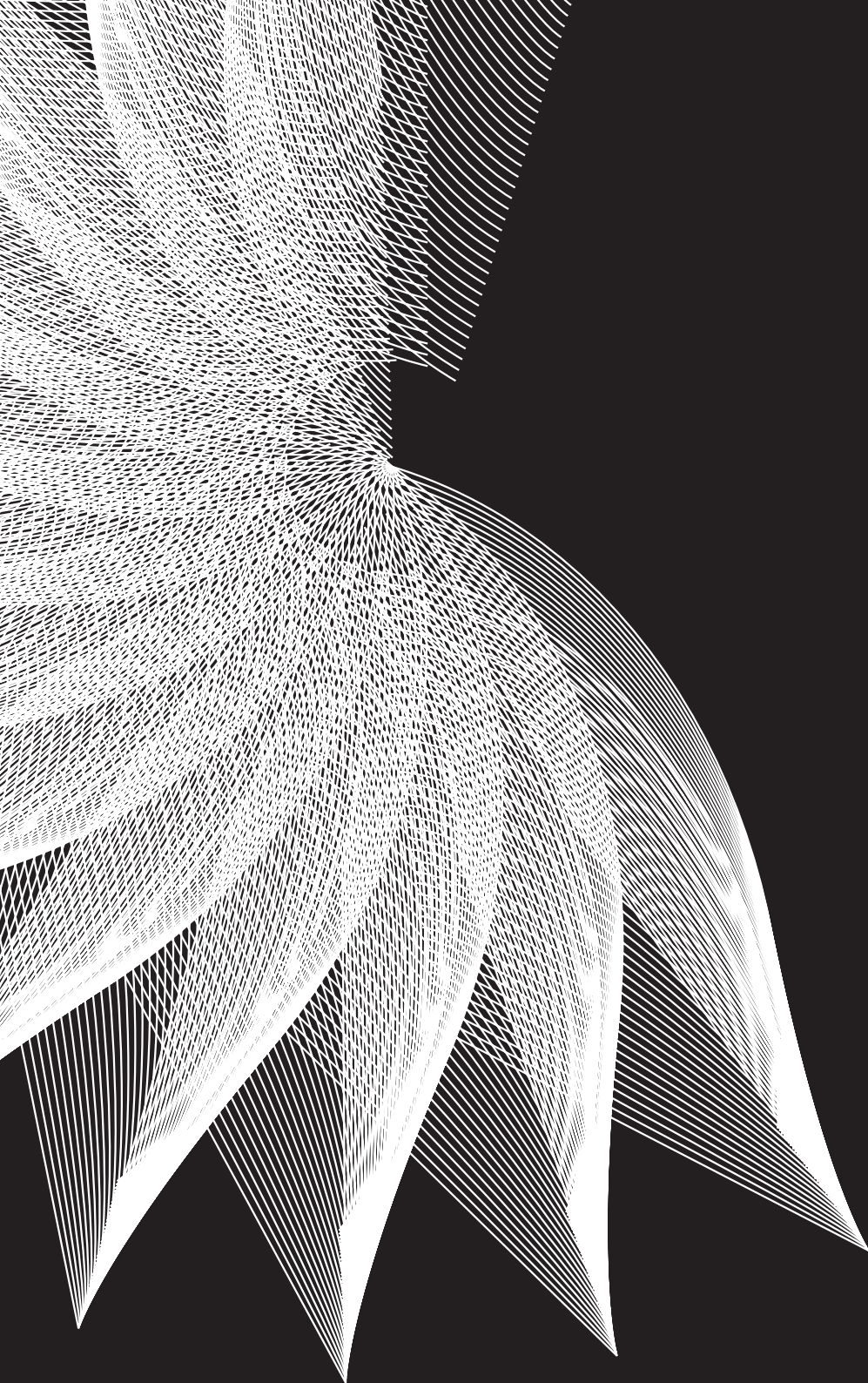
The implementation of a planning process that support the management of a territory, establishes in the development of tools of territorial management focused on an integrated vision, not only of the problems of the territory, but especially in the strategies and solutions. In order to assess the impact of actions and policies established in the process, it is necessary to consider a monitoring phase, which defines a monitoring program that establishes territorial indicators and indices, which must be flexible, so they can adjust when scenarios or reference situations have changed. The results of this program should be indicative, in order to provide representative scenarios of potential changes, so it is possible to act in every situation and correct deviations. The calculation of some of these indicators it is facilitated by the use of Geographic Information Systems, which has the potential to generate value scenarios, using just the preventive planning. The use of these tools allows evaluating alternative uses and resources, also consider the environmental impacts, economic implications and potential conflicts of uses, as well as the development of future scenarios, and, thus finding answers to solve problems, permitting to clarify choices to support the decision and the type of measures to be implemented.

It would be essential to manage the occupation of space by directing the flow of claims and requests, in advance, from a preventive standpoint, not to intervene, later, in a corrective optics. Monitoring and perception of changes and trends in the area helps to prevent distortions and inefficiencies of the process, allowing us to understand, through the monitoring program, the course of the scenario, and fix it in order to move towards the desired scenario.

To manage the territory in an integrated manner, implies in giving sustainability to activities with economic viability, and rooted in local communities, and the stimulation of new activities with the objectives of preserving the quality of resources, heritage and landscape. It should be compatible and planed with land buffer zones or peripheral to the most sensitive areas so they are preserved from pressures. However this definition has to go through consultation between the various political actors with influence in these territories, in order to give coherence to the management actions that should be integrated.

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ARCHAEOLOGY OF THE LANDSCAPE

JOSÉ LUIZ DE MORAIS

The purpose of this paper is to present content on the theme of landscape archeology, focusing on the geographical perspective of this subfield, considering the experiences of more than twenty years of archaeological practices in the Paranapema River basin, São Paulo State.

Focused on various segments of the interface archeology / geography, archeology of the landscape aims to study the processes of artificialization of surroundings and the scenarios produced from the perspective of regional systems of settlements. Its central focus is the reconstruction of scenarios of human occupation by studying the dispersion of the population ecumene, creating regional systems of settlements and producing remarkable landscapes identity.

Based on theoretical and conceptual bases of the original disciplines - archeology and geography - landscape archeology converge their efforts to two dimensions:

- the environmental matrix (topic related to the physical - biotic);
- the built environment (topic related to the socioeconomic and cultural environment).

In fact, it configures itself as a research strategy for the study of social processes in their spatial dimension, reconstructing and interpreting the archaeological landscape evolution and settlement patterns from the material expressions of culture.¹

Thus, the archeology of the landscape is the inclusion of archaeological *praxis* in spatial coordinates. This quality of geo referencing procedures, scenarios or regional systems of settlement, confers to archeology of the landscape a unique status: the competence to address issues related to the design dimension of archeology in planning, management and management of archaeological heritage.

STAGES OF INVESTIGATION PROCEDURES OF LANDSCAPE ARCHEOLOGY

Using a body of theory, so to say "post post-proceduralist", which *admits greater personal choice and ecletism in the putting together of theoretical positions* (in the words of Ian Hodder), landscape archeology seeks to rescue and revitalize archaeological database by means of three consecutive stages, characterized as follows:²

STAGE 1 – BASIC

It is the preliminary screening of the archaeological heritage, including landscape compartments, urban complexes and buildings (formal and vernacular architecture) of potential interest for archeology.

- ***Preferential Unit mapping***

The geographical unit focused at this stage is the municipality, while the geographical unit of asset management³ at scales between 1:100,000 and 1:50,000;

- ***Environmental Licensing (preventive archeology)***⁴

The first stage relates to the previous license, consolidating in diagnosis of archaeological potential of influence area defines an array of impacts and proposed program of exploration, rescue and preservation of archaeological heritage.

- ***Area of influence***

This item also binds to the procedures of archeology in environmental licensing; focuses on the expanded area of influence, formed by slices of the city (each city or group of municipalities in the area of influence of the project).

- ***Field procedures***

Recognition of the landscape, without intervention; spontaneous observations are made of the environmental compartments, in order to assess its archaeological potential; recognition built sets, without intervention; observations are made in the vicinity of ambience, geo referencing, metric-architectural survey of buildings and images record.

- ***Products***

As products of stage 1 - basic are expected:

- Diagnosis and inventory of assets (memory locations) recognized by local communities, organized from oral information and secondary sources;
- Digital cartographic database with geo-referencing of the center point of the property inventory (including archaeological sites and landscapes geo indicators notable sites of archeology interest);
- Geographic Information System - GIS, integrating summary descriptions of the property and areas of potential interest for archeology (alphanumerical database) database and digital images;
- Preliminary asset management strategies, defined as initial grant for the formulation of public policies in the areas of local cultural and environmental heritage.

STAGE 2 - EVALUATION

This is the evaluation of the archaeological heritage, including landscape compartments, urban complexes and buildings (formal and vernacular architecture) of po-

tential interest in archeology, with the more accurate recognition of its shape and extension.

- ***Preferential mapping unit***

The geographical unit focused is the archaeological module, understood as the geographical unit of asset management at scales between 1:25,000 and 1:10,000;

- ***Environmental Licensing (preventive archeology)***

The second stage relates to the installation license, establishing itself in the development and implementation of additional modules of the program of preventive archeology, with agenda fully coordinated with the installation schedule of the work.

- ***Area of influence***

This item also binds to the procedures of archeology in licensing; focuses on the area of direct influence, consisting of the conventional cut which includes the setting around (or wrap belt) of the area directly affected by the project.

- ***Field procedures***

Recognition of land: with no intervention, with spontaneous and induced observations, or prospective survey, with random surveys on the sediment matrix to demonstrate or assess its archaeological potential, if any, there are made corroborative semi controlled collections of archaeological materials; recognition of buildings: with no architectural interventions, the procedures above, add to the registry data and geotechnical surveys to verify the architectural structure.

- ***Products:***

As products of the stage 2- evaluation are expected to expand and detail the products of stage 1.

STAGE 3 – MANAGEMENT

Is the intervention in archaeological heritage, including landscape compartments, urban complexes and buildings (formal and vernacular architecture) of potential interest to archeology, with the precise recognition of its form, function and change.

- ***Preferential mapping unit***

The geographical unit is focused on the archaeological site, considered as micro-geographical unit of asset management, scale 1:2,000 and higher (including plants of buildings).

- ***Environmental Licensing (preventive archeology)***

The third stage relates to the operating license, consolidating the planning and execution of the final modules of the program of preventive archeology, whose results will subsidize the issuance of this license.

- ***Area of influence***

This item also binds to the procedures of archeology in environmental licensing; focuses on the area directly affected by the polygon of implementation of the project.

- ***Field procedures***

Exploration and archaeological excavation, with the full activation of the field techniques (surveys rhythmic cuts, trenches, stripping); there are made controlled collections of archaeological materials, with geo referencing in three axes, to allow the recovery of virtual archaeological strata; interventions in buildings: punctual or full intervention in buildings; to the above procedures are in added different intervention techniques of positive quota (surveys of wall surfaces, chromatic stripping) and negative quotas (cuts, trenches and stripping of the soil, with any type of collection), aiming at the consolidation of ruins, conservation or restoration.

- **Products**

As products of the stage 3 - management, are expected to expand and detail the products of stages 1 and 2.

As it should be, landscape archeology deals with the concepts of landscape, space and region, terms frequently used in geography, a discipline that takes care of relation man / environment.

Classic theme of geographical research, the notion of landscape differs according to the interest of what is the object or the way you look at it. There are very different approaches that geographers, historians and architects use in the treatment of landscape; simply, it has been defined as part of a territory that nature presents to the observer.

In fact, the idea of landscape as a scenario is a common way of conceiving the landscape. One has to agree, however, that the sense of the word landscape varies according to the scale of observation and classification criteria, depending on the priority angle of geography as a discipline of the physical - biotic and socio-economic and cultural environment.⁵

However, it is unanimous to say that the notion of landscape is in full renovation, pointing to a true science of the landscape, a common idea among Russian geographers.

In the case of archeology of the landscape, the term is mainly seen from the perspective of society, that is, the landscape is continually built and rebuilt by the evolving society. Thus, it is interesting to reiterate that landscape, as result of the artificiality of the middle, is the subject of landscape archeology, line of research that studies the regularity, the arrangements and distribution of transformations of the environment in a defined geographic area.

The process of the artificiality of the middle results in a series of fully articulated scenarios, increasing the complexity of the concept of built landscape. In fact, the landscape analyzed by archaeologist is not only the ecosystem but, yes, the place full of anthropogenic signatures that happened in time. The shape and evolution of the built landscape, seeks to get to their authors.

In the manner of Bertrand⁶, who gave a historical perspective to the study of geo systems - combining ecological history and social history - the proposed archaeo-

logical landscape advocated by the author is based on the encounter between the natural systems and economic systems that happens in the same space, creating regional systems of settlements.

THE URBAN LANDSCAPE ARCHEOLOGY AND ARCHITECTURE ARCHEOLOGY

Furthermore, the archeology of the urban landscape is a deployment of the archeology of landscape, with essential links to key urban geography and urban planning (this from the perspective of the academic school of architecture and urbanism).

The building itself should be investigated by the architecture archeology, line of research with strong relations with the discipline of architectural history (still in school perspective mentioned above). Thus, the model adopts the precepts of Daisy de Moraes, formulated during the study of eclectic built heritage cities of Paranapanema River basin.

As emphasized by this author, in Brazil, issues that could be identified as the architecture archeology have been treated within the general scope of historical archeology. On the other hand, the architecture linked to the restoration of property built, also deals with issues very close to the archeology of architecture. Thus, many architects are involved in such studies as they understood the history of architecture, a discipline which has motivated some interesting discussions in the courses of architecture and urbanism.

In fact, archeology architecture is a term commonly used in international literature to characterize the possible interfaces between archeology and architecture. There are several names that come to better identify each type of approach. One, for example, is building archeology (or archeology of what is built), which favors the intervention techniques in architectural structures, because of its insertion in very precise planning and execution of restoration projects.

By being more inclusive, the term archeology of architecture is used more frequently in the literature, identifying the broad possibilities for studying of what is built, with two most common focuses: social issues, with support in anthropology, or in historical perspective, centered on reading of architectural elements of the building.⁷

The best technique of architecture archeology is the approach of the building as archaeological artifacts, focusing on its stratigraphic units (additions and deletions of brickwork).

The reading of the stratification of the building - through observations of spontaneous and induced positive quotas - is a non-destructive analytical technique or just micro-destructive. Indeed, the big difference between the techniques of positive quotas and negative quota is that in the later is that the context of the objects is carved and destroyed to make them visible, which would not make sense in the positive quotas - to dismantle the building to study it! In fact, stratigraphic reading applied to building was inspired by the situations of the stratigraphy of the soil, whose theory stems from the following observation: the first layers that are deposited are below those that settle later, a cut in this package allows seeing that the layers below are older than the top ones.

It is worth reiterating that the archeology of architecture is defined as the study of buildings that make up the city's archaeological record, in order to reconstruct its history and insert the society that built them and keep them. In this line of thought, heritage buildings should be studied as a material document privileged by their status as an actor in a complex social process that resulted in the city. Its reading and interpretation covering design, construction, use, alteration, abandonment and recovery, permit the knowledge of the history of society where it belongs, in its various aspects.

BROWSING CURRENT CONCEPTS IN THE LANDSCAPE ARCHEOLOGY

In the wake of the theoretical and methodological bases of the proposed model, it would be interesting to expose meanings and concepts essential for understanding the conceptual platform that supports the planning and execution of archaeological research that favors the archeology of the landscape.

It is important to note that most of the concepts and definitions provided here are based on the experience gained by the research teams PROJPAR - Project Paranapanema, academic and scientific platform originated and developed in the investigative actions of the USP - Universidade de Sao Paulo, at the Paranapanema River Basin, from the last decade of the 1960s.

That said the following technical and scientific terms, whose presentation will facilitate the understanding of theoretical-methodological support in discussion can be highlighted:

a. *Archeoinformation*

Generic reference to any information relating to archeology and the archaeological heritage in the broadest sense whether archaeological data themselves or archaeological data from the related disciplines of archeology, in manageable geographic information system (GIS applied to archeology).

b. *Evidence and archaeological evidence*

The evidence is a direct archeological signature, concrete, clear; it makes sense of certainty expressed. The indication of evidence is an indirect signature, fugacious, latent, authorizing, by induction, conclusions about the existence of some archaeological interest.

c. *archaeological geo indicators*

These are elements of the physical - biotic endowed with some expression systems for locational regional settlement, indicating locations of old settlements. Archaeological investigations carried out in the Paranapanema basin⁸ and other regions allowed the construction of database geo indicators, leading to the consolidation of an empirical model, which derived strategies assumption.

Thus, the archaeological geo indicators maintain an efficient locational model, of predictive character, very useful in recognizing and archaeological survey. Examples are:

- Diverse gravel lithology
- silicified sandstone dikes
- Floor detrital (raw materials of good conchoidal fracture for chipping)
- Mud pits (outbrake of good clay for pottery)
- Top morphologic compartments suitable for a particular type of settlement
- Excerpts of evident agro-forestry management

d. Geo referencing

It is the act of establishing the link between the literal information (database) or graphics (vector or bitmap) and its specific position on the globe, by means of coordinates. The most common geo referencing and compulsory in the process of archaeological investigation is the anchor of the archaeological record in global positioning system, using a GPS receiver⁹.

e. Strategic management

Set of decisions and actions that will determine the performance of studies of preventive archeology (or archeology within environmental permit) from its implementation. The strategic management starts from the analysis of the environmental context in micro, meso and macro scale, converging to the formulation and implementation of strategies for the medium and long term (considered the schedule of works), with a forecast evaluation and control. All members of the archeology team, alone or in groups, need to be involved in strategic management, evaluating and seeking the solution of problems.

f. Interventions on soil and buildings

Technical procedures are supported by methodological and conceptual platforms that allow reading of archaeological objects such as documents within the full meaning. Interventions produce seemingly disparate actions: either dismantles the archaeological record, in another moment consolidating it.

Interventions on the soil may be in the negative quota, with the execution of surveys, cuts, trenches, stripping, or in zero quotas (surface collection). Interventions in buildings may occur at quota zero (current floor), to the negative dimension as it relates to the foundations, or more often in the positive quota, as it relates to the walls and roof, such as polls wall, stripping the chromatic etc..

g. Archaeological Matrix

Some sedimentary environments may contain evidence of human occupation in the past, making them some sort of archaeological record. In this case, the package acquires the status of archaeological matrix, providing the connection holding the physical and chemical signatures of anthropic nature.

The absence of this matrix, however, does not disqualify an archaeological record as such, although it limits responses of stratigraphic nature. In fact, the archaeological record directly deposited on rocky substrates comprises aggregates of objects potentially subject to continuous re-deposition, since lacking of archaeological sediment matrix that would serve as a connection between its elements.

The settlement pattern designed for the most part of Brazil demonstrates that, in their primary contexts, most of the archaeological remains of hunter-gatherers was capped by alluvial sediments (terrace sites), as well as, the records of the indigenous farmers were colluvial sediments (sites colinares). Residual soil resulting from decomposition in situ rock, tend to keep archeological objects on the surface.

h. Locational model and empirical model

Locational models can be formulated from empirical models generated by the praxis of the discipline¹⁰: archaeological signatures (objects, latent evidence, etc.) constantly present in some compartments of the landscape suggest successful choices, determined by favorable environmental conditions.

Thus, the empirical model is constructed for detecting, mapping and consolidation of these signatures in their respective media landscape. From there, the supports are assumed as archaeological geo indicators. The locational model, of predictive character, is based on the mapping (through the interpretation of orbital and suborbital sensors) media assumed as archeological geo indicators, converging to the prediction of landscape compartments potentially able to submit signatures of pre-colonial indigenous people.

Diverse gravel lithology diverse, rapids, rocky outcrops good conchoidal fracture, clay, pieces of agro forestry, marginal terraces, river fords are, among others, archaeological geo indicators.

i. Archaeological Module

A portion of land, that is demarcated by a planar coordinator reference of the Mercator system, (UTM coordinates), or, by a divider of the watershed. It is the smallest unit of spatial organization of the geographical archaeological investigation¹¹ of assuming, in this case, the rule of unitary and fundamental term.

Archaeological modules can be defined a posteriori, due to the presence of a local system of archaeological sites. Example: a sequence of steps in a riverbed identifies a geographical area encompassing a local system of archaeological sites, resulting in favorable conjunction of several factors considered as archaeological geo indicators.

j. Archaeological Occurrence

Single object or very small quantity of apparently isolated or unconnected objects found at a particular location (an arrowhead, a piece of pottery, a small piece of foundation, etc...). The occurrence can earn status of archaeological site from the subsequent detection of additional evidence to enable this new classification.

k. Settlement patterns

The distribution of the archaeological record in a given geographical area results from the relationship of communities of the past with the environment and the relationships between themselves on the environmental context. Livelihood strategies, political and social structures and population density were some of the factors influencing the distribution of the settlement, drawing settlement patterns.

l. Archaeological Heritage

If cultural heritage is the representation of memory, archaeological heritage is its materialization. In other words, it is the set of expressions of material culture of the pre-colonial indigenous people and of various segments of the national society (including situations of interethnic contact).

With potential to be incorporated in the local, regional or national memory, the archaeological heritage makes up part of the cultural heritage a legacy of past generations to future generations. In view of the landscape archeology, archaeological heritage includes some parts of nature where can be seen a progressive artificiality of the middle, creating striking landscapes of significant archaeological interest.

m. Soil profile; archaeological strata and levels

Profile is the ground cutting which allows the examination and description of soils in their natural environment. Shows the sequence of pedogenetic and anthropic horizons contained in a vertical section from the ground surface (quota zero).

Pedon is the minimum tridimensional unit description and sampling of soil; its concept is broader than the profile by its three-dimensionality. Archaeological material inserted in the soil environment or residual eluvial - resulting from the decomposition of rock *in situ* - are located at quota zero or, exceptionally, by vertical migration in negative quotas of minimum depth.¹²

Moreover, archaeological material inserted into and colluvial and alluvial soil may form an archaeological stratum of variable magnitude. The ones of colluvial environment tend to deepen into negative quotas up to 0.50 m or 0.60 m; the alluvial environment can be much deeper.

The concept of archaeological strata (or archaeological layer) is essentially three-dimensional suggesting the idea of the package; the concept of archaeological level is two-dimensional, because it indicates the idea of surface. Thus, arbitrary levels of excavation are made for the removal of layers delimited by levels quoted at intervals of 10 cm for example. Furthermore, the excavation by natural levels assumes the topography of the archaeological layer in total, grit blasting micro-stratigraphic successive levels (in this case, the set of levels form the layer).

n. The preservation in situ and preservation ex situ

The adoption of mechanisms for maintenance and protection of the archaeological record in the environments of origin is the preservation *in situ*. In this case, they do not constitute direct interventions that may compromise the physical structure of the records, although his reading and analysis may eventually be possible through noninvasive methods.¹³

The *ex situ* conservation admits severe interventions in the physical structure of the archaeological record by means of surveys and excavations authorized by the competent body¹⁴. The dismantling of the matrix is necessarily compensated by archaeological accurate record of the original positions, so that it can be virtually reconstructed in the electronic media.

The set of collected materials – archaeo-information segment - is the collection of material cultural expressions of the extinct society that left signatures in certain compartments of the landscape.

o. Archaeological Record

It is a generic reference to the objects, artifacts, buildings and structures produced by past societies, inserted in a given context. When buried, the archaeological record includes the pedological or sedimentary matrix which relates to objects, latent signatures, etc...

This is a broad concept that is independent of its subsequent classification as a site, place or archaeological geo - indicator. It covers the evident archaeological signatures (eg., a funerary set) and latent archaeological signatures (eg., Physical and chemical signatures that might corroborate funerary structures almost invisible).

The idea of the archaeological record includes some landscaping, such as those arising from the management of tropical and subtropical forests by indigenous farmers, as well as the elements of the physical and biotic interest in archeology (eg., Clastic or gravel dikes that served as a source of raw material for lithic industries).

The formal notation of archaeological sites and events is a mandatory procedure in all circumstances and will be made by completing the appropriate form¹⁵. The archaeological geo - indicators will be registered according to the degree of significance that includes, among others, its precise correlation with archaeological sites and events.

p. Abbreviation in the archaeological record

The archaeological record can be abbreviated according to alphanumeric system formed by a segment of the alphabet - abbreviation of the municipality - and a segment formed by the numeric digits identifying the zone and six digits extracted from the east and north UTM coordinates¹⁶. Example: a hypothetical archaeological site, located in the city of Caraguatatuba - SP, geo-referenced zone 23 with coordinates UTM E = 456,262m and N = 7,383,500 m is abbreviated, as CGT 23,562,835.

q. Local archaeological records

The set of records coordinated by the presence of one or more archeological geo-indicators is a local system of archaeological records. Example: sites, events and places of archaeological interest relating to the pre-colonial farmers around the rapids can be articulated by the presence of some major geo-indicators: the mud pits (used as sources of raw materials for ceramic production), making significant

reserve for quarrying of clay, the gravel of diverse lithology (used as sources of raw materials for the production of lithic artifacts), making significant reserve for quarrying stone, and finally, the-related accidents from the river integrating a set of rapids and fords, environments conducive to catch seasonal catch of migration fish and transposition of the river.

r. Regional system of settlements

Coordination between the archaeological records inferred by the possible spatial, socioeconomic and cultural relationships, considering its proximity, contemporary, similarity or complementarily, indicates a regional settlement.

The concept of regional settlement system has its best basing in geography, as it refers to the dispersion of the population through ecumene land and the consequent production landscapes, with the construction of scenarios that followed. In its wake, are allowed two macro systems indigenous pre-colonial: hunter-gatherers and farmers.

The first case can include in the umbu regional system, correlated to the homonymous archaeological tradition, which generated scenarios of adaptation to environmental conditions of transition in the highlands of southern Brazil. In the second case, the Guarani are a system that produced clippings landscape with a strong regional identity, organizing themselves into regional system of settlement with *design* fully adapted to the environmental conditions of the highlands of the southeast quadrant of the subcontinent. In the post-Iberian conquest, the fronts of the national society generated systems and specific scenarios dictated by new economic and social orders.

s. Archaeological site

It is a term and fundamental unit of classification in the archaeological record. Corresponds to the smallest unit capable of space research, with its objects (and other latent signatures) intentionally produced or rearranged, that witness the conduct of past societies.

A site can only be defined as such after its verification as an archaeological record. Reference site is one that, by its characteristics topomorphologic, stratigraphic and chrono-cultural, serves as support for regional interpretations and their insertions.

t. Geographical unit of asset management – UGGP

It is each municipality while federative entity has the authority to propose and implement local public policies to value the cultural and environmental heritage, including archeology.

By the law , in the Brazilian federal State the municipalities are responsible to manage all that is of local interest, supplementing the federal and state laws, as applicable.¹⁷ In the case of archaeological heritage, it is its job to protect archaeological sites in partnership with the Union and with the respective Federal State, implementing programs, projects and actions for heritage education and social use of sites and places of interest in archeology, considering the standards federal in force.¹⁸

u. Geographical unit for asset handling – UGMP

Corresponds to the fraction of land where reconnaissance, survey, exploration and archaeological excavation procedures are performed. Generally comprises a module archaeological backed up by UTM coordinate system.

Each detected site is delimited by a conventional polygon assumed as restricted area, where the exploration and excavation procedures of the archaeological record are focused. Involving this perimeter will be set a range of external security¹⁹ swept by the actions of recognition and archaeological survey, known as expanded perimeter. Optionally, the UGMP can focus on a micro-watershed.

LANDSCAPE ARCHAEOLOGY AS FIELD ARCHEOLOGY

Although it is characterized by the assumptions of preservation and conservation of the archaeological record, the archeology of landscape stands by adopting proper field procedures, as defined below:

RECOGNITION OR EXTENSIVE SURVEY

It is the trace of the environment for the preliminary assessment of archaeological potential, in the case of investigations of preventive archeology, the procedure itself is the stage of preliminary license.

The recognition passes between large and small areas according to the focus of the approach, unfolding in recognition of landscape and reconnaissance of the land, respectively. Its operation is done through the planning and execution of geo referenced route recognition, with vertices labeled by positions evaluated as strategic, in terms of observation and data collection (PGs – geo referenced positions). Interventions are not implemented in the pedological matrix or in the archaeological records, if any; no material collection is made.²⁰

The recognition of landscape covers greater lengths, including various environmental compartments (intermediate macro scales, including the expanded area of influence of the enterprise, in the case of preventive archeology projects). It is the exploitation of prior document collections (pre-existing inventories) and thematic interpretations made from maps and remote sensing (suborbital and orbital images). Enables understanding of the landscape clippings, with the definition of significant compartments for the understanding of regional systems of settlements, since they are forwarded comments on the regional physical - biotic environment and territorial designs. Geo referencing is done on the UTM grid system, preferably on a scale of 1:50,000.

The recognition of ground covers minor extensions, restricting them to one or two topomorphologic compartments (intermediate micro scales, including the area directly affected by the project and its immediate surroundings, in the case of preventive archeology projects). Relies on observations of spontaneous and induced ground, surface and subsurface, as shown in the roadmap that guides their empowerment, shown below:

Understanding of the local pedogenic process for evaluating the pedologic matrix, expecting to find inserted archaeological records, considering the following parameters of the composition of the land:

- Outcrops of rock and lithic deposits, if any, the archaeological materials are aggregates of the objects subject to continuous redeposition (the absence of sediment matrix), mixed with the debris of rock.
- Residual soil; if existing, the archaeological materials show up at quota zero (ground surface), subject to continuous redeposition, some objects will eventually be located in negative dimensions, by vertical displacement

- Colluvium: if any, the archaeological materials show up in negative dimensions, at small depth if erosion processes prevail, any archaeological layer can become superficial, appearing at zero quota.
- Alluvium: if present, the archaeological materials show up in negative quotas at large or shallow depths; if the depositional processes prevail, the archaeological layer tends to become deeper.

Observations of spontaneous surface and subsurface, allowed by agents and natural processes, such as:

- Bare earth: so understood as the surface without vegetation, which facilitates the observation of archaeological materials that may exist on the ground surface.
- Diffuse runoff: diffuse runoff of rain water causes the appearance of sheets of areal denudation, facilitating the observation of archaeological materials previously located in shallow water, if any.
- Concentrated runoff: concentrated runoff of rainwater, as their intensity, causes the appearance of ducts and channels that furrow the ground; if any, the archaeological materials outburst in these scars, known as gullies and ravines.
- Structures of bio disturbance: mainly anthills, termite hills, armadillos holes, mammals burrows, etc., The activities of some animals can relocate buried archaeological materials to the surface, indicating the existence of archaeological layers in negative accounts.

Observations of induced surface and subsurface, allowed by agents and artificial processes arising from the use and occupation of land and related studies, such as:

- Removal of vegetation: clearing the land, executed prior to the implementation of some activities, facilitates the observation of archaeological materials at elevation zero, if any.
- Cattle Trails: usually caused by the displacement of the usual cattle, induce the observation of archaeological materials located at shallow depth, if any; it should be remembered the possibility of resurgence of the track marked by induction of concentrated rain water runoff.

- Agricultural practices:²¹ particularly the procedures for plowing, sub soiling and terracing, which revolve the subsoil, making emerge archaeological materials, if any.
- Underground research:²² so understood the geotechnical boreholes and monitoring wells that allow to infer the presence of any buried archaeological layers
- Engineering works²³: particularly the execution of earthworks and cut slopes that expose (sometimes dramatically) levels of basement, reveal archaeological layers, if any.

INTENSIVE SURVEY

It is the tracking of archaeological record for the preliminary assessment of a region or a place, in terms of archaeological heritage.

The survey transits between major and minor extensions, according to the focus of the approach - intermediate micro scales covering the geographical area of heritage management, organized in archaeological modules.

Its operation is done through the planning and execution of surveys on the pedological matrix assessed as strategic points, marked by archaeological geo indicators (possibly a net of random or rhythmic survey can be made). Detected the archeological records, corroborative semi controlled sample collections are made. The archaeological survey converges to the survey.

PROSPECTING

It is a small intervention in the archaeological record, including controlled surface collections, gullies and ravines grinding, various types of survey in the archaeological record and stripping in restricted areas.

The survey provides a detailed environmental archaeological matrix and the collections of systematic sampling, allowing the evaluation of the extent of subsurface archaeological records.

The tie is made in the UTM grid system, the micro-scale (greater than 1:1,000) in planimetry or digital terrain modeling generated specifically for this purpose, at the environment of the geographical asset management, which includes the area directly affected.

EXCAVATION

Intervention is detailed in the archaeological record that reveals the distribution of three-dimensional structures in the original matrix, allowing the routing analysis of intra-site: anthropogenetic soils are dissected by stripping; archaeological strata are observed in micro stratigraphy.

The archaeological excavation is based on complementary methods and techniques: large surfaces, which is characterized by land clearing, binding geo referenced plan altimetry, opening of trenches and cuts, and ethnographic, its best tone is due to the stripping of natural levels tied to micro-geo referenced topography.

The excavation allows the development of plants and digital terrain modeling at scales larger than 1:1000 (micro-scale). The archaeological record excavated always becomes a part of the geographic units of asset management.

ARCHAEOLOGY AND LANDSCAPE GEO-ARCHAEOLOGY

In the case of indigenous societies, considering regional systems of settlements, the verification of archaeological geo-indicators, as well as the inclusion of topomorphic archaeological record is best done in geo archaeology environment and archeology of the landscape. For this analysis are forwarded geographic, geologic, pedologic, edaphic, geomorphologic bases at various scales. In addition to subsidizing the locational predictive model, this reinforces the recognition procedures of the landscape and terrain of a non-interventionist kind, especially at the stage of preliminary environmental license for studies of preventive archaeology.

In fact, a methodological platform that supports this model is given by geo archaeology, subfield which refers to the possibility of disciplinary relationship be-

tween archeology and the so called geosciences. Well consolidated, especially in investigating the source of Anglo-American origin or inspiration, geo archaeology should be considered a subfield of archeology in total. It does not exist as an autonomous discipline, since it is understood as part of the archaeological discipline.

The geo-archaeology acts exactly in the intersection discipline, responding to questions raised by archeology. Certainly, the reverse may become true when, in addition to the advances made by archaeology itself, there are plausible answers to the fields of geosciences involved as a whole. This happens with some frequency, in Geomorphologic and geologic studies relative to the Quaternary, when the presence of the archaeological record may indicate sequential timelines concerning the genesis and development of sedimentary packages.

The term geo-archaeology was introduced by Butzer still in the early 1970s. In one of his texts, the author gives an ecological connotation to the term:

Geo-archaeology contributes far more than stratigraphic information. In the ideal case it is basic for the identification of micro-environments (...) When the practitioner is sufficiently attuned to and allowed to participate in excavation strategy and implementation, geo-archaeology can resolve further aspects at the research interface; burial, preservation, and contextual factors critical to the recognition of primary, semi-primary or secondary sites. It can further be argued that a functional classification of Stone Age sites into categories such as quarry/workshop, kill/butchery, or camp/living can only be properly made with the close collaboration of a geo-archaeologist. Finally, the geo-archaeologist can probably contribute significant information on the availability and limitation of environmental resources, or help generate higher-level interpretations such as cultural adaptations of adaptive radiation. (Butzer, 1982)

Renfrew (1976) goes further, even considering geo-archaeology a real discipline:

This discipline employs the skills of the geological scientist, using his concern for soils, sediments, and landforms to focus these upon the archaeological 'site', and to investigate the circumstances which governed its location, its formation as a deposit and its subsequent preservation and life history. This new discipline of geo-archaeology is primarily concerned with the context in which archaeological remains are

found. And since archaeology, or at least prehistoric archaeology, recovers almost all its basic data by excavation, every archaeological problem starts as a problem in geo-archaeology.

Referring to the term geo-archeology, Bruce G. Gladfelter (1977) comments:

The contributions of the earth sciences, particularly geomorphology and sedimentary petrography, to the interpretation and environmental reconstruction of archaeological contexts is called 'geo-archaeology' (...) For the archaeologist, prone to focus narrowly on human adaptations to environment, evaluation of prehistoric behavior must also include reconstruction of the 'physical' surroundings, by implementing contributions from the earth sciences and other disciplines. Such an approach to man's past that focuses upon the geomorphological context of artifacts is what is mean by 'geo-archaeology'. This designation by itself implies a need to integrate data from many, often diverse, fields and to emphasize that, the 'man' and the 'land' elements, as well as their interrelationships are important for understanding prehistoric activity and associations. The 'geo' component concentrates upon the landscape, defined in the broadest sense to include the intricately related aspects of surface form and morphogenetic systems.

Another author, Fekri Hassan (1979), defines the term as follows: “*Geo-archaeology is the contribution from earth sciences to the resolution of geology-related problems in archaeology.*” In the commentary transcript, the latter author emphasizes that the scope of geo-archaeology is extensive, covering:

- The location of archaeological sites through a variety of specific technical field of geosciences;
- assessment of paleo-landscapes in terms of the possibilities of settlement;
- studies of the regional stratigraphy and local micro-stratigraphy;
- Analysis of sediments for understanding the formation processes of archaeological sites;
- paleo-environmental analysis involving geomorphologic, stratigraphic and sedimentary studies with the study of soils, the remaining of flora and fauna and pollens;

- the study of technological artifacts for the purpose of determining manufacturing practices associated to sources of raw materials;
- the evaluation of the dynamics of relations between human activities and landscape;
- the conservation and preservation of archaeological sites;
- the geochronology and archaeometry.

Gladfelter (1981) also states that, for the geo-archaeologist, the environmental context extends itself from locational factors specific to each site, to the broader zone implications, and the physical context can be identified at various scales.

For example, an archaeological site situated along an ancient river channel will be analyzed under the following aspects:

- Geomorphic environment, immediate or depositional microenvironment, whether an abandoned bank of gravel or sand, a terrace or floodplain;
- The surrounding landscape (or around setting) being an extensive alluvial plain or an embedded valley;
- The regional morphogenetic environment in macro scale.

More recently, Leach (1992) said:

Archaeologists work in a geologic medium. Their interests lie in a particular subject of the geologic realm — the superficial subset — directly affecting and affected by human actions. The archeologist's initial extraction of information from the medium is by geologic means, although the information itself may be non-geological. Therefore, in this restricted sense of the respective sciences, that is, in terms of its techniques, archaeology may be considered as a subset of geology. The archaeological subfield of geo-archaeology explicitly claim ties with both geology and archaeology, and claims itself to be the intermeshing of the two fields.

In fact, this archaeologist from Minnesota, tries to set goals of anthropological significance for this subfield: first with the material culture (the object is the result of a geological support – for example, the stone); then with the cultural attitudes

(the case of the symbolic status of ochre), still with the subsistence patterns (the role of geography in development, soil management, etc..) and, finally, with patterns of settlement (the correlation of the establishment of hunter-gatherers with the sources of raw lithic material, for example).

THE GEO FACTOR

Also in the context of the archeology of the landscape and its relationship with geo-archaeology, it would be interesting to resume something about the field guidelines and other guidelines from the perspective of so-called geo factor. Thus, the considerations are taken on the archeological geo indicators and the predictive model. In fact, the basis for understanding the geo factor in archeology have been launched in Brazil by the author of this article, by induction, pointed out the definition of Aurelio Buarque de Hollanda Ferreira for the term "factor", understood as "what contributes to a result".

Simply put, it is said that the contributions of "geo"-graphy, of "geo"-morphology and the "geo"-logy for archeology are called "factor geo". The contribution may be understood in a dual handed -direction, featuring true interdisciplinary in the fields of knowledge. The factors that are associated with the use of geo, is here understood:

- Global Positioning System – GPS
- Geographic Information System – GIS
- Remote Sensory System – SSR
- Digital Terrain modeling – MDT
- CAD System Programs- computer aided design
- CAM System Programs - computer aided mapping

In proposing the geographical factor geo it is in mind the ideas of Bruce G. Glafelter, one of the creators of geo-archaeology: *"The geo component concentrates upon the landscape, defined in the broadest sense to include the intricately related aspects of surface form and morphogenetic systems"*.

Thus, according to the model and as an example, the strategic planning of a study of preventive archeology focuses on the interpretation, analysis and consolidation of the indicators of the potential presence of archaeological records in the area directly affected by a particular enterprise. In this case, the support base of the model in practice are, the thematic analysis and interpretation focused on two media:

- a. Remote sensors that allow interpretation of the landscape, with the contribution of the disciplines of the physic-biotic, to assess the archaeological geo-indicators, especially in the case of Indian archeology. In the case of archaeological investigations undertaken in the Paranapanema River basin, for example, this refers to regional systems of hunter-gatherers and indigenous farmers, herein defined as hunter-gatherers of the regional umbu and Guarani peoples and kaingangs present in that territory.
- b. Ethnographic documentary sources, ethno-historical and historical related to the multivariate universe of national society. In the case of archaeological investigations undertaken at the Paranapanema River basin, for example, this refers to the first contact between Indians and Europeans (and the resulting mixed culture), and other aspects of the expansion fronts of the national society in that territory. Specifically in the case at hand, it will highlight the heritage of eclectic buildings of various cities in the region, built with the coffee capital of the early twentieth century.

In fact, each of the media is best applied to each of the major socio-cultural segments of the remote past to the recent, produced archaeological record today, included in the environmental context: the regional settlement systems of the indigenous pre-colonial period and the historical-economic cycles in force as from the sixteenth century.²⁴

In strategic planning linked to the model, considering the stage of preliminary license (in case of preventive archeology), the focus of the evaluation of potential evidence and archaeological evidence, are these thematic interpretations, supported by the analytical approach of archaeo-information and in the case of areas archaeologically unknown, the recognition of land (extensive survey), of a non interventionist character.²⁵

In this model, as reported previously, the assessment of potential indication and pre-colonial archaeological evidence applies the prefix "geo" to the term "archaeological indicator." This is explained by the relevance of elements of the physic-biotic indicators in the recognition of archaeological sites, especially when equipped with some expression for understanding locational settlement patterns of indigenous populations.

Thus, the archaeological geo indicators maintain a locational predictive model, focused on analysis and evaluation of the archaeological potential of a given area.²⁶ In its characterization are highlighted and some topomorphologic compartments and geologic, geomorphologic and pedologic situations, (and some wildlife), whose convergence suggests locational parameters for the old settlements, and determined by situations and socioeconomic and cultural functions, such as habitat, mineral extraction and extraction animal - this issue will be taken later.

The locational model parameters, which allow the mapping of archaeological potential, are determined from a few situations in the universal standards relating to establishment, supported by several local and regional situations of the Paranapanema River basin, a standard area for the construction of model.

Also reinforce a predictive strategy to support the implementation of steps to recognize the landscape and terrain, as well as the prospective survey. The initial definition of locational parameters applied to the studies of preventive archeology and inspired by the precepts of the archeology of the landscape, require the re-evaluation and re-reading of data for which, eventually, it can be incorporated into other situations, related to the period after the European conquest, when the economic and social order of indigenous communities was changed drastically.

LOCATIONAL PARAMETERS OF THE ARCHAEOLOGY OF THE LANDSCAPE

According to the model built from the archaeological investigations carried out in the Paranapanema River Basin - potentially applicable to many other regions - the following parameters locational pre-colonial settlement - seen as compartments and topomorphologic events - subsidize the predictive model:

Habitat

- a. fluvial terraces: fluvial accumulations with flat surfaces, slightly bent, with varying degrees of reworking, lifted by rupture of slope a few meters over the level of water or the recent floodplain, must have been sufficiently large to support, in the past, settlements of indigenous groups (most often, hunter-gatherers and, exceptionally, farmers).
- b. Slopes: flat inclination that frames the valleys, with varied morphology and amplitude; the ones of soft convexity (less than 10% of inclination) eventually bore settlements of indigenous groups, most often farmers.
- c. Landings of slopes: slope ruptures more or less horizontal, usually located on the hillside slopes, and possibly supported settlements of indigenous hunter-gatherers or farmers.
- d. Headwaters springs: flat slope in amphitheater, usually shaped by head ward erosion that fit spring niches (springs), some still remain forested under environmental protection legislation. In the past endured, with some frequency, pre-colonial indigenous settlements, considering some advantages related to protection.
- e. Watershed tops: guidelines (ridges) that separate watersheds. There are records of archaeological sites in places that are more lower (laps) of these watersheds, confirming they are places of transition between environments locally different, involving different watersheds.
- f. Scarps: steep slopes, sub-vertical to vertical, erosive or tectonic origin, and may contain shelters or caves resulting from landslides or dissolution, possibly supporting environments for the occupation of indigenous groups, most often hunter-gatherers.

Mineral extraction

- a. Gravel: deposits of boulders, forming homogeneous or diverse lithologies, accumulated in the beds or shores, with elements of size usable in the process of chipping to obtain chipped stone artifacts. Includes rocks and minerals of good conchoidal fracture to slash, retouching and carve or hard enough to percussion.

- b. Clastic dikes: the intra-trapians resulting from the deposit of fine sand, probably soaked with water, in fissures of volcanic lava (basalt rock) in the cooling phase, in the Mesozoic era; the typical situation of the geological structure of the Middle Paranaíba (formation of Serra Geral), the corresponding passage in the province of geomorphological Cuestas Basalt. In the past, silicified sandstone dikes, excellent conchoidal fracture, attracted groups of hunter-gatherers who used them as a source of raw material for the processing of lithic tools.
- c. Columnar Disjunctions: hexagonal structures resulting from the cooling of volcanic rock, resulting in basalt columns (popularly known as "mine of small platforms"). They are relatively rare occurrences. The archaeological significance of this geological fact lies in the fact that they were used, in the past, as pre forms for the production of polished artifacts, especially the hands-pestle; especially basalt columns are found in various stages of polishing.
- d. Flooring debris: coarse material deposits presenting grains of varying size, as a result of mechanical weathering, arranged on slopes or accumulated in the basal parts of slopes in the form of deposits of fragments with elements used in the process for obtaining chipping stone artifacts. It includes rocks and minerals of good conchoidal fracture for carving, and retouching, debitage or sufficient hardness for percussion or texture suitable for polishing.
- e. Licks: occurrences of accumulation embedded in fluvial environments (seasonally flooded wetlands), with silt loam or sandy clay, sources of raw materials for processing and production of ceramic pots.

Fishery

- a. Rapids, waterfalls, water jumps, gradually steep slopes from riverbeds, causing waterfalls hampering seasonal migrations of the ictio- fauna, constituting sites for easy harvesting of fish migration.

ARCHAEOLOGICAL SITES AND LANDSCAPED COMPARTMENTS

As a manner to conclude this article, it would be interesting to point out an example of inserting ancient Indian settlements in regional landscape compartments. Thus, in view of the archeology of landscape, inserting records into classes of archaeological in top-morphologic typology is possible on the platform of the geographical factor. Here are some examples from the consolidated experience of archaeological investigations of the Paranapanema River basin:

Site on basalt

Located on the basalt substrate outcrops with clastic dykes (silicified sandstones intra-trapias). It is raised some feet above the water surface, usually free of floods. Without Anthropogenic stratification, the arrangement of archaeological materials (lithic of silicified sandstone and, rarely, fragments of pottery) are subject to the physical processes operating in the range of debris, mingling with the dominant rock waste. Exceptionally, the anthrop marker element is the presence of cave painting inscriptions.

Usually, it is favorable site for mining activities (collection of matrices good conchoidal fracture), giving promise of producing pre-forms of lithic artifacts; it is the typical lithic workshop or, as in the second situation, a ceremonial locus, with inscriptions on the basalt floor.

Site on debris surface

It is located on a slope or baseline more or less flat, inserted into packets formed by silicified slag of basalt and sandstone. It is of common occurrence in areas where the basalt substrate outcrops, locally rich in clastic dykes (silicified sandstone). Especially, the area of mining activities with lithic workshops, may present locally capping of colluvium containing anthropogenic structures inserted suggesting possible camps of hunter-gatherers, or even farmers.

Gravel site

In this case, the archaeological site of type lithic workshop is part of the gravel deposits with varied lithology, which is common in the lower section of the Paranapanema River. Anthropogenic strata are confusing, due to the hydrody-

namic of the river. Lithic materials, obtained from the pre-form of rolled gravel, mix with unmarked of process or unused gravel. Nevertheless, the gravel is an important milestone for the demarcation of territories and to obtain mineral resources related to the processing raw lithic material. These were, undoubtedly, of great importance to the groups of indigenous hunter-gatherers.

Site on fluvial terrace

It refers to the alluvial deposit associated with the outcrops near basalt substrate rich in clastic dykes or marginal gravel; they are lifted from two to fifteen meters above the local reference level (which may be a stream or, more frequently, the river itself). The anthropogenic structures were buried due to the alluvial deposits during the floods, and exceptionally, they can reach higher areas. Eventually, marginal levees of lower floodplain cause the appearance of elongated wetland, following the direction of current.

It can be verified the presence of diverse lithology of gravel and clay banks, where mining activities have developed; another source of lithic raw materials are silicified sandstone dikes, embedded in large boulders or outcrops of surrounding basalt. In general it is found in archaeological layers in stratigraphic sequence, since the ancient hunter-gatherers, to the colonial Indian occupation, through pre-historic farmers Prehistoric (multi-component sites).

Site on terrace and lower slope

It is a typical situation of multi component sites, with several layers. The most superficial (and extensive), runs along the lower stretch of the slope, above the contact with the river terrace. On them it can be found the structures of village farmers. The buried layers (especially two or three) are included in the colluvial-alluvial package of the terrace and correspond to one or more camps of hunter-gatherers.

The clay to produce the ceramic shaft came from the clay banks existing at the perennial outlet (typically a stream). The stone of good conchoidal fracture came from boulders or outcrops of silicified sandstone, nearby.

Site on a hill

It is implanted in the upper middle part of a wide hill. The extent of the site is at most 50 meters and the inclination of slope around 7%. It is the topomorphological compartment of typical farmer's village, and eventually, camps of hunter-gatherers who chipped stone.

Anthropogenic structures are covered with very thick layer of colluvium (they are often touched by erosion, caused by deforestation or by the action of agricultural implements). The local reference can be a perennial river channel of varied magnitude, with marginal deposits of clay, a source of raw material for the manufacture of pottery.

Site on headwater spring

It is inserted into topomorphologic amphitheaters resulting from erosion caused by laminar flow or sometimes concentrated, at the very reverse of the fronts of steep hills, as at Fartura and Botucatu, mountain, demarcating the environmental borders between the peripheral depression and western plateau in São Paulo; sometimes, those compartments consist of a demoted lap that facilitate the transit between depression and plateau.

Thus, sites in the headwaters spring tend to mark passage routes, a fact that is corroborated by the presence of alien raw materials (in the case of lithic industries). Such settlements refer mainly to the camps of hunter-gatherers.

Site on residual hilltop

Situated on the flat surface of sandstone hills, almost along the cornice, topographically quite high compared to the reference at the local level; distance themselves enough from water sources. It displays anthropogenic stratified layer in shallow packets of coarse particles. It contains many robust pre forms, chipped in silicified sandstones intertrapianos. The presence of combustion plants can be connected to the preheating of the raw material and additionally heating the shelter constructed, due to the harsh winter. It relates to the camps of hunter-gatherers and farmers.

Site on top of watershed

It lies on top of spikes, large or small, dividers of draining watersheds without apparent bedrock; inserts, preferentially, at topographic downgrades lap type. Apparently there is no other appeal to the settlement, except the topomorphologic neck own design that facilitates traffic between the basins.

The stone of good conchoidal fracture, and good clay for pottery, is brought from afar. The erosion outweighs the depositional, accentuating the dispersion of archaeological structures originally stratified.

Site under rock shelter

Occupies sheltered niches, formed by existing recesses in front of steep sandstone cliffs of rock; in some regions, the shelters may occur as a result of dissolution of limestone. In addition to lithic material (possibly may appear ceramics) are registered inscriptions, typifying multi component sites (camps of hunter-gatherers, farmers and ceremonial sites). At the current stage of research in the Paranapanema basin, there register a few sites in shelters.

Site in cavern

It is inserted into well marked cavities of sandstone or limestone rock, identified as caves. Apparently there are not many occupations in caves in the Paranapanema basin in the middle and lower segments of the Paranapanema basin; in the upper basin, where they are most frequent, archaeological investigations are rare.

Site on depression

Implanted at the top or high slope of hill, or even in small plateaus, it occupies circular or oval depression, dug in the soil. The housing structure was constructed semi-buried, protected from the harshness of winter. This is the typical "underground home", which appears with some frequency in the sub-basin of the upper middle Taquari.

The identification of depression may possibly be impaired by subsequent filling with sediment or organic matter (in the latter case, especially in forested areas, when the place turns into a real depression of waste of composting plant). Lithic materials and structures of combustion are usually frequent.

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1. In the sense of "material culture".
2. The term "stage" has been consolidating over the term "level", previously used in other works by this author.
3. This term, as well as, other commonly used in this article is defined further.
4. The term "rescue archeology" was formalized by IPHAN Decree 230 of 17 December 2002, which distributes the archaeological investigation of the three phases of environmental licensing potentially harmful to the environment.
5. The term "landscape" is very well presented and discussed by Blanc-Pamard Chantal and Jean-Pierre Raison in the Encyclopedia Einaudi, Portuguese edition of 1986: *The landscape and analysis of all that is visible to observation, the landscape as a complex mechanism of multiple variables : this is the evolution of a science that, having begun with simple description of the environment surrounding man, came in our time to look with greater attention to the network of relationships that bind now and in the past people to the territory since, with the first forms of plant and animal domestication, its action has transformed the nature.*
6. In France in the mid-1960s, Bertrand discusses the landscape as a problem of method, inspired by the current vocabulary of ecosystems: geotopo, geofacies, geosystem, natural region, rural geographic area.
7. Interestingly, in the first case, the bulk of the international literature is in English and in the second, in Italian and Spanish.
8. The first manifestations of archeological geo indicators appears in the work for degree of José Luiz de Moraes: Master's thesis (1978) and Ph.D. thesis (1980), consolidating the early researches of Luciana Pallestrini in Paranapanema, from the perspective of geography, landscape and environment, in 1999, the author presented his Habilitation thesis, focusing on such content.
9. The geo processing is inserted within the scope of geo technology, group of technologies related to geographically referenced information. Among them stand the global positioning system, the actual geo processing, photogrammetry, aerial and orbital sensing, topology, geodesy, geophysics. The use of available geo technology, especially the global positioning system, is essential in archaeological research. The geo processing involves the

construction and use of geographic information systems - GIS, which is a convergence of technological fields. This is a set of computer-aided tools that enables the capture, storage, processing, analysis and graphic representation of spatial data. It is sometimes expressed as geo-referenced information system for handling data of the physical, biotic and socio-economic status, whose meanings contain associations or relationships with specific *loci*. The intelligence of the GIS is in its data model. The stored data have two main components: graphical information (stored for X and Y coordinates) and descriptive information (stored in the database). A GIS is designed for the collection, storage and analysis of objects and phenomena where geographic location is an important characteristic or critical to the analysis. In other words, GIS is an information system built to work geo referenced data through spatial or geographic coordinates. In it are stored map information (what is possible to know on the exact location of each element in space and in relation to other elements) and alphanumeric information (data, characteristics or attributes of each geographic element). The National Center for Geographic Information and Analysis, United States, formalized the definition of GIS as a system of hardware, software and procedures, manipulation, analysis, modification and presentation of spatially referenced data for solving complex problems of planning and management.

10. Archaeological investigations PROJPAR implemented by teams in various parts of the State of São Paulo have been using the possible complementarity between empirical models and predictive locational models, as it will be fully explained further. Indeed, about empiricism in archeology, we can paying tribute to good arqueography, Eduardo Goes Neves, expressed himself in his memorial contest, and held in 2003: *From all of this I take a great lesson: the empirical dimension of archeology is essential. The assumptions are changed, but the data, and when produced, have a much greater permanence. When I started interning in Archaeology, in 83, it was said in Sao Paulo that the problem of Brazilian archeology was the lack of theory. Today can be seen enough theory, but practice has not kept up that pace. In this sense, our present problem is the lack of a well-informed practice. I think, unfortunately, the methodological revolution of processual archeology, already so old, not yet dug roots*

here. If we look at our neighbors Argentina and Colombia - two countries that have an active archeology and well organized - it is easy to see the distance that separates us. As I told Paul Courbin, field archeology well done is a very difficult task that requires a great intellectual preparation. Perhaps our belletristic tradition, this kind of activity, which also includes manual labor, is not well valued.

11. Organizational strategies originally adopted in archaeological research Paranapanema in São Paulo, by research teams PROJPAR. Archaeological investigations of the Paranapanema River basin provided the basic parameters for the formation of scientific-technical model now in use, as stressed.
12. Thus, deep drilling in search of archaeological layers in eluvials soils per se, are unnecessary, except for effectively buried objects such as funerary urns.
13. In this case, include the geophysical methods as applied to archaeological sites, actually known.
14. Matters regulated in the ordinance IPHAN 07 of 1 December 1988 laying down the procedures for prior notification, to permits and authorizations for research and archaeological excavations at archaeological sites, under the law 3924 of 26 July 1961.
15. Preferably the form of the CNSA - National Register of Archaeological Sites, the system operated by IPHAN partially available on the federal agency - www.iphan.gov.br.
16. This system was proposed by Morais based on the UTM system, from researches conducted in the area of the Paranapanema River basin, São Paulo State (this is an invention of the Project Coordination Paranapanema inspired by the conventions expressed in topographic sheets published by Geographic and Cartographic Institute of São Paulo, 1:50,000). UTM is a system of plane coordinates based on the universal transverse Mercator projection. In it, the earth was divided into 60 zones of six degrees of longitude each (numbered 1-60), starting at Greenwich antemeridian (180 °), followed from west to east. In latitude, the parallels are limited by the 80 ° S and 84 ° N, divided into parallel strips of 4 ° latitude. Each track forms a zone identified by letters. The origin of linear measurements of the grid is the intersection of the central meridian of each zone with the Equator. By convention, the coordinates of origin is 500,000

meters in an easterly direction for each zone and 10,000,000 meters north. Thus, to determine the local longitude, simply add to 500,000 meters, the distance of the point relative to the central meridian. The same is true with respect to the measures in latitude, when the value assigned to the Equator (10,000,000 meters) decreases gradually towards the south.

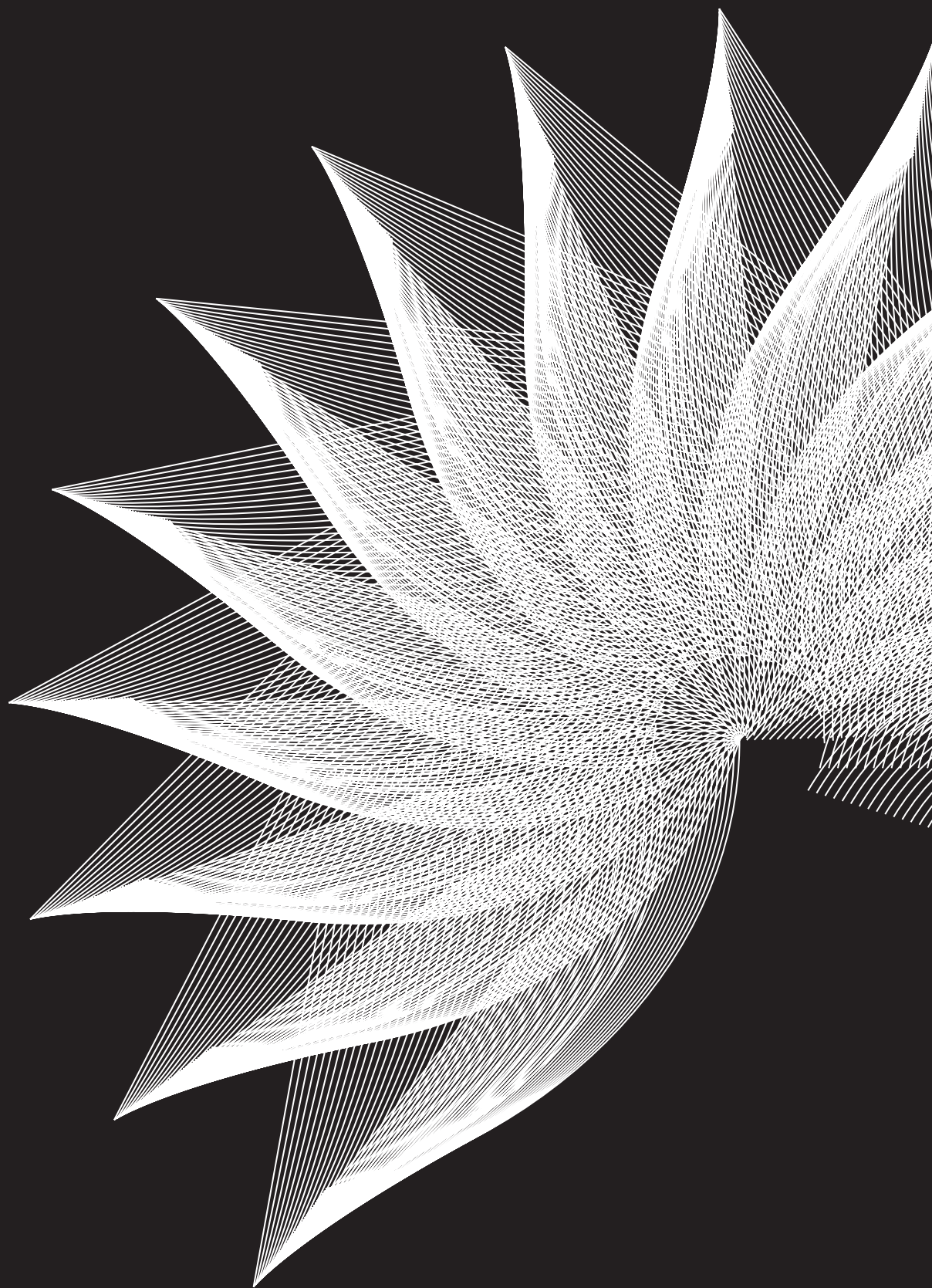
17. Federal Constitution, art. 30, I.
18. Federal Constitution, art. 30, IX.
19. Additionally characterized as buffer impact zone, considering that an archaeological site can assume, in fact, some prerogatives of conservation unit, the CONAMA resolution 013 of December 6, 1990, establishes standards for the surroundings of protected areas.
20. If not characterized the possibility of intervention in the archaeological records there would not be, *de jure et de facto*, the need to obtain authorization or permission of IPHAN. However, considering the formal qualification of the federal agency as manager of the archeological heritage, it would be wise to inform IPHAN, using the device prior - notice, because if the IPHAN wants to know where the archaeological records are there is also interest to know where they do not occur.
21. The mechanized agricultural practices, especially those using subsoiler, drastically undermine the arrangement of the original stratigraphic archaeological layers.
22. The research techniques used by the subsoil geology and engineering, relatively similar to the techniques of archaeological survey, tend not to compromise the integrity of the archaeological layers, if any.
23. Unlike the research of the subsoil, the preparatory works of the land for construction of engineering works are absolutely destructive when they affect archaeological layers.
24. These segments correspond to some extent, to the traditional division of academic archeology in two sub disciplines: prehistoric archeology and historical archeology.
25. In fact, regardless of any other parameters and their variables, the existence of archaeological indicators should refer to the continuing study of archeology in the preventive phase of installation license.

26. As pointing out earlier, this predictive locational model was built by the author of this article from the redesign of an empirical model, due to the practice of archeology in various environmental situations (this subject has been published in various publications and technical reports by this author, including his Habilitation thesis).

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COMMUNITIES, IDENTITIES AND ECONOMIC SUSTAINABILITY: VALUING PATRIMONY THROUGH AN EDUCATIONAL PRAXIS¹

ANDRÉ LUIS R. SOARES

For this article, I intend to discuss the title presented here. Academic activities in communities can be roughly classified as research activities, education or extension, a tripod on which the public and private universities have lean out in Brazil. Communities – ethnic, racial, economic, peripheral, gender or otherwise – are subject to various activities, where those disadvantaged deemed at some point to become a prominent object of intervention as a way of dialogue, improving or promoting development, most of the times economical, being this, one of the criteria for the search for improvements.

However, it should be emphasized that the economistic view, of financial solution as a panacea for social ills, is outdated and should be constituted as one of the pillars of medium-term actions that include also the social and environmental issues.

1. Specialization Course of Integrated Management of the Territory for Sustainable Development, Programme for Strengthening the Capital and Qualification in Integrated Management for Sustainable Development in the Rio Doce Basin.

Recognizing that the economic, environmental and social components not only must happen simultaneously, but there is an interlocking "ab initio", which is independent of wanting or not wanting an element interfering with each other. There is a transversality between the economic, environmental and social that needs not only to be recognized, but it is time to learn to plan, implement and monitor the development in a territory of greater or lesser extent, in an integrated way, from the whole to the part and coming back as a whole, taking into account all the actors who live and live in that territory. (Oosterbeek et al, in press)

From this starting point there is the second item, which identifies or gives identity to nurture this community. Again, the identity can be given by ethnic, religious, cultural, historical or other various factors. The intervention on these human groups may develop, among other reasons, by the breakdown of these people or dissatisfaction with their immediate realities. The identities in the first place are historical processes, in most cases, social constructs given by the need of the nation-states to realize unification based on several factors such as national heroes, shared past and supposedly unified territory. So, as I present below, identity is not something ready, or just petrified; they are dynamic structures, given socially and historically constructed so it can be modified or changed by the agents involved in the process.

From this point, the community and its identity, verified by its peculiarities that make them different from each other, proposals for economic sustainability arise. Although placed in the third person, you know that is not so: the proposals do not appear, they are created by agents of social, cultural, political, economic, or others agents who wish/ hinder historical changes. It will hardly be found the presence of these agents so that the situation remains the same, or without changes. When communities are fulfilled, they are not required.

In this article I present some results obtained during more than ten years of activities of the Center for Studies of Patrimony and Memory of the Federal University of Santa Maria, in Rio Grande do Sul, Brazil. These activities deal with a few lines that fit the title of this work and offer, at first hand, the argument that social action to improve social, economic, political or ethnic and/or social origin conditions may result from a process of thesis-antithesis-synthesis in which the

action-reflection-reaction of educators that has as an object the patrimony, can be described in terms of educational *praxis*, going far beyond the consecrated "patrimonial education". In this sense, considering the Integrated Management of the Territory as a construction that considers Community, Economy and Environment, I will try to draw, at the same time, a brief dialogue between these elements and patrimony.

THE RELATION BETWEEN THE COMMUNITY AND CULTURAL IDENTITY

Identity is not a label. Although it is customary to create forms of identification and classification, first of all one must remember that the historical construction of what is commonly called "identity" is a formation of nation-states that after the consolidation of these create belonging ties to format a common past trampled territory, language and history conferences. This constitution of the nation state in Europe dates back, more vigorously, from the eighteenth century. In the Far East, although the unification of Japan occurred in the seventh century, is also in the nineteenth century that the idea of "national identity" will be constructed and sought evidence for its consolidation.

In Brazil, identities are constructed according to various historical, ethnic, cultural, processes, among others. But it is worth to remember that much of what gives ethnic identities are in fact constructions of a nation-state, but are not ethnic (the "German" arrived in Brazil before the unification of Germany, a process similar to the Italians, there is no ethnicity in nationalities). At the same time, Brazil is the scene of hyphenated identities, where the reproduction of the term "ethnic" to natives of several countries in the world allowed the identity of Teutonic-Brazilian, Italian-Brazilians, Nipo-Brazilians, etc., in processes related to other places where immigration has taken significant proportions. They carry in them an identity, but before anything, are constructed identities, invented (Hobsbawm and Ranger, 1984) by the need to consolidate a common history, as well as language. From the construction of identity is also observed the "invention" of traditions, as Hobsbawm & Ranger said:

A set of practices, normally governed by overtly or tacitly accepted rules; such practices of ritual or symbolic nature, aims to implant other values and norms of behavior by repetition, which automatically implies continuity with the past. In fact, whenever possible, tries to establish continuity with a suitable historic past. Hobsbawm & Ranger (1984, p.9)

Likewise, these identities can also be designed or constructed as a mental framework from what was left behind in the idealized past, existing only in the memories of their bearers, as "imagined" communities (Anderson, 2008). When you leave the place of origin, a new home is built from the feelings, idealizations of the future and frustrations of the past. Existing only in the memory of immigrants, this contrary Pasargada² fills many gaps of forgotten memories.

THE PATRIMONY AS IDENTITY

The patrimony will be one of the instruments of the nation-state for the creation, consolidation or affirmative discourse of identity. The construction of the past, in material (such as the appreciation of architecture and other monuments of stone and lime) or intangible terms (the discourse about the historical past, the construction of national heroes) will be used as tools to streamline the process of belonging to different social groups and with different goals, but with a uniformity formed from the need for States to reaffirm as a territory, language, identity.

We must emphasize that the notion of patrimony that we adopt today is coming from the nineteenth century, when the sages and scholars stood against the destruction carried out by the religious Reformation in England or looting promoted by the French Revolution. Thus, it is emphasized that the very notion of patrimony is built "in the process of consolidation of national states, serving as ideological justification for building a national identity." (POSSAMAI, 2000, p.16).

2. Reference to the Brazilian poet Manuel Bandeira, in which lies the city of ancient Persia as an idyllic paradise, even if imaginary.

Thus, the value that is given to a particular architectural object, for example, is not only in its physical and morphological characteristics, but in all it will represent, as the identity of a particular group, nation or city or the historical period to which it belonged, among many others. (POSSAMAI, 2000, p.17).

The invention of heritage does not happen smoothly or historically. It is a process that involves the perpetuation of memory, traditions, social and cultural references, maintenance of material and immaterial practices, the persistence and reproduction of certain elements considered relevant - or its obliviousness.

The first effort of the historian is to realize that the patrimony category acquires different meanings depending on the social sector for which it is addressed. Forgetting serves much more than a memory and it is the heart of memory. A policy of preservation of heritage should be guided by two questions: What did you forget? Why did you forget? (GARBINATTO, 2000, p.43)

The discussion about what is patrimony exceeds the translation of *pater* = father (in Latin) and *nomos* = legacy, inheritance (in Greek); it is known that the term cultural heritage, historically, has gained several meanings, i.e., patrimony is dynamic and evolving, and therefore attention should be paid to the pragmatic consequences of the enlargement of its concepts. Maybe that is why we prefer to think of patrimony as a conceptual field in which the various disciplines appropriate translation to its own settings.

Although it is known that patrimony can also be associated to what we perceive or inherit from our father or family, we cannot forget that it is directly associated with assets, i.e., it has a financial connotation in what we possess or acquire. Thus, the patrimony conception comes in the form of cultural inheritance, but also in an economic conception.

From there comes the exploitation and sustainability of patrimonial resources, on one hand as elements considered relevant to the establishment of local identity, and on the other, as a source of capture and economic exploitation, through tourism as it is more widely known, but not denying other forms of sustainability.

We cannot stop dedicating attention and, at the same time, question the economic obliquity that overlaps with the policies for the protection of patrimonial assets, when those seek to attend the industries of trade and tourism; even more, if we take into account that the concept of nature, especially after the nineteenth century, regards it as an intellectual construct, a social fact. Thus, it is set up as commodity like any other. The patrimony is then considered, in some cases, as "a cultural resource, an economic connotations term and designative of something that can be used with profit by those so called" (Alvarez, 1996:138).

Cultural patrimony involves natural and cultural assets, but can also include the assets of an intellectual and emotional order (Ataídes, Machado and Souza, 1997), so that not only the nature that surrounds the human being, but his works and civic protests, religious and folklore form a cultural identity to be preserved.

We cannot forget the context that rises the discussion about what are the assets in Brazil and as they came to be preserved. Perhaps most notable pioneer is Mario de Andrade, who from the 1920s begins to go through Brazil in search of a national identity built on the idea of miscegenation between white, black and Amerindian. Thus, the construction of a national history began with the colonial Brazil and the city of Ouro Preto became an icon, receiving the status of National Monument (1933). In 1936 was created the Office of National Historical and Artistic Heritage (SPHAN) - under the Ministry of Education and Health, whose proprietor was Gustavo Capanema. Capanema soon turned to Mario de Andrade ordering him to draw up a program to protect the historical and artistic heritage of Brazil.

This concern began with the Week of Modern Art, where intellectuals seek to track the conditions for the creation of *brasilidade*. Thus, it was sought which would be an "authentic" Brazilian heritage, and the cities of the eighteenth century, wrongly called "mineiro baroque", will be the greatest example of creating a 'typical' nationality. Moreover, this construction of patrimony from the architecture created two milestones in the development of strong patrimoniality in Brazil: first, the supremacy of "stone and lime" on other evidences and, second, the consolidation of economic elites as having symbolic power that launched the dictates of what is recognized or not to glorify the country's history (Soares et al, 2007).

The preserving the historical and artistic patrimony policy has been reduced almost to the policy of preserving the architectural monument of stone and lime. The survey on the social origin of the toppled monument indicates that it was: a) a monument linked to the successful experience of the Caucasian ethnicity b) a monument linked to the successful experience of the catholic religion; c) a monument linked to the successful experience of the State (palaces, forts, forums, etc..) and society (headquarters of large farms, urban houses, etc.) of the political elite and the country's economy. (Falcão, 1984, p 28.)

Mario started to accumulate the role of SPHAN representative in Sao Paulo, where he prepared a preliminary inventory, listing the examples of cultural heritage from Sao Paulo who had managed to identify on his excursions with Paulo Duarte. The performance of SPHAN was regulated by Decree-Law 25/37 – a document drawn up by its first director Rodrigo Melo Franco de Andrade – in which it is usually pointed to the influence of the draft bill written by Mario de Andrade. Even today the draft of Mario is actual, and it is every time more in use as reference to define what patrimony is and what is entitled to recognition, intervention and preservation.

It is in this period that the image of Brazil is constituted for Brazilians: a country where the elements recognized and registered in the country are the catholic churches of the eighteenth century, houses from the same period, mansions and palaces: the country is formed by a white population, catholic and rich, because that is how it is represented in their listed items. There are more than three hundred catholic churches, and only two *candomblé* yards even with a predominantly multi-religious population; there are hundreds of buildings that symbolize a white and European elite, who deny or conceal the African-Brazilians and other immigrants from the near and far east. They are the apotheosis of traditional white immigrants of four hundred years of the Iberian peninsula, with only two indigenous intangible property registered in a country of over one hundred and eighty native languages still being spoken. The assets must be protected by all but a few inheritances is and should be preserved with the most resources.

We can cite, for example, a proposal for the protection of intangible assets. In the categories of cultural assets of archaeological art and Amerindian art given the inclusion of "American Indian folklore", which manifests itself in the "Amerindian vocabulary, songs, legends, magic, medicine and cuisine," and the folk art category included the theme of "folklore", which consists of "popular music, tales, stories, legends, superstitions, medicine, cooking recipes, proverbs, sayings, dramatic dances", among others.

Mario de Andrade is also concerned with the educational aspect of heritage. While one group tries to harness the heritage education seminar held in 1989 sponsored by IPHAN and the translation of *'heritage education'*. Mario envisaged the need to incorporate the materiality of the buildings and objects as components of national history. As Mario Chagas said to him (Andrade), "the actions of preservation of cultural heritage are identified with the process of literacy" (ANDRADE, 1971, cited in CHAGAS, 2006, p. 69). Perhaps the origin of the term "cultural literacy", questioned now, has its origin in the proposal of the Sao Paulo pioneer.

Does not fit here to discriminate against any changes that the Andrade project suffered and political period in which it operates (see SOARES et al, 2007). However, Andrade proposes an answer that values cultural diversity, the different "Brazils" within a Brazil in which cultural diversity should be seen as our unique feature. There was a discrepancy between the preliminary project and the actual project: while Andrade is concerned with conceptualizing the patrimony and value all forms of cultural events, the decree-law of Rodrigo Melo Franco de Andrade addresses the legal implications and the legal effects of protection, as the use and ownership of property. This is clearly visible in the constitution of 1937, according to the First Article of the Decree Law No. 25 of 1937:

ART. 1 – It is the historic and artistic patrimony all the movable and immovable property in the country and whose conservation is of public interest, whether by their connection to memorable events in the history of Brazil, or whether for its exceptional archaeological or ethnographic value, bibliographic or artistic.

Thus, preservation of patrimony is also linked to the elites represented in the produced historical knowledge. This domination of elites (economic and politi-

cal) in the country today is exercised, because they handle - primarily through its political status - which cultural property will be preserved. This explains the number of registered protected properties belonging to the dominant white class facing the quantity of registered assets belonging to African-Brazilian culture or even immigrant.

So instead of a speech that "one does not love what one does not know", perhaps in the Brazilian case it should be asked: "to whom this patrimony really belongs too, which has to be preserved?". Perhaps in this answer lies the main reason for depreciation, vandalism and destruction of cultural property, as there is no belonging between people and the elements that is demanded to be preserved. OR people destroy it because it means nothing to them. Patrimony as cultural, social or ethnic identity origin should be perceived as a two-way street, i.e., what gains (emotional, social, cultural, not necessarily economic) there is to keep this element as part of the socio-cultural-spatial landscape of the city/local/community.

A preservation of the "identity" that does not give emotional return to their rightful owners – even if it is an emotional enjoyment – is doomed to abandonment and neglect. So it is then that education in the country has been enshrined under the epithet of "Patrimonial Education", a term already used from the work of Horta, Grunberg and Monteiro from the "Guide for Patrimonial Education" (1989), a basic manual of obligatory reference on the steps of a process of valuation from the experience in the Imperial Museum.

Many criticisms have been made on this subject. In 2003, the author of this text with co-workers released the book "Patrimonial Education: Reports and Experiences," which featured an academic perception of educational activities from archeology activities, History and citizenship in Sao Martinho da Serra, a small town twenty-two kilometers away from Santa Maria. In 2008, from the maturation of research, education and extension projects, several colleagues met, teachers from the top and the elementary and middle school, to build the book "Patrimonial Education: Theory and Practice" (co-organized with Sergio Klamt).

Immediately thereafter, events grew with the theme of heritage and even Patrimonial Education³ throughout the country, with different nomenclature, but

3. Just as an example, the First Latin American Forum of Patrimonial Education, Pelo-

always with discussion groups, working groups, conferences or academic communications on this subject. The proposal was spreading across the country in search of ways to resume social growth and enhance patrimony.

EDUCATIONAL PRAXIS: THE PROPOSAL

In our experience it was observed that the patrimonial education, in the most part of the consulted bibliography, presents actions for recovery of cultural property without a clear theoretical proposal, whether in the educational or political aspect. Thus, it is very noticeable which authors propose to defend a constructivist pedagogy, new-school, Skinnerian, behaviorist. Although the quote from the educator Paulo Freire is almost a mandatory reference, there are not many works with a consistency between the educational perception from this author, who understands education as a practice of freedom and builds a theory of Dialogic and Problematic Education in which the teacher-student relationship is horizontal, i.e. it is believed that through dialogue and reflection men are educated in communion.

Thus, it lives without strangeness, a practice in which the quotations from Paulo Freire endorse without problems exposition classes, countless lectures and teacher training that does not exceed the multiplication of educational booklets, without knowledge building with social actors involved or without a feed-back process in which academic activities correspond to problems in communities of action.

In a previous work (Dias and Soares, 2008), it was demonstrated the rapprochement between the Patrimonial Education and liberating education promoted by the educator Paulo Freire, especially with regards to own perception of the exploited status as a means of liberation. This education is, in part, in service of groups, organizations or persons that envisage ultimately the perception of themselves as part of a system that excludes them and makes them play values, discourses and practices of a group or a class. In this process, we seek to break the shackles through education and get the "liberation" from oppression that assume economic, social, and cultural or gender aspects.

tas, RS, 12 to 17 May 2008. Also the First Meeting of South-Brazilian Patrimonial Education. Tubarao, SC, 16 to 18 October 2001.

That is why importance of finding a form of education that has focused primarily on the individual, who teaches from the knowledge and individual memories and facilitates the learning process, thus the importance of the pedagogy of Paulo Freire:

Therefore even thinking correctly implies the teacher or, more broadly, the school, not only the duty to respect the knowledge that the students, especially those from lower income groups, come to it socially constructed knowledge practiced in community - but also as for over thirty years I have been suggesting, discuss, discuss with students the reason for such knowledge in relation to the teaching of content. Why not enjoy the experience that students have to live in city areas discussed by the public to discuss, for example, pollution of rivers and streams and low levels of well-being of people, the dumps and the risks for the health of the people (FREIRE, 1996. p. 30).

What is necessary is to realize that this is in Popular Education as well as an educational *praxis*, in which knowledge is a process of action-reaction-reflection, in which the current activity is the result of the ripening of an action developed and added to the gained knowledge in companionship with the different realities and through an ongoing dialogue. Just as an educator cannot press the student to free himself, the state cannot dictate what equity is or provide their own preservation. Before anything, you need to enable agents to understand their historical condition in society, as well as to choose what should be elected as an asset. We deal in our activities with plots usually excluded from productive processes and dumped of economic power, as residents in outlying areas, low-income classes or simply students from several public schools.

EDUCATIONAL PRAXIS IN PATRIMONY: SOME EXAMPLES

The activities performed by those who worry about the memory and heritage should have as its objectives the preservation of cultural identities, i.e., the particularities of each people, each region of the world. Mainly, to recognize the multiple influences that one suffers from another cultural identity, as they realize the

similarities, but mostly, what is different. Thus, it is necessary that along with this notion of identity, which we build, defend that it should "capture the everyday elements which make the life and activity, culture, natural and social assets (...) to build a sense of citizenship." (ITAQUI, 1998, p.17).

The patrimonial education, here treated as an educational *praxis*, starts from the relationship between man, subject, and the object transformed by him. Therefore, this *praxis* approximate to the methodology of Integrated Management of the Territory, because as methodology, the educational *praxis* realizes the relationship between subject, creator of reality, in a deep relationship with the environment that transforms it in its management (is not innocent the origin of the word economy, the knowledge of the environment).

In the case studies we now present, we see the construction of the concept of patrimony from an individual level, i.e., one can appreciate something from "outside" if one is able to honor something "inside", that is, to oneself. With the construction of this identity, we try that the people involved pursue with greater vigor their citizenship, and therefore create a cultural identity, as Santos asserts:

The understanding and practice of citizenship, in our view, starts with the knowledge of reality from where the individual is introduced, preserved the memory, the data of the present, the understanding of the transformations and the search for a new doing, which does not mean a submissive and passive acceptance of values of the past, but the recognition that there are basic elements that we count to preserve our cultural identity. (1994, p.78)

To demonstrate the implementation of our activities, I present the progress of a project in a municipality of less than ten thousand inhabitants in a district with a unique history. I will not make a presentation of IMT, but introduce an educational *praxis* that can be part of a project that uses the IMT as sustainable development.

The display is the city of General Camara, ninety kilometers distant from the capital of Rio Grande do Sul. The work of the Center for Studies of Memory and Patrimony began in 2005, as an invitation to undertake a project of patrimonial education in monitoring excavations carried out by the Center for Archaeological

Research and Education, coordinated by prof. Dr. Celio Sergio Klamt of the University of Santa Cruz do Sul – UNISC. From this activity and with support from the National Council for Scientific and Technological Development⁴ – CNPq, of the Research Foundation of the State of RS⁵ – FAPERGS, and bid for projects of national Extension⁶ – PROEXT, activities were carried out between the years 2006 to 2010, with the aim of promoting an appreciation of self-esteem of the community through its heritage.

This requires a brief history of the place. Complete information on this project are published in several academic articles and systematized in the book "Santo Amaro do Sul: Archaeology and Patrimonial Education", organized by me and Sergio Klamt, published by the UNISC in 2010.

This district has its origin in 1752 with the construction of a fort on the left bank of the Jacuí River, which served as a weapons and food warehouse. In 1755 the first settlers came, mostly from the Azores and Madeira archipelagos, but also of Colonia do Sacramento, Laguna, Sao Paulo and other parts of Brazil. Santo Amaro is one of the first Azorean villages of the state, keeping the urban layout representative of the eighteenth century. This village of representative historical value had in 1998 a total of 14 buildings listed by the Institute for National Artistic and Historical Patrimony – IPHAN, including the Church of Santo Amaro, dated 1787.

Yet, beyond the built patrimony, there is an intangible heritage highly valued by the community that, therefore, misses the point of recognition of IPHAN. These are local celebrations, ancient and recent, as the Feast of the Holy Spirit and Santo Amaro and Feast of the Navegantes.

The Feast of Santo Amaro is held in the district for over a century and currently brings together nearly 2000 people between the days of 14 and 15 in January. Throughout these two days you can follow the pilgrims who come from various cities in the region, some walking in groups, others on tours that fill the narrow streets of the district with their buses. The community is involved, either in the

4. Support through universal proclamation of CNPq, Project 472363/2006-9 and Scientific Initiation Scholarship – PBIC

5. Through Scientific Initiation scholarship for academics (2008)

6. National proclamation of SESU MEC, Extended Projects – PROEXT, 2009.

informal trade that takes the square, whether in the organization of events that makes up the feast. The feast preparations begin one year prior to the choice of the entertainers, who take charge of coordinating its organization. The feast is composed of a *novena*, a procession of light, a ball and masses celebrated in the church. At the end, the district returns to its just over 600 inhabitants, that during the summer that number has tripled and even quintupled by the presence of vacationers.

However, the Feast of Navegantes began to be reorganized in 1989, given the commitment of the local community. This is because it already existed for over fifty years. Apart from religious reasons, also stands out the economic help to the community, since it serves to raise funds to finish the construction of a police station, as well as bathrooms, benches and barbecue grills near the resort. Initially, this party was held by AVASA (Vacationers and Friends of Santo Amaro Association), having broad support of the fishermen. However, in the last four years, it is being organized by the Brotherhood of Santo Amaro, created in the early nineteenth century. Apparently this change in coordination of the feast seems innocent; therefore, entering in its history and interviewing local residents, we realize that there is an intense struggle for control of the festival among the fishermen and part of the community and the Brotherhood, revealing the intense power struggle not only on the material assets, but also on the intangible ones.

In an attempt to inventory the assets of the town of Santo Amaro, we encounter a community of simple habits and a life history marked by political losses, as changing the county seat to General Camara (in the 1930s'); for economic losses, deactivation of the railway (1962) and reduced tourism vacationers after dam construction (1974); and mainly marked by the negligence of their rulers towards their history and their basic needs.

During the interviews we realized that the obstacles faced by the community of Santo Amaro, throughout its history, made the bonds of belonging of the community with the place they live to grow weak. At the same time, the above-mentioned losses were not well resolved, so that associated with unemployment was the emptying of the location where it was seated.

Therefore, it was observed that religion and its manifestations have taken a representative dimension to the local culture as well as the Jacuí River and the knowledge that it originated, such as fishing, making nets and fish scale crafts, joined the

small but complex range of intangible assets that are part of that culture. It was necessary a recovery program to change the self-esteem of people from the community.

The methodology used for the development of this community was the rescue of memory and history of life of residents of the district. In this sense, we understand that it is only possible to the community to recognize as patrimony the assets, which in one way or another, were part of their life and have been or are representative of their culture and identity.

It requires the full participation of the individual and the society in the creation of cultural goods, in the maintenance of places of memory, in decision-making concerning cultural life and in its dissemination and enjoyment. If taken this way, culture will facilitate the construction of meaning ties, therefore of identity that contribute to the preservation and enhancement of cultural patrimony. Martins Vieira, s.d.

The interviews were crucial, both for the collection of survey data and for integrating the community with the staff of the university. Thus, the daily life of the village was gradually unraveled, allowing the research team to realize aspects of local culture, such as the relationship of this community with the river, which goes beyond the mere economic factor and adds faith, art and recreation. Once the survey was conducted, we started to conduct some systematic interventions to change the perception that the community had about themselves.

From the discussion among academics and the coordination, we believe that we should act on two occasions in the community: directly with the people and with the local school. The community was heard in a debate brought from the screening of a film entitled "Storytellers of Yahweh" (Brazil, 2003, Eliane Caffé direction) in which a community sees the need to register their assets because the risk of a flood caused by the dam. Residents identified readily with Santo Amaro, who lost their socio-economic condition with the construction of the Amarópolis dam. So the team started the discussion about raising the local problems⁷.

7. There are social problems: the town of Santo Amaro is divided among the inhabitants of the central square, low-income fishermen and the "village of the blacks," historically marginalized community and gradually disappearing.

In the state school Rio Grande do Sul, the only one on site that serves only elementary school, the action was different: we proposed an environmental-cultural competition with various activities in which teachers and students interact with the survey of local, environmental and economic problems and about patrimony. A detailed description of this action is detailed in Rempel (2010), but it is worth to note that, from the discussion with students and teachers of the problems existing in the community, we can propose a short-term strategy action for a change in the perception of the role of students as individuals who have the power to modify the immediate reality. Then, from the student initiative, it was proposed and carried out a garbage collection in town, the streets and on the Jacuí River, that everyone consider as patrimony. Then, posters were produced on the shortcomings of the Village in environmental terms, as the absence of garbage collectors, among others.

In contrast the team of NEP donated two hundred native trees in the region of the Jacuí River basin for planting and reforestation in the Village. The involvement of children was total and had very positive impact in the eyes of all participants in the process: teachers, assistants, servants and military police, who collaborated in the contest. Finally, we proposed to students and teachers a "fair idea", in which they could propose concrete actions to change attitudes and ways of establishing new relations with the environment such as recycling, among others.

CONCLUSION

Although the period in which I developed this project there was not a concern with a program of Integrated Management of the Territory, I realize that what we had at this time had this as goal, even if dimly. From the concept of Oosterbeck et al., I realize that we were walking in this direction, even so with some shortcomings:

The Integrated Management of the Territory is not a revenue, is a set of guiding principles that support the theoretical developments of planning and land management, in particular the strategic management and participative management, but consists that the dynamics of reality and are not fully rationalizable and require constant monitoring and continued foresight exercises. It is a program that values technologi-

cal innovation and human capital formation at all levels, combating the alienation of citizens and strengthening their critical competence. It is, finally, an approach that recognizes the limitations of the rigid institutions solutions, so that from them and with them seek the construction of new platforms of governance, recognize the expression of multiple and distinct interests and consider the conflict not as something to be overcome but as the main engine of sustainable development. Oosterbeck et al, in press.

The action that I developed with teachers and students from various undergraduate courses had as the ultimate goal the self-sustainability of the community, but the lack of a plan of governance and lack of local political contribution to the implementation of actions to medium and long term weakened the credibility of the team, who had no resources for investment in modernization projects and generation of employment or income. Although as academic experience it has been a five-year results with high and positive impacts still perceived in the community, on the other hand was not enough to mobilize public policies and political administrators at the municipal level to implement the program in a municipal scale.

The program and its results were published, but also the certainty that, during five years, we made the difference in a small community in the state of Rio Grande do Sul, which will remember for some years the interviews, records and legacies for school and the people, actions that mobilized young people and adults in valuing human being first.

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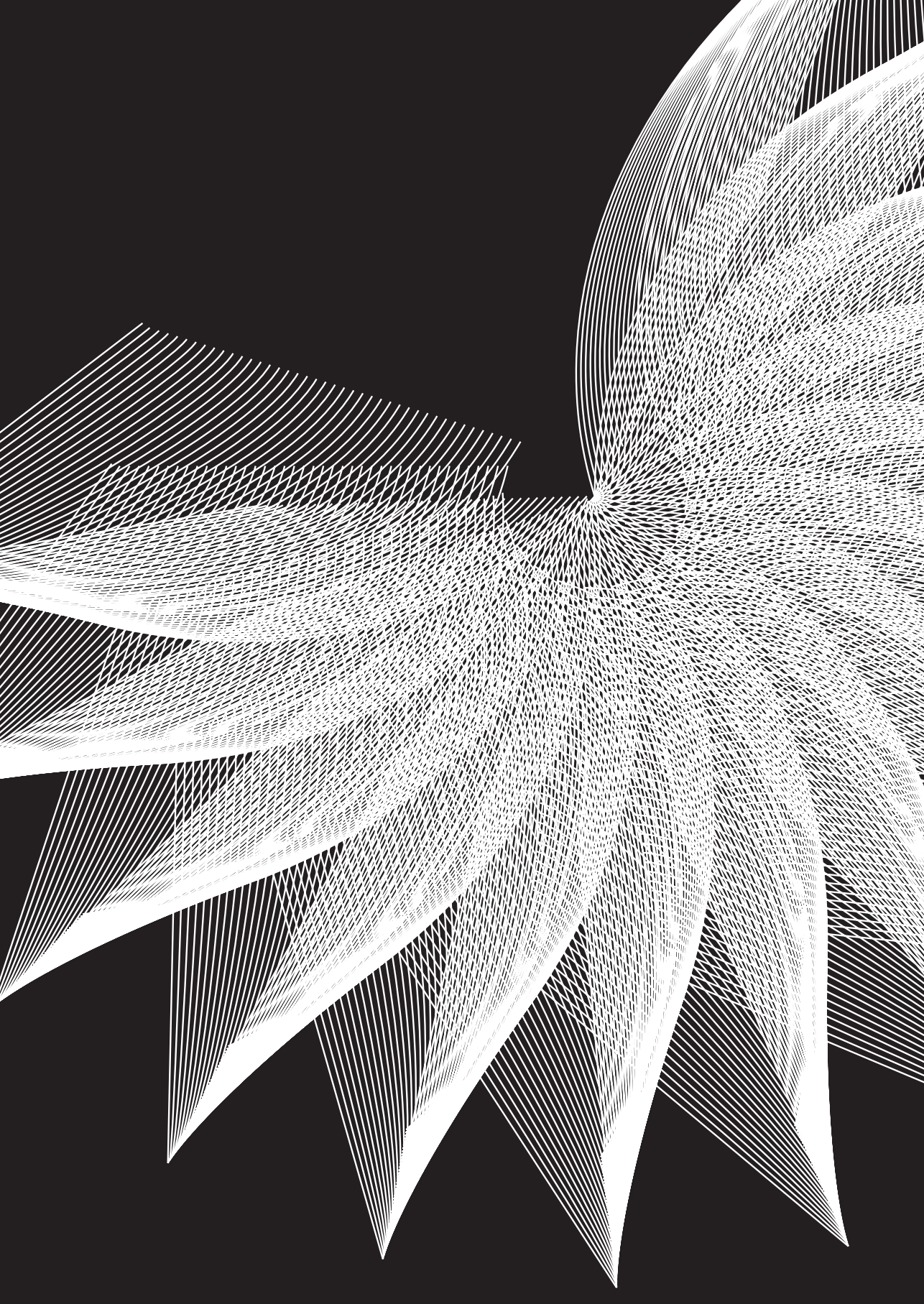
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IN THE TERRITORY OF LIFE: THE ENVIRONMENT, CULTURAL DIVERSITY AND THE HUMAN BEING – A PATH IN THE BRAZILIAN REALITY

MAURO PASSOS

*A time or a culture is characterized
more by the nature of the questions it sets
than the extension of its knowledge.*

François Jacob

The history of nature is the history of human life. The human being architects nature according to their needs, dialogues and performances. The notion of representation of the environment has an extensive discussion. In this study I consider two aspects in the context of social actions. In the foreground, the world of life, that is, the everyday, the environment in which people live in, with their values, cultures and traditions. In the background is the regulatory system - the political, economic, and legal. The environmental issue is very broad and its implications show that these two aspects are not separated. Social representations in the sphere of everyday life are translated into practical knowledge, information on traditional and ritualized embodied in the actions of individuals. The territory of life becomes social experience, because it is also founded in customs, political and institutional processes that have been assimilated in a socio cultural context. From this perspective, I intend to go through the Brazilian reality, considering the challenges of the relationship between environment, culture, religion and human being. An analysis focused on global issues seemed an interesting starting point. I recognize this clash between the general (global configuration) and particular (the Brazilian case)

a way to seal the path of this study. More than an incursion, a tour of this territory where there is a fermentation of differences, problems and utopias, particularly since the 1960s.

The history of mankind is, in fact, is man's struggle for survival. And the first big challenge has always been focused on understanding and mastery of their natural environment. Running through the history of relations between humans and the environment, we understand the world vision's that have been designed over the centuries.

Think of the life sciences is to cherish a complex theme and at the same time exciting, challenging. It is a title that plays on many assumptions. The approach depends on the level of uptake of these assumptions. The challenge lies mainly in the word "science." Isolated in itself, science cannot respond to the needs of humanity. Cartesianism and the scientific revolution of the eighteenth century introduced the rule of rationality and supremacy of human reason. The human being turned nature into an object and tried to conquer it and dominate it. It was not pondered to understand nature or study in depth its complexity. It was considered an inanimate object to be exploited without limits. The human (reason) was the master of nature and did not imagine that could be part of it.

Scientific knowledge can no longer ignore the various life sciences and cultural diversity. There are several knowledge to learn better about life. Science and scientists do not control life, are components of it. Cassio Hissa shows that the crisis of modern science is also a crisis of disciplinary knowledge, which is facing today and will face in the future, enormous challenges.¹ He puts the need for an open dialogue between the various sciences, but also between them and other knowledge. The multidisciplinary, interdisciplinary and transdisciplinary prove that there are several knowledge and that at times integrate approach, sometimes recede, at borders which are very vivid, dynamic and uncontrollable. However, it must be noted that the disciplinary power is still very strong.

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THE ENVIRONMENTAL MOVEMENT IN THE TERRITORY OF LIFE

The primacy and pride of its exuberance led modern science to ignore the forms of traditional social and economic organization, especially the "popular knowledge", knowledge of local communities on issues such as climate, medicinal plants, animals, food, cooking, and rivers. It lacks scientific value, although it is of great value to people and life. What is questioned is the value and meaning of science, if it has no connections and commitments to improving the quality of life.

A series of phenomena with different intensity and impacts has caused an environmental crisis on the planet. "Crisis" in this context means to break the balance, removal of the state of normalcy. The nineteenth and twentieth century's showed, clearly, the domain of science and technology in action and human thought. With the expansion of human activities, the twentieth century, particularly, was conducive to discussion on this issue that would have its cause in the irrationality of the space occupation and appropriation of natural resources. Deforestation, siltation and flooding are associated with the activity of human beings on planet earth. This environmental crisis is actually an ethical crisis of reason that generated the crisis of cultural values and behavior.

Modern science has become one of the most important pillars of international capitalism. In a society increasingly globalized and competitive, science and technology have been used, mainly by rich countries to control and dominate politically, economically poor and developing countries, but also to impose their cultural values. The new scientific and technological knowledge are strategic within this logic. The information and knowledge, new technologies, materials (each day presenting new features and improvements), the skilled labor and automation became top priorities in rich countries.

Science and technology are not only vital fuel of mass production of modern capitalism, of exacerbated consumption, schizophrenic competition and manipulation of the power of knowledge that separates peoples and cultures. They deify the specialization, fragmentation of knowledge and clearly overestimate the part at the expense of the whole. This fragmentation has resulted in the isolation of "wise men", which always carried with them the certainty of having the primacy of

the knowledge domain. Milton Santos calls "the ideology of globalization" this enhancement of the value of competitiveness, the adoption of a thought centered on the economy and the multiplication of capital and not the people, the standardization of life in the name of science and technology. For almost the entire nineteenth century and part of the twentieth century there was the dominant notion of the existence of unlimited natural resources. The understanding of progress was growth, exploration, field development and conquest of nature. Modern and contemporary civilization conceived nature as an endless supply of resources and subject to uncontrolled exploitation. The myth of an inexhaustible nature contributed to it.

The binomial population-environment has not always been properly understood and analyzed. This relationship has been switched through time, as far as referring to the domain of one part on the other as the importance given to each. The issues concerning the environment were largely expressed in the second half of the twentieth century. Understanding the relationship between social history and territory requires a methodological dialogue.

The environmental issue is the face of actual social, cultural and civilization crisis, which we are living in. How to point out a new way of living and thinking? The challenge is great in the sight of the consequences of environmental and human beings degradation. The conversion is an ethical way to update the religious tradition, in order to cultivate a paradigm that values life and the interrelationship between nature, society, and the human person. We have reached a new period in time. And the future scenario? What is its velocity and agenda? The new tune as sung today - "quality of life" is not meaningless. It has an ancient tradition, as ancient as the ideals of democracy, Athenian invention, which went through space and time. However, there is much to do, rather than a political regime, democracy is a system of life. The political world continues with global problems - war, hunger, illiteracy, environment, development, and many questions demanding answers. The globalization process has had major impact on natural resources and the model of civilization. The world scenario is modified. Economic globalization has caused nature of globalization, which has generated serious problems due to indiscriminate use and ownership. The health of democracy is in the quality of life, in the range of values that society establishes with nature. The environmental crisis is passes, of course, through the social, political

and economic crisis. Much of the world population has no access to basic health care. While a portion of the population live in the era of consumption and waste, most still suffer from hunger. Remains valid, the argument of Josué de Castro that, "the biggest disease of the world is hunger." The environmental crisis is a political crisis, rooted in social patterns.

In 1946 it was created the International Union for Conservation of Nature and Natural Resources. This organization had as its objective the promotion of activities of a scientific nature, preservation of natural resources, of which all living things depend, not only for its intrinsic scientific and cultural values, but also for economic and social well-being of humanity.²

The issues concerning the environment were highly expressed in the late 1960s. Several investigations were made and disseminated about population growth, the planet's resources, human survival, energy, sustainable development. It is worth mentioning the Club of Rome, founded in 1968 that prioritized in discussions and studies these issues.

The 1970 records the awakening of ecological consciousness in the world with the United Nations Conference on Environment in Stockholm (1972) and the Brundtland Report (1987)³. It occurs for the first time, the awakening to the problems of environmental degradation and its social, cultural and economic consequences⁴. The asymmetry between the living conditions in rich countries and

2. Cf. VARGAS, Heleiana Comin. População e meio ambiente na entrada do Terceiro Milênio: em busca de uma nova ética. *XI Encontro Nacional de Estudos Populacionais da ABEP*. São Paulo: USP, 2006, p. 3055

3. The Brundtland Report was the result of surveys conducted between 1983 and 1987 on the economic and environmental situation of the planet, as a UN initiative. According to this document "sustainable development" should be an evaluation of this concept and should be understood as economic growth for all, respecting the rights of life of future generations and the current needs of human beings.

4. VIOLA J. Eduardo. O movimento ecológico no Brasil (1974-1986: do ambientalismo à ecopolítica. *Revista Brasileira de Ciências Sociais*, São Paulo, v. 1, n. 2, p. 6-26, out. 1986. The author discusses several issues on the environment, cites sources for further development of these important issues and prepares a historical overview on the situation in Brazil.

the difficulties of survival in poor countries placed on the agenda social justice, human life and growth models. Another problem that grew, and reached the XXI century, is regarding to unemployment and the devaluation of human labor.

As humans are one of the social species alive, the quality of life depends heavily on their pattern of relationship with the social, environmental and cultural aspects. The newspaper headlines, the media and various media lead us to a false interpretation of reality. The avalanche of information we receive on a daily basis does not allow an insight and understanding of the complexity that the world is today⁵. Mankind requires a restoring of the quality of life. This also has to do with the restoration of universal values, able to recognize the identity as a being-in-re-relationship, and care for others. The notion of territory extends to the meaning of cultural-political space, not just geographically.

Increasingly it is known that the production of innovations and exploration of the environment must not be driven only for utility. The late XX century and XXI present themselves as periods of profound social change. These changes embrace the culture, production, science, technology and labor. The directions of this process are still unclear, but certain guidelines have begun to emerge, stimulating different types of movement, new social relations and great fighting ability. In this sense, NGOs, popular groups, social and religious movements struggle for the democratization of technical progress and the satisfaction of human needs. According Grzybowski (1996):

Our political action with the power and market system for a democratic globalization implies, first of all, the strengthening of civil societies in which we operate. The challenge is to combine these two poles. To confront it will certainly shape a new globalization.

It is therefore difficult to solve the problems without the involvement of various social strata. In this sense, education is a key meddle in the formation of new generations. It should also be designed in a different and ample manner. It should be a space for thinking about the conflicts and contradictions of society.

5. TRIGUEIRO, André. Meio ambiente na idade média. In: TRIGUEIRO, André (org.). *Meio ambiente no século 21*. Rio de Janeiro: Sextante, 2003, p.75-89.

The role of scientists and experts is of fundamental importance in this process. However, the technical and scientific knowledge is still seen as an absolute and unquestionable truth. According to Cassius Hissa (2008)

The world emerges everywhere and every manifestation of the world saves specificities, in consideration of the entire movement. There are worlds in the world. They are all boundaries of the *subject's world* and the scientific disciplines are, in turn, originated *from parts of the world* made by the subjects of knowledge. Thus, to each subject corresponds a *part of the theoretical framework* of the world which, in turn, also corresponded to a *division of the world* experienced by its existence. A rereading that can be done from ideas of Paulo Freire: *at every reading of the world* corresponds a *reading of the word*. The registration underlines the insertion of the actual reading of subject knowledge, as, in the world, the subjects are politically inserted.⁶

This argument shows that there are different levels of knowledge, although still exists in the scientific area the defense that complex technical issues should be left to the engineers, the issues of biodiversity for biologists, the mapping only with geographers, complex economic issue only with the economists, the issue of health only with doctors, social issues only with sociologists.

It is worth remembering that every scientist is first and foremost, a citizen, and his science always binds to a policy. Inevitably, though, some scientists disagree, but all politics affects science. Therefore, science and technology are not neutral and cannot be separated from politics. The attempt to place them as "apolitical" is a manipulation that seeks to hide its important role in the maintenance of economic, social and political power in today's world, especially of large transnational corporations. Those scientists who say they are neutral or "apolitical" are in fact, omitting or concealing reinforcing this scenario. The international scientific community has recognized for decades that scientific discourse is ideological and also the supposed neutrality of science is nothing but a big non sense.

6. HISSA, Cássio Eduardo Viana. *Saberes ambientais: desafios para o conhecimento disciplinar*. Belo Horizonte: UFMG, 2008, p. 24.

TERRITORY - HISTORY AND UTOPIA IN BRAZIL

Several stages of the environmental movement and environmental marked its course in Brazil. In the state of Rio Grande do Sul, for example, two leaders stood out - the naturalist Henri Roessler who served in the 1950s and 1960s and the engineer José Lutzenberger he founded in Porto Alegre, the Gaucho Association of Protection of the Natural Environment (Agapan) in 1971. This was an early environmentalist association. Its performance had to face repression from the military government of President Medici. After other associations were created, notably, the Art Movement Art and Ecological Thought, in São Paulo, groups and movements denouncing environmental degradation and alternative rural communities. From 1979 propagates the country further discussions on social justice, ecological balance and base democracy, and defense of the Amazon.⁷

Some religious militants Brazilian movements gave a great contribution to discussions, leadership formation, meetings and popular mobilization. The lower classes start to become aware of their rights. It is true that not all, because the contradictions are present. But several groups in several regions fought / fight for quality of life, for issues of land, labor, health and education.

In the 1970s, the World Council of Churches (WCC) called attention to another issue, beyond the economic and sustainable development - a concern with the human being. In 1979, the Catholic Church promoted a Fraternity Campaign highlighting the social dimension of the ecological issue - "Preserve what belongs to all." In 1983, VI WCC Assembly in Vancouver, the focus has broadened, as has been said that sustainable growth is linked to the need for greater social justice and peace building. The central problem is the very life of humanity. During this period, the approach was mainly political. The struggle for trade union organization, movement of rubber tappers, indigenous, rural workers and the issues of land expropriation, exploitation of labor were the main concerns. In general, there is not yet a wider ecological and environmental awareness.

7 In this phase was created the Ecological Thought Magazine and other publications on environmental issues. Noteworthy in this period is the work of Fernando Gabeira who returned from exile and Jose Lutzenberger. Another very significant fact was the experience of Lages in Santa Catarina by Dirceu Carneiro team.

From 1980, particularly, various religious and rural communities battled for social, human and labor rights, as a guarantee of justice for all. The Fraternity Campaigns promoted by the National Conference of Bishops of Brazil (CNBB) during Lent prioritized social and political issues. Thus, religious experiences, inspired by liberation theology, traced a history of activism, faith and politics.

From 1984, a period of democratic transition in Brazil, several environmental groups and institutions got involved in the campaign for "Direct Elections Now". There was an increase in the number of entities that handle environmental issues in line with other groups like the Movement of Landless Peasants (MST), the Indigenous Missionary Council (CIMI), the Pastoral Land Commission (CPT), and the Popular Pastoral. The role of some members and sectors of the church, as a space for mobilization and struggle, enhanced the meaning of grass-roots resistance.⁸

In 1986, a new phase started to shape. Thus was created in Rio de Janeiro the Green Party in the following years, and it grows in several Brazilian states and cities, with candidates and political representation, later on.

In June 1992, was held in Rio de Janeiro the United Nations Conference on Environment and Development, also known as ECO-92. In addition to the official conference, the Global Forum was held, simultaneously, Rio-92 with the participation of national and international entities. There were debates, conferences, exhibitions, workshops, involving young people, Indians, women, workers, NGOs, among others. The presence of scientists and the pressure of civil society organizations contributed to the recognition of developmental crises caused by political, economic and technological capitalism. Several documents, projects, agreements and initiatives in favor of a new world order were born of this event, among others highlights the Earth Charter and Agenda 21.⁹

8 During this period the role of leaders and religious groups was very important historically. In the 1980s, the 5th Interecclesial Meeting of Basic Ecclesial Communities in Canindé in Ceará (1983) had as its theme: "United people, the seed of a new society." Considering the previous meetings of the CEBs, can be seen a growth in religious and social consciousness. The design of the CEBs is in line with the document published by the National Conference of Bishops of Brazil (CNBB) published in 1982 with a view of transforming the social and political structures and creating a new society.

9. Agenda 21 has an overall view of the world's problems without forgetting its national

It is noteworthy that social relations, values and connections happen and settle in a particular space and, consequently, shape and change the territory and the environment, affecting the natural resources present there. This space-territory- environment acts as a *locus* of convergence of knowledge and experiences, contradictions, conflicts and possibilities. According to Milton Santos, "The territory is the ground and people; identity and the facts, is the feeling of belonging."¹⁰ This sense of territoriality is important because it links the past to the present and the future of the people. It calls attention to the strength of collective identity that involves and form links with past generations, and also with the future.

Environmental history provides an understanding of the social mechanisms of exploitation of human labor and the appropriation of nature by men over time. In 1992, the National Conference of Bishops of Brazil (CNBB) published a document entitled "The Church and ecological issues." At the end of the text is the following statement:

Being in the world, for humans, means to live in communion and communication with nature, making it culture, ie, making the environment in which to live, work and organize them into society, enabling, through their creativity, the creativity of nature itself. Recognizing its meaning and originality, men can construct a new order as "common house" to all. Without this "creaturely consciousness," it is unlikely that humans will be able to discern its place among the beings that surround him, and guide their relationship with them, according to the ethical imperatives stem-

and regional peculiarities. According to its creators, it is a purposeful document that aims to stimulate, encourage and guide the process of changing values, attitudes, behaviors and procedures for all segments of society (governments, enterprises, civil society organizations, etc.) in relation to our environment. It discusses vital issues the world faces and the complexity of this, calls our attention to the future, concerned to protect the real interests of future generations, and do not forgetting the past, valuing the goods and cultural expressions of all peoples. This document has had several editions in Brazil. *CONFERÊNCIA DAS NAÇÕES UNIDAS SOBRE MEIO AMBIENTE E DESENVOLVIMENTO*. 3ª. ed. Brasília: Senado Federal, 2001.

10. SANTOS, Milton. *Por uma outra globalização do pensamento único à consciência universal*. 3ª. ed. Rio de Janeiro: Record, 2000.

ming from the condition of creature. Without this awareness, a human ecology and social becomes impossible.¹¹

Thus, understanding the young Brazilian society involves understanding not only the relations between social groups, but also the relationships between them and nature, natural resources, fauna, waters, minerals, forest and its wealth, its legends, traditions and cultures.

The values and principles that should guide the pilot of a new world need a "re-utopization", new political practices. In this sense, the differential mark is one capable of ensuring a just social order, respect for life and recognition of social rights. In this field, we can highlight the political invention of the World Social Forums. The I Forum took place between 25 and 30 January 2001 on the *campus* of Catholic University in Porto Alegre, with the theme "Another world is possible". There were 4,000 delegates and 16,000 participants from 117 countries, plus a large number of eventual participants.¹² This is a new experience and a new way of doing politics, which has as reference the idea of networking. The involvement of Christian religious based movements, Christian leaders engaged in politics and social issues have been frequent in these forums. In Brazil, from mid-1960 a new religious consciousness was emerging in some groups, movements and religious leaders, especially with the Christian Base Communities (CEBs). Among others, deserves to be pin pointed the "Faith Movement and Politics", created on the 6th. Intereclesial of Basic Ecclesial Communities Meeting (BECs) in Trinidad. It was not a political party, but the relationship between faith and religion. This movement has expanded and spread to various regions and among various religions in Brazil with the objective of assisting grassroots organizations and provides training service and encouragement to reflection groups. According to Leonardo Boff (2004):

11. CONFERÊNCIA NACIONAL DOS BISPOS DO BRASIL. A igreja e a questão ecológica. *SEDOC*, v. 25, n. 234, p. 222, set./out. 1992.

12. A study of the history of this event is in the work of LEITE, José Corrêa. *Fórum social mundial: a história de uma invenção política*. São Paulo: Fundação Perseu Abramo, 2003.

Democracy is an ideal and a reality. [...] The eco-social perspective has, moreover, the power to embed democracy in the logic of things. We now know through the Earth Sciences that the basic law that continues to act in the constitution of the universe and of all ecosystems is synergy, symbiosis and relation of everything with everything at all times and circumstances. [...] Delivering democracy, the best we can, mean to advance further and further into the realm of the specifically human. It means re-connect more deeply with everything and the whole earth.

Anything that involves life and its quality, regards to religion. The territory of life is united to the religious territory. The policy and the environment have to do with life, and life has to do with the religious phenomenon.

Religious experience is life transforming. The seeds of the politicization of the 1960s opened up new areas of activity. From the standpoint of social and religious, for the period 1960 to 1970, there is a swarm of experiences that germinate a new way of being religious. A richness of new practices grows in the Brazilian religious field, which also favored the encounter and dialogue between different religious expressions.

It is important to note that from the 1970s, a new agent will be working within the religious practices - the working class. It is a "new social subject" and a "new religious subject." A lady of 70 years, who worked in the 1970s and currently develops an activity in the "House of the woman worker" in Ibitiré, Minas Gerais, said:

We had nothing here in the neighborhood. The road existed because of the holes. It was necessary to fetch water far away and carry by hand. The children had to cross a wooden bridge and walk over for more than half an hour. It all started at the church. There was meeting, Bible circle, and worship three times a week. Almost every Sunday, the community gathered for Mass and then talked about the problems. The priests really spoke out. They went with us to City Hall, called the politicians. Thus, it was forming leaders. All we have here today was from the from struggle of people.¹³

13. Briefing of Ana Amaral para o Projeto de Pesquisa: "Depois do dilúvio a bonança"?, sob a coordenação do Prof. Mauro Passos, do Mestrado em Ciências da Religião.

This statement demonstrates the desire to join, participate and act for the good of the community. The ties of solidarity marked its place, occupied space and were present, on the one hand. On the other hand, these new formulations of Catholicism resulted from its contact and engagement with the historical reality. Result of a learning exercise and convergence of developments, discoveries and exchanges. The history is the place of the pursuit of justice in which we cannot minimize the value of the word, justice and new practices. But changes only happen if they are planned, with clear strategies and a time horizon. In this model, the important thing is to plan with people instead of planning for people. This should occur in a participatory manner, listening to local councils, associations, unions, public and private organizations and working in a rational and balanced way. The use and conservation of natural resources is a duty of all. It is useless to talk about development if there is not a mature social and environmental management, professional and democratic - participative. Otherwise, the natural heritage will remain in the hands of a few to the detriment of the thousands who need it.

Much of the population, especially in poor and developing countries, still has a passive attitude, always asking for and expecting the government to do all or a large enterprise to adopt a paternalistic attitude. Local actors also need to be recognized as "knowledge producers" and not just the universities and their scientists. The popular knowledge can be added to scientific knowledge, ie, quantitative data can be added and subjective qualitative data supplied by non-academic actors. This will contribute for scientific knowledge to takes place in / with more realistic bases. The grassroots movements and religious institutions have played a major role in this.

Following the studies of Hervieu-Léger¹⁴ (1993, 2008), the mobility situation, typical of a religious modernity woven by personal experiences, favors the emergence of another scenario in the religious field. It happened with various religious beliefs. They began to fight for issues that concern the life, culture, politics and society. Moreover, the fundamental questions that pertain to life at the present

14. Among others, I point out the following studies of this French sociologist: HERVIEU-LÉGER, Daniele. *La religion pour mémoire*. Paris: Les Éditions du Cerf, 1993; —. *O peregrino e o convertido: a religião em movimento*. Petrópolis: Vozes, 2008.

time are urgent and require a joint search and dynamic. This contributes to the understanding among various religions and new forms of inter-religious relationship. If all religions relate to life, the dialogue is essential and becomes increasingly significant area of life. The various religious traditions, with their histories of struggle for the poor and marginalized, particularly in the second half of the twentieth century, may contribute to the implementation of an environmental ethic. In Latin America the binomial religion-liberation is a milestone and an option for the poor, who can enrich around the relationship between science, politics, religion and environment, on one hand. On the other, open to the religious dialogue, integrating the different cultures and promoting political mediation in favor of building democracy for all citizens.

As conclusion, I return to the epigraph of this article on "the nature of the issues and the extent of his knowledge." More than one space, a territory holds a name, a history, so it is of significance. This place territory has been forming through time and generations, therefore, saves traditions values and has a memory.

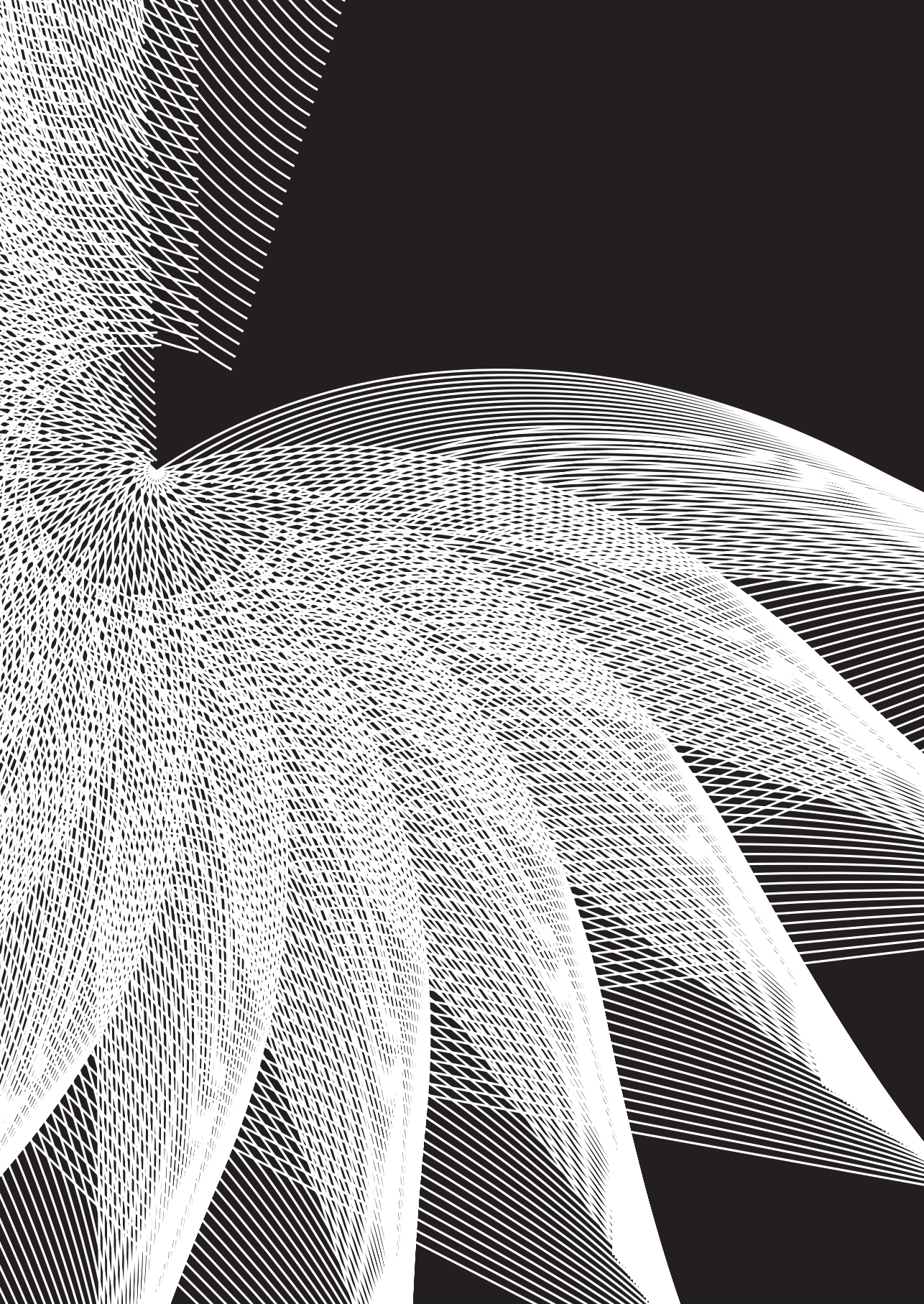
Today the safety of many people, in its territory, is still threatened. It is a problem that remains, provoking new dragging and depositing inequalities. The media has not mentioned the facts, just the news. It should be emphasized, however, that some voices, gestures, initiatives, movements, organizations and groups have animated the debate on this issue and calling for the right to build another road. The populations resist, challenge and rebel. It is a network movement, demanding respect and progress in the system of liberty.

The important thing is that everyone has access to information about the world, politics, society, and especially the ability to articulate and organize critically on the complex scientific and technological realities. Thus, utopias can point multiple possibilities of living in space diversity and the universality of law. The "many educations" experienced by the human being, should help to build territories and in recovering the collective way of living.

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THE TRANSFORMATION OF REALITY: NATIONAL MONUMENTS

JORGE RODRIGUES

The successful uprising of May 28th of 1926, dictating the beginning of a new politic organization that later would enshrine as the new State, has since its first moments the concern to ensure the nation's monumental memory, and because of the state of ruin of many of the castles, churches and palaces, dear to the new regime, it became an urgent matter. It was in this context, in April 30 of 1929 that the General Direction of Monuments and National Buildings was created. It was integrated to the Communications and Commerce Ministry (becoming later the Communication and Public Works Ministry) which was in charge of building and repairing all buildings belonging to the Portuguese State. It was included the monuments -whose legal status were, moreover, very diverse, being allocated to various ministries according to their uses: barracks, military buildings, hospitals, government offices, churches or simple monuments without specific use, in most cases abandoned or poorly maintained.

The exception to this state of ruin and abandonment was only protagonist by the great monumental and emblematic buildings in the country, by which the restorers of the nineteenth century were already interested. This nineteenth-century interest, whether distinctly romantic and mostly inspired by the theory of unity of style of Viollet-le-Duc, was, however, responsible for considerable abuse in many of the interventions performed essentially turned to the golden era of Art History as Alexander Herculano himself defended: the Middle Ages. In this sense, it does not surprise the restoration of the set symbol-monuments of Portuguese independence

against the Spaniards powerful neighbors of the fourteenth century, that being of Santa Maria da Vitoria, Monastery of Batalha, and one of the most remarkable collections of Gothic art in the country in which Mouzinho Albuquerque, Inspector-General of Public Works, tried to remake as from 1842, the noble parts of the set, following, uncritically, the drawings of the survey, somewhat fanciful, of the English architect James Murphy, who had been there years before; to Albuquerque – a practice that would make school – convent parties would be negligible, and the restoration should be conducted in such a way not distinguish the new from the old. A project based on incorrect assumptions, which would lead to misleading results.

We can say the same with the rest of the directed intervention, after 1860 by José Maria Eugénio de Almeida at the Mosteiro Jerónimo de Santa Maria de Belém, monument related to the zenith of discoveries, that would end up with the fantasy interventions of the tower and the new wings of the dorms- which would later host the Museum of Archeology and Ethnicity founded by José Leite de Vasconcelos – design by two scenographers of S. Carlos: Rambois and Cinatti. More concerning were the ideas of Possidónio da Silva, founder of the Portuguese Architect and Archaeologist Association, for the church, for which he was in charge of the restoration and where he planned to substitute the chapel, Capela-mor de Jerónimo de Ruão, mannerist, for a new and false construction with manuelist characteristics.

The last example is the Sé de Lisboa's work, monuments just as emblematic by the meaning that related it to the Christian's conquest over the moors, knowing that the temple would be already consecrated (in the initial phase of construction) three years after the city was abducted, in 1147. The restoration led by the Italian Antonio Maria Fuschini in early twentieth century, reached here the scenic climax, with the tearing of the walls to see the head, the change of the facade – with the planned construction of a niche in one of the towers to house a revival *Pietá* – and implementation of various architectural and sculptural elements, whose remains can still be seen in the remains of the cloister terse, inspired, as anachronistic as it may seem, on what could be destined for a dubious film production of history characteristics of the Hollywood the years 30 and 40. Intervention which would be later “corrected” in the years 40 of the XX century, by the campaign directed by João Couto, that– nonetheless – would not be able to help some of the *reintegration* which were characteristic of D.G.E.M.N.'s action, that included redoing some cracks, ro-

settes, capitals of the triforium and galleries, in a way that that it would look the same as the original ones. This would contradict a consented practice in the Letter of Athens of 1931 that said (point I) Main principles:

Where a restoration seems indispensable due to deterioration or destruction, the conference recommends to respects the historic and artistic works of the past, without sacrificing the style from any era.

And below in the article VI – conservation techniques although focusing on the problems of the ruins (the conference in Athens was worried with the preservation of the Parthenon and the Acropolis of the Greek city):

... a scrupulous conservation is necessary, with the replacement in place of the original of elements found (anastilose), each time the case permits; the new materials required for such work should always be recognizable.

The Charter of Athens, in the spirit of nationalism and isolation of autistic of the Regime, would be totally ignored by those responsible for DGEMN. Examples of previous restoration interventions of the Portuguese monuments were not, however, as mentioned before, particularly inspiring to the men of the Directorate-General or, more specifically, to its Directorate of Monuments, which inherited the powers of the 3rd Division of Directorate General of Fine Arts, Ministry of Public Instruction. Being in charge of the inspection, inventory and restoration of national monuments – whose classification it was also in charge, in collaboration with the Superior Council of Fine-Arts – the Directorate of Monuments was essentially made up of architects, formed by a technical staff of the broader Directorate-General, where the engineers prevailed, being this training required to Director-General himself.

As we shall see below, the concerns of DGEMN during the Estado Novo was divided between those of the highly technical, often insufficiently informed, for lack of interdisciplinary project teams, and the ideological in nature, given the concern of *building*, from the memory of the past, an image of the regime in line with the words of Salazar in Braga in 1936, when he spoke of “...material restoration, moral

restoration, ... national restoration.” The symbolic nature of the image of the regime became increasingly evident, with Salazar to appear alongside the founder of nationality, D. Afonso Henriques in propaganda posters, against the background of the *nation's birthplace*, the castle of Guimarães. This was a search for the paladin of the New State legitimacy for the authoritarian regime, as if it was a *symbolic rebuilding* of the country, which appeared identified with its first founder, and that the monuments related to this gained new meaning and importance: Guimarães and S. Jorge castles, Chapel of St. Miguel (which allegedly Don Afonso Henriques would have been baptized, although the present building was erected after his death ...) and also the Cathedral of Lisbon, all subject to interventions in the early years of the dictatorship.

The theoretical and ideological assumptions of the D.G.M.E.N. intervention were clear in a text of whom had been its general director between the years of 1929 and 1960, Eng^o Henrique Gomes da Silva, published in 1935, the first of more than 130 reports of the General-Directions, dedicated to interventions produced on a great percentage of the monuments under his guard:

The work done in recent years claim that the country, while cherishing the natural longing for the achievements of modern civilization, went back to the past in the service of their monuments, restoring some, retaining others, giving, in short, all the purity of its primitive traces .

And this work was necessary, as one of the most important, giving everyone the assurance that our artistic and Monumental heritage is being redone of the attacks against it that were committed in the seventeenth and eighteenth century.

The criterion to preside over these delicate restoration works cannot deviate from the ones with notable success followed in recent times, in order to integrate the monument of its primitive beauty, cleansing it of later excrescences and repairing the suffered mutilation, either by weathering or by vandalism of men.

The ideological and celebration nature of the restoration work found, on the symbolic significant dates of national celebrations, a privileged moment of inter-

vention. That's how the most significant intervention efforts appear, before the emblematic dates for the regime, in 1936, occasion of the celebration of 10 years of the Estado Novo. Celebration which was a rehearsal for the big celebration of the Centennial in 1940, high point for the regime with the performance of the Portuguese World Exhibition, and a huge desire to intervene in national monuments, especially medieval, with the Church of S. Miguel de Guimarães and the Castle of S. Jorge, in Lisbon, as highlights, given its obvious relationship with the eight hundred years of nationality. Also the Palace of Vila Viçosa, representative of the III Centenary of the Restoration, was then subject to detailed intervention. A commemorative plaque was to score a huge amount of monuments intervened.

New high point comes in 1947, with a consequent increase in restoration interventions in the preceding year, having in view the celebration of the Eighth Centenary of the conquest of Lisbon from the Moors, whose most important symbol cathedral of Sé itself, of time consuming and complicated intervention, and not without hesitation – now even undergoing the possibility of reconstituting the medieval Capela-mor (main chapel), in detriment of the 1300s and 1700s existing structures, interventions work of Afonso IV and Ludovice (the architect of Mafra Convent), according to order of D. João V.

The year 1947 was also the year that the Presidency of the Council of Oliveira Salazar, completed 15 years, and this coincidence of dates - always ideologically capitalized by the regime in terms of propaganda - would be celebrated with dignity by DGEMN, that edited a Special Bulletin, commemorating 15 years of Public Works that basically reproduced the photos of “before” and “after” interventions that had been the subject of the first 51 Bulletins, with an interesting introductory text to which we will return later.

Finally, in 1960, it was celebrated the fifth centenary of the death of Prince D. Henrique, an emblematic figure of the Portuguese discoveries, the subject of a major exhibition, for which was recovered the Infant House, in Porto, and many of the monuments linked to it had privileged treatment - cases as the Convent of Christ in Tomar (Order that the Infant was Master), the set of Sagres or of the walls of Lagos.

The interventions of restoration of monuments have been directed since its inception and throughout the duration of the Directorate of Eng Gomes da Silva, Mil-

itary Engineer close to Duarte Pacheco, following a sense of *historic triumphalism* of the Nation, a fact that is evident right from the already quoted text of introduction to the first published Bulletin, in September 1935, dedicated to the Church of Leça Bailiff. The medieval monuments would be, moreover, the subject of particular attention – to the detriment of periods of decadence, identified with the XVII and XVIII century, in the same text – and not until the 24th Bulletin, June 1941, to see a documented a restoration of a Renaissance temple – the Church of Atalaia, still an almost unique exception in the first 20 years of activity of DGEMN.

This choice, indeed, seems to have been a draft response to the detractors of the action of the Directorate-General, as it gives us to conclude the long, justifying and self-laudatory text that precedes the analysis of the monument and its restoration as such. It was written then:

The buildings of existing artistic value will be maintained and repaired, within a clearly defined in any style, even if linked to monuments absolutely opposite in character.

The Bulletins – 131, published at a rate of four per year until 1966, and then on a less systematic basis until 1990, with an excellent version on CD-ROM published in 1998 – clearly showed the patriotic spirit that guided the Directorate of Monuments, in which texts and interventions remained anonymous (although the vast majority until 1955, were attributable to D. João de Castro), at the *higher national designation*, where the shortcomings are clearly evident at the level of studies in Art History and on the other hand, the empirical nature of the interventions. The ideas of *unity of style* of Viollet-le-Duc were scrupulously followed, including the concern to document – graphics and photographically – every step of the restoration, showing the decay of *before* and dignity recovered the *after* of the restored monuments. Ideas that led the technical D.G.E.M.N. to rebuild – or even build in some extreme cases, that we will see – not as *it was*, but as *it should have been*, placing the restorer in the skin of the Author and interpreting – imperfectly, given their apparent lack of artistic knowledge – the original intentions of the architects and teachers from the medieval.

This practice married perfectly with the religious imperatives (a Catholic fundamentalism), moral and ideological of the regime – God, Country, Authority –

which often came in conflict with the expectations of scholarly layers of society and with the catholic Church hierarchy itself. In fact, many of the restorations did not take sufficiently into account the value of the restored monuments *document*, in the manner of Viollet-le-Duc, but their *symbolic* meaning – with the emphasis on its historical value rather than its historicity. In many cases, it was not sufficiently safeguarded the use of religious buildings – the churches, since the other dependencies, including the monastic, were neglected or secondary – with interventions that made difficult the practice of religious services, the *purification cleansing* conducted indoor and at utility facilities (sacristy, in particular), removing or decontextualizing altars and images, often baroque, indispensable to the ritual and liturgical practice.

This attitude was based on assumptions that originated rough errors, result of the lack of historical and artistic training of its staff, as well as an excessive ideological engagement that turned the restoration of medieval monuments in a new *Crusade* with a full spirit of reconquest, as can be read in Bulletin 78, December 1954, dedicated to the Church of Our Lady of Mileu near the Guard:

... between us, it is certain that not all of its architectural features have survived the” improvements “due to the reformers of different time ages. Among these, can be pointed out, however, as one of the most disfiguring, which took place between the second and third quarters of last century, so many were deplorable traces left, either externally with large opening of windows in the nave and the major chapel, or in the interior, where some new altars, a sumptuous pulpit, and other out of place innovations, like a large choir, damage the characteristics in a rough and disproportionate manner throughout the enclosure, depriving it of the severe religiosity that the Romanesque art, mirror the austere medieval faith, always magnifies, within the Christian humility, in the temples which it dominates.

It was mainly in the correction of those errors which so disfigured, in their largest values – historical, artistic and religious – the Shrine of Mileu, which had the most incidence on the remedial action work carried out recently by the Directorate-General for National Buildings and Monuments. This does not mean, of course, that the building had come to our days free from some serious evils of decay, and still others

from the *decrease of pious fervor*, which became so common in modern times. In fact, the monument was very battered when they began the work of restoration. In some of its elements, both in nave and in the major chapel, the ruin were already visible and often denounced by disturbing aspects of gravity. All this damage is remedied, however, easily noticeable, and so that the temple, as it is now, should not be very different in its general feature, of what it was eight centuries ago and seen by the first Portuguese then reinvigorating their faith, and contributed that they very *successfully confronted the ultimate attacks by the Moors in the region*.

The total alignment of the DGEMN men, the principles of unity of style did not prevent them, however, elements of introducing false elements in the reconstructions, as is evident elsewhere in the same text:

Internally, it was not lower or less complex the task of reintegration required by the outrages of the reformers. The original high altar of stone, which had been banned from the sacred enclosure, as unworthy of honor assigned to it, to give place to another, wood, and ornate carved in the likeness of what is commonly seen in more modest houses of prayer; this ancient priestly communion table, often enshrined in liturgical memorable ceremonies and ultimately discarded as if they constituted the stones of a dolmen, polluted by Celtic heresy; but still, as it was banned, this altar provided the elucidative elements needed to build another, very characteristic, also of stone: which is currently in its proper place.

The imposition of the criteria for *use* of the authoritarian matrix and supposedly cultural and informative – as opposed to the common and traditional *use* of local communities related to restored buildings – often led to conflicts of those communities with the Directorate-General, who destroyed the altars, withdrew benches from the interior of the temples, imposing outdated lighting systems, supposedly *in harmony* with the spirit of places, and did not allow (as in Mileu) that the congregation put their jars of flowers to pay tribute to the images of their Saints. Another excerpt from the text gives an idea of the thinking behind the action of DGEMN:

The work of rectification, as initiated, also included other modern altars, *also worthless*, erected along the nave – not, without doubt, for greater brightness of the ceremonies that were celebrated there, but simply to” fix “enclosure nudity, *nudity that in fact existed and was (in order to create a general climate of severe religiousness) one of the characteristics of the Romanesque style that had been submitted to building of the temple*. The pulpit and the choir, innovations of the same time and also irreconcilable with the shape and proportions of the chapel, were also thrown out. With no obstruction, the ship recovered the ancient simplicity and indeed (as can almost be said) it's very soul.

Reappearing, as well as it should have been in “Portuguese period” of its long existence, the simple and cozy abode of Our Lady of Mileu now has more spiritual comfort and greater truth in all its aspects. Many of the ancient pilgrims would undoubtedly recognize it, and find there almost lost the echo of their prayers. It was essential, indeed, that the face of the monument reflect truly the miracle of faith, that magnified it, both in honor of the same faith, as the memory of those to whom it owes its foundation, its conservation, its beneficent and glorious existence.

It is said that the small image of the Virgin, venerated there by the name *of Lady Mileu*, is still the same as in the last centuries of the Visigothic domination – this is the dawn of Christianity across the peninsula – there it was enthroned. Whether it is so or not, its antiquity dates many centuries back. The purpose of this tradition harmonize with the environment in which their worship is still preserved, and also the intention to respect the character of our oldest art of building, reported there were, in fact, the two guiding thoughts of the repair action of the Directorate-General for National Buildings and Monuments, for the works undertaken to save this monument, though modest in appearance, it has some historical nobility titles sufficient to put at the side or above others of even greater fame.

The disagreement among academics and educated society in the country relating to this type of action would have a mild expression, but would be fiercely fought by paladins of the regime, as can be seen in another passage of text that opens the virulent Bulletin 24:

It's very interesting to say that one should simply keep the monuments, not touching them, even to prevent the disappearance of the *picturesque* which give them the herbs, mosses, brambles and even the fig and olive trees whose roots have caused the ruin of many walls. (...)

Some defend the thesis that the buildings later, attached to the monument, show a workmanship of its time, and therefore should not be demolished. (...)

It is a mistake to suppose that the reintegration of our ancient monuments was inspired by "the conservativeness of the ancient Egyptians or that followed the criterion proposed by Raphael making the ideal complete reconstruction of what was ancient Rome, dictating at the same time how should the surveys be carried out on each discovered building, with its plans, elevations and sections" (...)

Nor is it true to have followed the same criterion that "in the mid-nineteenth century with the work of the scholar architect Viollet-le-Duc who came in the time of full restoration, and then, the purity of style that was the misfortune of many monuments" (...)

Lately, however, despite the presence, since long, all the elements for a perfect examination, unhappiness appeared and an unfavorable criticism was made at the Academy of Fine Arts by a distinguished scholar [that the author does not name] whose "communication", published in the Bulletin of the Academy IX, were transcribed periods highlighted above.

Signs of discontent that grouped advocate of DGEMN in justification of their actions, trying to walk away from Viollet-le-Duc and criticizing implicitly advocates of the rival *school* of John Ruskin.

The only dissenting voice that was raised against this state of affairs within the Directorate-General during this long period, was that of the architect Raul Lino, educated and traveled man with formation at different schools, other than the practitioners of the house had, having studied in Germany with Albrecht Haupt, he had a solid background in Art History and defended, precisely, the ideas of *pres-*

ervation or restoration of John Ruskin, in his the *Seven Lamps of Architecture*, 1849, *against* the one of *restoration* of Viollet-le -Duc. It is assigned to him, moreover, the only critical text published in the Bulletin (unsigned), when of the celebration of the 15 Years of Public Works, published in 1948, and transcribed in the following significant passages:

Sometimes it's so important the monument itself as the overall framework within which it lies – how many times the landscapes more interesting than the work of Man. – But most often is the set of elements – architectural, landscape, picturesque (picturesque) (sic), sentimental, which must be respected. Therefore, care of monuments cannot be the work of a fierce archaeologist, despotic technician, a painter, not even a poet ... The conservator of ancient monuments has to be part of all these qualities and his task is full of subtleties only having for the complexity of problems, trade-offs.

Who would dare today to strip the rotunda of the Templar of tinsel D. Manuel added to? Who would have the audacity to propose to replace the chapel of Geronimo with new work, even though the primitive risk appears now? – The dangerous notion to *reintegrate* has caused great artistic damage, great damage to the sensibility of the people. Suppose that Viollet-LeDuc in his time harbored the idea of *restoring* different from today, what we will never forgive is that his conception of restoration of monuments were a result of this shuffling of truth and artifice that destroyed forever not few sources of deep emotion.

Artistically, the monuments are jewels embedded in the landscape or in urban centers; documental, they are a focus of interest that keep the *arcantum* of History. [...]

As the architect, also the preserver- priest must have his seven lamps, the seven lamps of Ruskin, in the light of which he fulfill the mission that destiny imposes: the lamp of probity, of the expertise, of the respect, the lamp of truth, of the esthetic and enthusiasm, and sacrifice, which is the abandonment of own references, the renunciation of personal exhibition [...].

It becomes evident from reading this text, Lino's confrontation with the dominant ideas of DGEMN – Whose staff he belonged to since 1936 – defending values near the English Romanticism, in which notions such as the importance of Nature – *landscape, picturesque* – are clearly valued in defense of a *poetic* intervention that respects a sensible *compromise* with the reality of objects artistic intervened. Clearly anti-positivist stance, in which ethical imperatives emerge alongside the moral and religious, he was worried as to preserve the *memory* of History for future generations. Obviously, these ideas inspired by the writings of John Ruskin, clash with the restorationist's criteria of the Directorate-General, which does not seem to have had great practical consequence – even getting a “response”, tested in the introduction of the Bulletin 24, as we have seen, and completed in the Golden Book of the celebrations of 15 Years, by the Gomes da Silva himself, in texts which makes unequivocal statement of the criteria adopted on this sensitive issue.

Criteria that would be, indeed, scrupulously followed by architect Baltazar da Silva Castro, in DGEMN, since the beginning being appointed Director of Monuments of the North in 1930, when the Department becomes reunited, sworn in as Director of National Monuments in 1936, a position he occupied until 1947. Man *of work*, empirical and determined, directed much of the restoration of Portuguese medieval monuments, without it being aware of previous studies or projects of intervention, being said that he would design them – with the tip of the stick or the tip of the shoe – on the very dust from construction sites. These are mostly restoration work on medieval monuments that we will now deal in some detail, from a choice of cases that illustrate the intervention criteria of the Directorate-General.

Firstly, it must be said that, despite the critical criteria of restoration followed, there were many monuments that were in such a state of ruin and degradation that traces of them may not have existed without a significant intervention by the Directorate-General, or because they had long been abandoned of all interest and function – citing as examples the churches of S. Pedro de Leiria, the Matriz da Batalha or the Church of S. Pedro de Vila Corça, near Monsanto – or with the a lack of timely intervention, perhaps they would have been in ruin, like the churches of Cedofeita or Roriz. Ther were others, as the Church of Santiago, in Coimbra, Castelo de S. Jorge, in Lisbon, or the Palace of the Dukes of Braganza, in Guimarães,

which were so adulterated that an intervention to restore would have to handle always critical aspects. Despite this evident desire to *recover the past*, the end result would ultimately result in many cases, in a confusion between past and present, given the state of “new” in what many of the monuments were made after the work.

The case of the Church of Santiago is, moreover, exemplary, given the confused state of destruction that the building was, even leading to an unexpected admission by the DGEMN, that what was returned to the city of Coimbra was not a Church rebuilt but *something else*, as can be read in the Bulletin June 28, 1942:

As can be deduced from that reported in previous chapters, the restoration works carried out at St. Tiago Coimbra developed into two distinct periods and considerably intervals: the first, with a beginning and ending in 1908, the second started twenty years later and ended in 1935, when it was possible to redeliver to worship the new temple erected *to replace and in representation* of the former.

Among the most pressing critics to the undertaken restorationist effort stand out, of course, those associated with the **artistic** interpretation errors, which destroyed or mutilated the monuments of significant historical elements. Two examples are hereby summoned to illustrate what we intend to say. Firstly the case against the destruction of ante-churches, or funerary structures that existed in many of the Portuguese Romanesque temples; the case that is particularly noticeable at church of St. Fins Friestas in Monção (Bulletin 11, March 1938), here the destruction of the structure that preceded the temple’s facade, built in masonry at regular eaves or cantilevers (at least on the south side) was made to “disengage” the facade and allow the view of the axial gateway, on the pretext that this would be a structure of the eighteenth century – an idea that stemmed, of course, of the hasty analysis of interior decoration. The eaves would then be shifted to the south side of the temple, with the elements reset to “its rightful place.”

A similar case happened into S. Pedro de Ferreira (Bulletin 7, March 1937), this structure is interpreted here as a narthex, demolished in part because “it concealed the abacus carved of the main entrance.” The lack of understanding of the structure involved, and the aesthetic concerns of restaurateurs have resulted, here, in a particularly unhappy way, with the walls of this structure before being lowered to

half size, leaving the stone portals of access loose. Although less severe, given the advanced stage of destruction of the remaining structures, also in S. Pedro de Roriz (Bulletin 9, September 1937) was “cleaned up” the remains of a probable funeral construction, on the north side, which – by their very nature “ignoble” – were not perceived as such, executing the work to better isolate the belfry. Better luck had the Church of Salvador dos Ansiães, subject to more punctual intervention, which retained its funerary chapel next to the facade, in part – certainly – because it is in a position that does not hide the main portal.

When we talk about belfry must say, however, that these were particularly mistreated by restorers, who withdrew from the facades, being medieval – as in S. Salvador Bravães (Bulletin 49, September 1947) – or modern – as in S. Claudio Nogueira’s (Bulletin 50, December 1947) – the latter being replaced by a false, pseudo-medieval. Also in S. Pedro de Lourosa (Bulletin 55, December 1949), the belfry was improperly shifted from the facade – which was leaning from the twelfth or thirteenth century – to the back of the temple, in a reorganization process of the surroundings of monuments, that was often destructive to the constructive and landscape environment in which it was inserted. Example of this limit is the restoration of the walls of Evora, which truly emptied a wide area near the periphery of the city, an example that was repeated often, given the concern to emphasize the symbolic objects that were temples and castles. This situation took the city almost 40 years to reintegrate in its renewed urban landscape.

Another of the mistakes and abuses were often committed to dismantling – and eventual destruction – of many of the decorative structures of the seventeenth and eighteenth centuries, usually of Baroque feature, which came to decorate the temples during the medieval times, after confirming the various steps of its existence. This disassembly was found in almost all temples intervention, allowing the vision “unburden” of the structures – particularly the head boarder, Romanic and Gothic – with the construction of new altars, usually in stone, allegedly made to the models or the taste of medieval art. An emblematic example of the just mentioned is given to us by the first monument registered in a bulletin, the Church of the Monastery of Leça Bailio. Head of the first Bailio Hospital in Portugal, still keeping part of the church and monastic dependencies, in the transition of styles, whose head was partially reconstituted from the existing elements or new made, and the interior

was “restored to his noble sobriety”, a concept that would guide the restorers of the National Monuments: Medieval temples were invested with a false spirituality, in which the simplicity of bare rock, totally contradicting the artistic reality of the Middle Ages, was a symbol of moral and religious values that was intended to be recovered. In this way, “demolition of the choir and altars which unconformable disturb the whole temple,” was made as an ideological cleansing that would spread throughout the country. Very few high choirs survived. And the altars had similar fate to that of Leça Bailio: 5 of 7 existing would be “rotten, no recovery possible,” being destroyed, one was moved to Matriz de Barcelos, and another to Paço de Sousa. This decontextualization, which also affected the great altar of Santa Maria de Aguiar, near Figueira de Castelo Rodrigo, only recently returned to their place of origin, sometimes also performed in reverse, as happened with the resetting of the Church of Santiago de Coimbra (Bulletin 28), with altars from the nearby Museum Machado de Castro.

As in Leça also Cete (Bulletin 3) four altars and pulpit were demolished that “obstructed” the Church, a procedure that took an even greater gravity in the Church of Cedofeita (Bulletin 2, December 1935), where besides the altars a chapel that had been attached to the north façade was also dismantled. The worst case would be, however, the Church of St. Pedro de Rates (Bulletin 23, March 1941), in which a small ogival dome that covered the South side entrance – perhaps the first experiment of its kind among us – was dismantled because it collided with the principles of unity of style. Rates that also saw the main chapel to be fully rebuilt, with the destruction of that was replaced in the modern period, work to which restorers refer to as “sacrilegious” or “crime against art,” calling them “Vandals.” “The Baroque altars are also destroyed, since they would be “subject to the general law of vulgarity,” to “replenish the aesthetic decency and balanced chronology.” The same applies to the tile lining of the seventeenth century, which covered part of the temple walls. The extent and importance of intervention in S. Pedro de Rates, associated with the historical importance of the monument, make this a clear example of action of DGEMN that, from a loose set of architectural elements found in the main chapel demolished in the eighteenth century, it allowed to remaking of the entire head boarder, not hesitating even to displace the panniers decorated absíditos of the South to support the cornice of the apse.

In Cete a Manueline arch is destroyed, which was set on one of the medieval gates of the temple, and was also demolished a floor on top of the Capitulo House – because it touched the wall of the Church – which boasted a Manuelist window feature. As early as Paço de Sousa (Bulletin 17, September 1939) is the belfry, contemporary of the reform made in the eighteenth century, which is dismantled, saving the main chapel and its altar, due to lack of safe elements for reconstitution of the original. Finally in Sé do Porto (Bulletin 40-43, June 1945), in one of the greatest interventions – which preserved the side gallery of Nicolau Nasoni and the rococo decoration of the facade – there were many elements of later times that were destroyed, especially around the cloister, in search of pristine purity.

These interpretation abuses were near the construction or the alteration of elements that were, allegedly in the medieval spirit, became a multitude of *falsification* over the whole country. So, in Leça Bailio is the door to the sacristy, redone when the restoration took place, which is carved with pointed arch, the same is true with the triumphal arches of S. Pedro de Rates and Vouzela (Bulletin 56, June 1949), the latter being reconstituted “in due form.” In Santiago de Coimbra there is the dismantling of a stone altar “of that time” and many new panners, to replace the missing ones, proceeding further to its moving to the opposite side of the temple, to a side chapel of the late Gothic. The reconstruction work on this temple from Coimbra were slow and complex, that the very DGEMN assumes, as we have seen, that when giving as completed, in 1935, it is “Redelivering to worship the new temple erected to replace and represent the old one.”

Among the most obvious *falsifications*, are the medieval rosettes reconstructed from elements found, as in Rates or Paço de Sousa, or simply invented – according to the “model” of the time – as in Cete or Santa Clara de Santarém (Bulletin 30-31, December 1942), where the intervention of restoration “cleaned up” also the lot of undesirable conventional buildings, isolating the Church in the vast yard of dirt where it still stands today...

More serious, however, are the cases such as S. Pedro de Lourosa (Bulletin 55, March 1949), a rare pre-Romanesque churches which survived until the present day, which has been one of the most discussed restorations made in national monuments. The criticisms are many, ranging from rebuilding of the narthex – the polishing of the new stones to look like old – downgraded to a level purported “orig-

inal” (destroying an extension of the nave of the twelfth century, as mentioned in the same Bulletin) fact which came into contradiction with the presence of a window ajimez, of Mozarabic inspiration at the top of the facade; a window that would be shifted to the gable of the temple entrance, being copied to be replaced by another in the same rear facade, on the triumphal arch. Even the triumphal arch would also be done again, in horseshoe – or exceeded – given the total reconstruction of the main chapel, according to very questionable criteria of integration into the existing architecture. Here would be placed “appropriate” altars, fact that would be repeated with the absidiolos. The North top of the transept was finally redone by copying the top of the South.

However, the most blatant abuse of interpretation of existing structures would be of the Castle of S. George and the Palace of the Dukes of Braganza (Bulletin 102, December 1960). Both structures were very tampered, in the case of Lisbon the walls and towers of the castle had been absorbed by the houses, over the centuries of actual disregarding to that medieval defensive structure; in the case of Guimarães for its as barracks, associated with earlier ruin of part of the building, which had changed its structure, especially in the area of the façade.

The procedure of the Directorate-General, similar in both cases was to truly build new structures, supposedly based on a correct interpretation of existing evidence and documentary material. In Lisbon walls were built, houses were demolished, towers were isolated, battlements were placed in a systematic way – this being one of the mistakes often pointed to the action of the Directorate of Monuments, which multiplied bits of the battlements throughout the medieval architecture – perhaps a bit too critical, in many cases, but it is perfectly acceptable in the case of the Castle of S. Jorge, where there was not the sensibility – or knowledge of medieval architecture of the period – to realize that maintaining an isolated tower outside the perimeter walls of the castelejo facing the Moorish and accessible by a wide staircase in a curtain wall, showed full anachronism characteristics, since that would constitute an impossible military defense (as more valid as an observatory than defensive tower).

More seriously, however, was the case, the Palace of the Dukes of Bragança, in Guimarães, where much of the structure was virtually invented in the absence of safe elements for its rebuilding. All the main facade, part of the side walls and most

of the interiors were built almost from scratch, turning the palace into a space of representation of the Regime, with few points of contact with the building originally built in that location. If in Lisbon was the question of the *symbolic* representation of the Country that was desired, rebuilding the castle that housed the Royal Palace of the Capital, after it was taken in 1147, in Guimarães this is clearly linked to aspects of political representation, with the new Palace privileged to serve as a set for receiving the guests of the New State. Palace, as can be seen by the pictures, following models that are totally unrelated to the mainland and Portuguese architectural tradition of the Gothic period, presenting an architecture inspired in aulic of Central European tradition, associated with an idealized vision of the triumphant power of a ruling caste, nobility and royalty, who thus sought to emulate themselves in the *cradle of nationality*.

The implementation of these controversial restorations leads us still to raise two questions of vital importance about DGEMN activity, which are closely related. Firstly, the lack of preparatory studies for the actual restoration, of Art History and Archaeology, allowing more correct interpretation of the material remains in existence, stating so advised the possibilities – and limits – of the intervention to be made. In reality it would raise numerous criticisms throughout the duration of the Regime, be it of politician – as Deputy Águedo de Oliveira, a former finance minister – as from historians, art historians and archaeologists, as Flavio Goncalves. The first would come forward for criticizing one of the criminal operations of the New State – the destruction of high Coimbra to build the new campus (especially the building of the Faculty of Sciences) – interpellation also to the Directorate-General for the destruction of joint Baroque art and numerous decorative art traces from all periods, due to lack of systematic prior archaeological surveys.

The second question relates to materials and techniques, without the necessary research, historical and physical chemistry. Cement mortars were used in stone structures such as the Castle Admiral or the walls of Lagos, without taking into account the interaction with existing materials. It was executed in reinforced concrete structures, “masked” of wood or stone coating, as in Guimarães Palace and many Romanesque churches, as we shall see. Existing structures were changed without regard for the existing physical evidence, an emblematic case is the Monastery of Flor da Rosa, near Crato, where construction of the monastic church,

whose head boarder had fallen down in 1897, was rebuilt between the years 40 and 60 this century, not in shale placed knife – as can be further seen in the nave – but in stone masonry, due to the excessive weight, that caused displacement of the wall structure, opening dangerous cracks. It was not just a technical issue that stood in this as in other cases, but also a matter of history and artistry, as the the coverage of this temple performed with an enormous practical intelligence, being the shale slides covered by land fill, rubble and ceramics – all topped by a terrace, improperly replaced by a gable roof when being restored – filling that allowed some flexibility in the construction in the distribution of masses, particularly useful when the occurrence of tectonic movements – since the whole building rises over marshes, with low stability.

The awareness of past mistakes, moreover, was tacitly assumed by the Directorate of Monuments that – while continuing to operate without the use of an interdisciplinary practice – it is careful not to remove the frescoes in the Church Outeiro Seco (Bulletin 112, September 1963); however, reinforced concrete is used, to consolidate the concrete structure.

Such a procedure is given in one of his last documented interventions, to the unique Church of Algozinho (Bulletin 126, 1972), where intervention is appropriate “only” of “full consolidation”, with the construction of a new sacristy which “was printed an architectural design to distinguish it without any doubt, from the initial construction. “ Here was also respected and restored the main altar, Mannerist, considered “part of undeniable artistic interest.” Although the builders involved in the restoration have not been curbed to carve some new cantilevers, the *Romanesque manner*, including the rabbit we see in the image to the right...

It began to be respect, slowly but steadily, what was stipulated by the Charter of Venice, 1964, which stated in its Article 9:

The restoration is an operation that must be exceptional. It is intended to preserve and reveal the aesthetic values of the monument and based on respect for original material and authentic documents. The restore stops where speculation begins: at the level of conjectural replenishment, all the work of complementation necessary to recognize for aesthetic or architectural techniques depends on the composition and possess the hallmark of our time. The restoration will always be preceded and accompanied by an archaeological and historical study of the monument.

And although the use of modern materials like reinforced concrete, were tolerated if properly integrated in the work of restoration, the Article 11 made clear the need to avoid purisms of the *unity of style*, often motivated by ideological reasons:

The valuable contributions of different eras regarding building a monument must be respected, not being the unity of style objective to be achieved during a restore. Since a building involves several overlapping times, evidence of an underlying time is warranted only in exceptional circumstances and provided that the elements eliminated have little interest, so that the final composition can be a witness of high historical, archaeological or aesthetic and its conservation status is acceptable. The judgment on the value of elements in question and the decision on the eliminations to be made cannot depend solely on the author of the project.

Concluding, in Article 12, with the enunciation of the fundamental principles of the cultural point of view, which should guide any restoration:

The elements intended to replace the missing parts must integrate harmoniously into the whole, distinguishing always the original parts so that restoration does not distort the document of art and history.

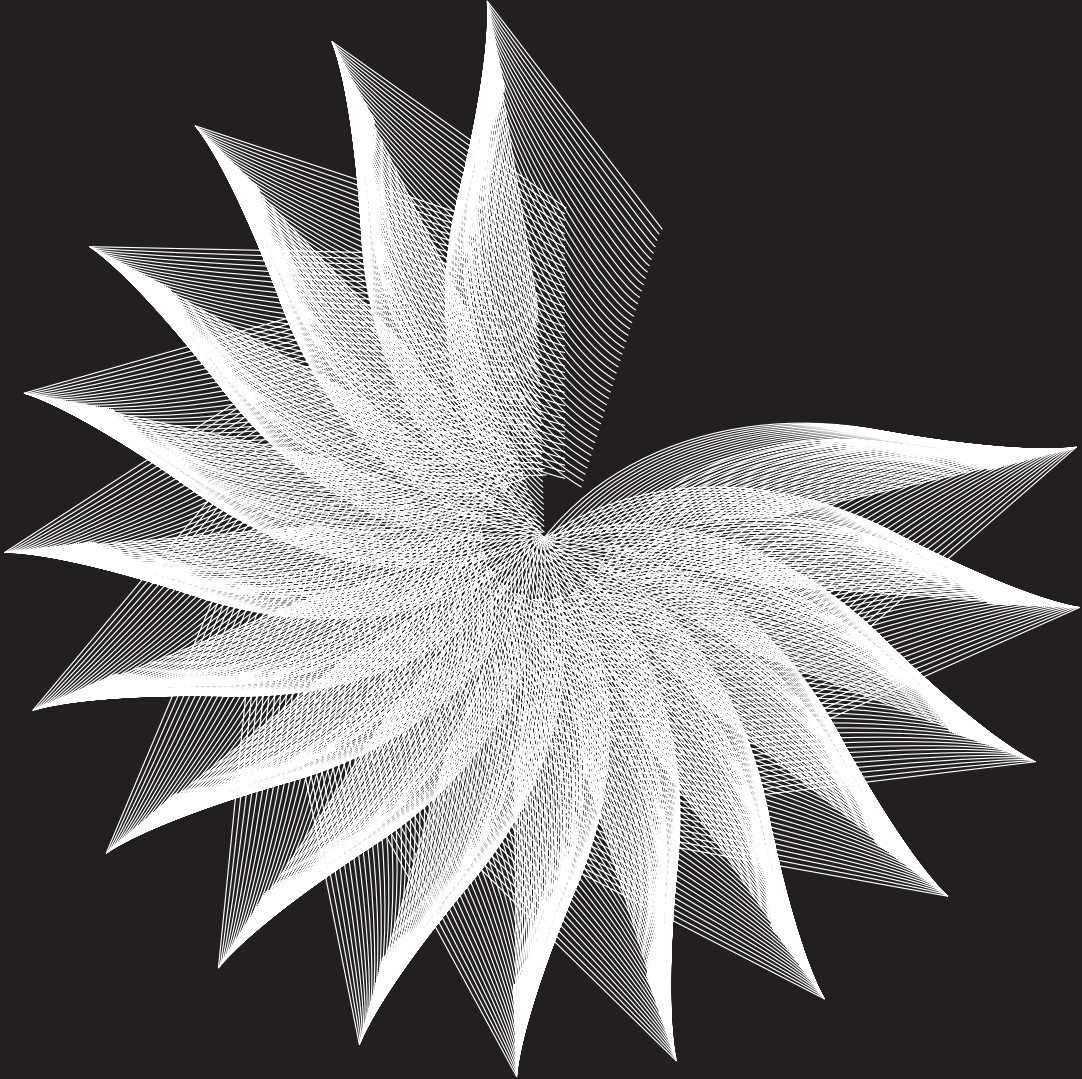
The creation of the Portuguese Institute of Cultural Heritage, Decree-Law No. 34/80 of August 2, put for the first time, emphasis on the precedence of the *cultural act* to guide the interventions of restoration. With staff that was part of architects and engineers but also archaeologists, historians and art historians, the new Institute - dependent on the Secretary of Culture, later promoted to Ministry - would seek to override the ruling of men of construction that had characterized the work of half a century of interventions in this field, with varying success, as subsequent history would show. But affirming, no doubt, the right way, which would even lead to “victory” in the war that opposed the powerful Culture Public Works for more than 25 years, and culminate in the extinction and partial integration of DGEMN that, by Decree-Law No. 223/2007 of 30 May, has been integrated into IHRU, Institute of Housing and Urban Renewal, regarding intervention on the non classified heritage housing and the development and man-

agement of Information System for Heritage (SIPA), finally remaining the assignments relating to the jurisdiction of the heritage listed to IGESPAR, the current heir to the main valences of the original IPPC.

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CULTURAL HERITAGE AND THE MORTALITY OF OBJECTS: THE UNAVOIDABLE CHOICES

JORGE RODRIGUES

CULTURAL PATRIMONY: CONCEPT, CONSERVATION AND RESTORATION

Even though the concept of *Patrimony* as *Heritage* – etymologically “Inheritance from the father” – has been used since the twelfth century, it was only in the eighteenth century, with the Enlightenment and the work of Abbé Gregoire, that it acquired the cultural sense that we attribute to it today. This cultural affirmation has come a long way, since the Ancient Times, passing through the Middle Ages and the Renaissance, being used to the present day.

Examples of this path – in which the symbolic sense frequently goes along with the growing cultural concerns – can be found in various times and different places, here invoking first of all the construction of the palatine chapel of Aix-la-Chapelle (*Aquis-granum*, today the German Aachen) by Charlemagne, between the years 786 and 800. A project of Otto Metz, this construction used – with the blessing of Pope Leo III – marble brought from Rome and the ancient palace of Theodoric, at Ravenna. This was an ambivalent attitude; for in the one hand it was a real “looting” of the most beautiful materials that the Ancient art – of the late Ancient times, which was Byzantine inspired – had produced, not respecting apparently the constructions where these materials had been applied; but on the other hand, this attitude showed a great appreciation and reverence for this very same Ancient times, whose people were fascinated by Charlemagne and his literate court¹, constituting

1. Reason for which this period is known as the Carolingian Renaissance.

a real tribute to a lost art and cultural paradigm: the Roman Empire. Even in its latest version, already after the barbarian invasions, with the “acculturated” Gothic Theodoric, the Empire on which the Sun never set, was still the model that the new Carolingian Empire – now Holy Roman-Germanic Empire – sought to emulate, by operating a symbolic and artistic synthesis, joining the Roman and Christian (after Constantine) matrixes, the pacification and integration of the Germanic lands, origin of the Franks and from where the Emperor had come.

This Symbolic sense is even more expressive if it is taken into account that the Palatine Chapel, with a centralized plant – an octagon within a hex decagon – made reference to the plant of the Holy Sepulcher and to an idea of evoking Jerusalem, and that Charlemagne himself desired to be buried on the chapel narthex, *ante liminia ecclesiae*, reinforcing his connection to the Roman Church².

The same ambiguous attitude was still a common practice during the Italian Renaissance, especially in the so-called “Second Renaissance”, which had as its epicenter the Papal Curia and the city of Rome itself, with the genesis of the “Antiquary” movement which – as Poggio Bracciolini, with his *Ruinarum Urbis Descriptio*, of 1513 – sought to identify and describe the ruins of Ancient Rome. The movement had as its purposes the urban and artistic understanding of the city of the Classic Antiquity as well as the identification of artistic “treasures” that could be potentially used in new papal projects and in the projects of the large families that dominated then the Curia and Italy.

Rafael Sanzio, also known as Raphael of Urbino, was in charged by Leo X in 1515, to supervise the ruins of Rome and to identify on them the suitable materials for the ennoblement of the construction of the new Cathedral of St. Peter at the Vatican. Joined by the architect Donato Bramante, Rafael was one of the first authors of the Cathedral’s project. He was later on followed on this search for antiques, by

2. BRAUN, Suzanne (2009), “Aix-la-Chapelle [Aachen]”, *Dictionnaire d’Histoire de l’Art du Moyen Âge occidental*, Paris: Robert Laffont (dir. Pascale CHARRON e Jean-Marie GUILLOUËT), pp. 8-11; McKITTERICK, Rosamond (2008), *Charlemagne. The Formation of a European Identity*, Cambridge: Cambridge University Press, nom. pp. 140-141; BONNERY, André, MENTRÉ, Mireille e HIDRIO, Guylène (1998), *Jérusalem, symboles et représentations dans l’Occident médiéval*, Paris: Jacques Grancher Éditeur, nom. pp. 33 e 218-219.

humanists such as Bartolomeo Marliani, who elaborated a detailed topography of Rome in 1539³, *Antiquitate Urbis Topographia*.

Giorgio Vasari, with his *Le Vite de' più eccellenti architetti, pittori, et scultori italiani, da Cimabue, insino a' tempi nostri*, that had its first edition of Lorenzo Torentino, in Florence on the year of 1550, revised and expanded in 1568, inaugurates a new era with new artistic and social concerns. With his magisterial work – frequently considered the founder of the history of art, despite the chronicle tone that dominates his biography of the artists, such as Cimabue and Miguel Ângelo, *il Divino* (or of the immodest Vasari himself)⁴ – Giorgio Vasari sought to ensure the social statute and the immortality of artists and their works, avoiding their *second death* – after the physical death – due to the *ruin* and *oblivion* (of their names), by preserving their *Fame*, intention which is very clear on the front of his work:” This whisper claims that these men never perished and were never defeated by death.”

His words are sufficiently elucidative about his intentions as well as about his process:

Since the Voracity of time is evident: not happy to have eaten the works and the honorable testimony of numerous artists, erased and made vanish the names of all those, whose memory was preserved by other things rather than the immortal pity of writers. After deep reflection about the example of the ancients and the modern, I noticed that the names of a number of ancient and modern architects, sculptors, and painters⁵ with many of their masterpieces are doomed to oblivion in various regions of Italy. Their works are being forgotten and destroyed little by little, condemned to a sort of near death.

3. For a more detailed perspective of this subject : cfr. SCHLÖSSER, Julius von (1984), *La littérature artistique: manuel des sources de l'histoire de l'art moderne*, Paris: Flammarion, pp. 589-593

4. SCHLÖSSER, Julius von (1984), *La littérature artistique: manuel des sources de l'histoire de l'art moderne*, Paris: Flammarion, pp. 307-356.

5. Referring here essentially to the artists of Ancient times and to the Renaissance, that in Italy it starts on the trecento with Cimabue and Duccio de Buonisegna followed by the geniality of Giotto.

In order to preserve them as much as I can, from this second death and keep them as long as possible in the memory of the living, I have spent considerable time researching their works, I used an extreme diligence to discover their homelands, the origin and activities of the artists, I worked to collect old reports about them, the texts of memories abandoned by their heirs to the dust and the germs. I made of this a pleasure and an interest (...)

I was also moved by another reason: it may happen that one day (may this not please God!), by the carelessness of men, the malignity of the times or heaven's sake that were not concerned about maintaining the integrity of things down on earth, the art becomes a victim of disorder and ruin. I wish that everything that I wrote and everything that I expose may contribute (if my work deserves this happy role) to keep it alive!⁶

The same attitude of preservation of the works and the Fame of the artists is also present on the construction of the *Pinacoteca dos Medici*, built close to the palace of the Ducal Florentine family, in 1581, and occupying a small portion of the *Uffizi* (or offices, initiated by Cosmo I and concluded by his son Francesco de Medici), curiously the original project was designed by Giorgio Vasari. This embryo, which later became the attitude of the private and public powers before the Art and artists, completed the vision that Vasari himself had enshrined on the *Vite*: the power of the Prince legitimized by the majesty of his name and ancestry- the *illustrissimi suoi progenitori* – and also by his role of *Mecenas* of the arts and of the artists, and their *Defender*, picking – by association – his own *Glory*.

This attitude was followed and reinforced in the next century, partially through all of Europe, initially spreading through France – whose “Italianization” began still on the sixteenth century with Francesco I, Leonardo da Vinci, Benvenuto Cellini or the School of Fontainebleau – with the creating of the royal gallery in Paris,

6. VASARI, Giorgio (1991 [1550-1568]), *Le Vite de' piú eccellenti architetti, pittori, et scultori italiani, da Cimabue, insino a' tempi nostri*, [seg. edição de Lorenzo Torrentino, Florença, 1550], Torino: Einaudi (2ª ed.), 2 vols., Vol. 1, frontispício, pp. 91-92 e 243 [our translations and underlinings]

at the Louvre museum, between the time Louis XIV was moving to Versailles in 1682, and the time of creation of an aisle of classic sculpture in the building, in 1692. On the same Louvre museum, Bernini elaborated several versions of a project that was never used (between 1664 and 1666), for a more *classic* model was chosen in its place, which was considered to be more in agreement with the artistic currents and the character of the seventeenth century French Power, which has as its architecture leading figure, Le Vau.

This “Italianization”, although already weakened by the ideas of nationalist affirmations, had two important moments: with Colbert and with the creation of the *French Academy* in 1648 – following the example of the previous Florentines and Romans – transformed in 1795, after the Revolution, into the *French Institute*.

It was only in the nineteenth century though, with the gradual affirmation of nationalism and of complex currents of thought – from the Positivist rationalism to the emotive dreams of the Romantics – that the concept acquired a new expression, where the concern of restoring a more pure spirituality, generally identified with the Medieval age prevails, especially with the Monasticism and the movement of the great Cathedral schools.

In France, the most important protagonist of this period was Eugène-Emmanuel Viollet-le-Duc (1814-1879) and his principles of *Unity of Style*. An architect heavily inspired by the Revivalist environment, the Romantic and the Neo-Gothic Movement, Viollet-le-Duc, started his career in the 30's and 40's of the nineteenth century, as the helper of Jacques Duban on the restoration of the Sainte-Chapelle. At that moment, he was already responsible for two projects that shaped his restorations intervention stamp: the Medeleine of Vezelay church and the Notre Dame Cathedral, in Paris, two emblematic monuments of the affirmation of medieval France as a great European Nation. Among many other projects to which he contributed are the Carcassonne and Avignon, the Castle of Pierrefond, the great abbey of Saint-Sernin of Toulouse, and the basilica – Royal Pantheon- of Saint-Denis, on the surroundings of Paris.

His work was marked by a clear preference for medieval elements, the architect-restorer defended that the *dominant* style of the building should be identified before restoring it, aiming to achieve a primitive purity in order to acquire a *Unity of Style*. Since the archeological and documental identification of a given monument was

often impossible, the restoration architect put himself on the position of the original architect constructor, restoring the building until it became not like they actually were, but how he thought they *should have been*. In this process, he introduced dissonance elements – new or *fake*, with the “flavor” of the original – and destroyed many architectonic and decorative features of posterior periods of the Renaissance, generally considered unworthy or even “degenerate”.

The cleansing of medieval buildings also collaborated that many elements vanished, for they were considered inconsistent with the ideological view of spirituality of that period, characterized by silence, chants inspired by faith and a “nude” and pure architecture. In this manner, in a more or less systematic way, the bright colors that originally covered his sculpture (which gave another and very diverse expression) disappeared. They just survived marginally after successive restoring interventions, in which the recuperation started to be contemplated (in sometimes debatable ways) only on the twentieth century.

Naturally, this process was carried out based on a thorough knowledge of the objects in intervention, which led Viollet-le-Duc to study in detail all the artistic aspects of Medieval and Renaissance art, including clothing, musical instruments, the arts of war, the furniture – to which he devoted an extensive work⁷ – and especially the architecture, the object of his most extensive and complete *Dictionnaire raisonné*⁸. And the work of the restoration architect should be complemented with a strict record of all phases of the intervention – from *before* the restoration up to the phase *after* the completion of the work – using all the technical resources at his disposal, including the new and revolutionary photography technique.

In England, even though the mainstream was of a romantic and revivalist bias – with an even greater emphasis placed on recovering the Medieval Gothic, such that symbolists and/or Pre-Raphaelites like Blake or Burne-Jones were not strangers – the approach to the built patrimony was mainly by means of its *conservation*, seeking to ensure their integration into the natural environment. Here too there

7. *Dictionnaire raisonné du mobilier français de l'époque Carolingienne à la Renaissance* (1858-1870), Paris: Librairie Gründ et Maguet (6 vols)

8. *Dictionnaire raisonné de l'architecture française du XI^e au XV^e siècle* (1854-1868), Paris: A. Morel, Éditeur (10 vols)

were, naturally, characteristic among the various protagonists of this vast movement of cultural affirmation, that varied from the radicalism of a George Edmund Street (1824-1881), English architect who proposed the return of the Gothic style in England, to the practice of George Gilbert Scott (1811-1871). Scott was the foremost representative of the Neo – Gothic Revival in the country, who restored in a more restrained manner than his contemporary French, the cathedrals of Ely, Rochester or Edinburgh, as well as the Westminster Abbey, also building in that style the University Glasgow and part of Whitehall.

The most prominent representative of the Anglo-Saxon *Conservationist* thought was, however, the philosopher and art critic, John Ruskin (1819-1900). He was a disseminator of the work of William Turner and of naturalism in the Art, but was also involved in the Pre-Raphaelite movement, with William Hunt, John Millais and Dante Rossetti. His first major work is "The Poetry of Architecture", published in fascicles on the *Architectural Magazine* between 1836 and 1837, a study of country houses and *villas* that exposed for the first time his theory of harmonization of architecture with the natural environment. This thesis was later developed on his most important theoretical work, published in 1849, *The Seven Lamps of Architecture*⁹, in which he supports the integration of buildings into the natural environment, giving rise to a certain *poetry of the landscape* that can be found, especially in the British Islands, characterized by the frequent preservation of the ruin around him, of which the Cistercian Abbey of Fountains, set in a vast park of more than three hundred acres wonderfully preserved – the Studley Royal Park – is one of the most eloquent examples.

In Portugal, the historian, writer and politician Alexander Herculaneum (1810-1877), a man of rare moral fiber and one of those in charge for introducing the ideas of Romanticism in our country, was among the first to be concerned with the preservation of a vast built patrimony and also of documental history, for he compiled in his *Monumenta Historica Portugaliae* a set of documents on which he would build the foundation, among us, of History as a scientific discipline. His temperament, averse to public office, honors and mystification, then clashed with the prevailing practice in a country financially and morally bankrupt, where Luis Mouzinho de

9. *The Seven Lamps of Architecture* (1849), Londres: Smith, Elder and Co.

Albuquerque (1792-1846) set out to remake in 1842, the Monastery of Santa Maria da Vitória ou da Batalha from the drawings – a little idealized – performed by James Murphy at the time of his passage by the Monastery in 1789. The action of Albuquerque would eventually mark the subsequent intervention on the Portuguese built Patrimony: motivated by a clear concern of safeguarding monuments often in ruins or in advanced state of decay but of great symbolism for the *national imaginary*, the recommended intervention generally followed the model of Viollet-le-Duc, of *Unity of Style*, with the fictional reconstruction and often abusive of the important parts of the structure or the decoration of architectural complexes, preserving the essential elements and neglecting the accessories, such as convent dependencies .

More serious and characterized by Fantasy, however, was the intervention in the Monastery of Santa Maria de Belém – of the Jerónimos – in Lisbon, its “restoration” was delivered by José Eugénio Maria de Almeida, in 1860, to two designers of the Teatro S. Carlos, the Italians Giuseppe Cinatti (1808-1879) and Achille Rambois (1810-1872), who redesigned the dormitories of the old ruined monastery, reinterpreting the Manueline art according to revival taste of romanticism and eclecticism that dominated then. The final result was a long aisle where nowadays is located the museum of Archaeology and of the Navy, as well as various spurious decorative details, foremost among them the cupola on the turret of the monastic church, which replaced the original roof of eight waters: the concern of investigating among the (many) existing graphical sources, that clearly showed the original appearance of the building and its ornamental details, was clearly relegated to the background, on behalf of the *construction* of a set that transmitted a new idea of the splendor of the period of Discoveries, the Monastery of Jeronimos – more than any other monument – clearly invoked.

With the New State, after the coup of May 28, 1926, the concern of preserving the memory of the nation gets a new lease, being created for this purpose a new organization – which inherited the powers of state of the Monarchy and early Republic. Its function was to supervise the construction, maintenance and restoration of all State buildings: the Directorate-General for National Buildings and Monuments, established in April 30th, 1929. Divided into two directions, the National Buildings- responsible for the construction and maintenance of courts, schools, hospitals and all other public buildings- and the Monuments, this last one was responsible for de-

veloping a whole program to serve the *symbolic rebuilding of the Nation* by the dictator Oliveira Salazar, which will be addressed in another text in this same work. The artistic object of this intervention would be well above all the castles and Romanesque churches of the period of the *founding* of the nationality – generally identified with the "heroic" figure of our first monarch, D. Afonso Henriques – with *Unity of Style* as a guiding principle of restoration interventions.

THE CULTURAL PATRIMONY: NATIONALISM AND LEGITIMACY

After setting – in a very uneven way and overlapping in time – the concept of Cultural Heritage all over the world, it was clear the attempt by National Governments to define criteria for protection of that Patrimony, which sought to prevent its destruction, illegitimate transactions and trading, that were declared as illegal. These attempts have always been more successful – in the strict legal concerns – in the case of the built *patrimony*, or *properties* than in the case of *movable* patrimony which, by its very own nature, has always been much more difficult to control and classify, since it covers a very wide range of objects – of artistic nature or not, but always characterized by a historical significance – of various kinds: painting, sculpture, tapestry or, sigillography or jewelry, clothing and everyday items (for weights and measures, farming utensils or manufacturing and industrial patrimony).

The relatively recent examples of the British, French or German archaeological missions, in peacetime or under cover of war situations, acquired or appropriated objects of significant artistic and heritage in countries historically very rich – such as Greece, Egypt or Iraq – raised several other issues, which can be summarized in the famous "acquisition" of fragments of the frieze of the Parthenon by Lord Elgar, at a time when Greece was part of the Ottoman Empire, occupying power that authorized Thomas Bruce, seventh Earl of Elgar, to remove the marbles of Phidias and of other sculptors of the Acropolis, between 1801 and 1812. These pieces were later acquired by the British government in 1816, integrating today one of the most important artistic nucleus of the British Museum. In modern Greece, whose weak independence would be restored only in 1832, has long been demanding the return of its art treasures, which they consider to have been illegally and in an illegiti-

mate way removed from their country.

This issue has raised a discussion which had some intense moments followed by some phases of almost oblivion. Nowadays it can be considered central in the current attempt of defining the concept of Cultural Patrimony on a global scale, centered on elements such as their *origin*, their *property* and their *movement*. Let us take them in detail.

The *origin* and *property* of Cultural Heritage must be understood, in our opinion, in a quite relative manner, since the entire Cultural Heritage belongs to all humankind, and not just a group of people gathered around a National, Regional or Parochial unit.

In other words, returning to the case of the Parthenon frieze, the sculpture of Phidias in fact belongs to all of us, although it is expected that the responsible for its protection be those in whose territory it is found – in this case, Greece and its capital city, Athens, and it is one of their most important treasures. Therefore, if the so called “transfer” occurred nowadays – namely after World War II – with nation states properly defined either by territory or by law, our position would be clearly in accordance with the Greek, that demand the return of these sculptures to their place of origin. And this position would be valid despite the fact that some of the national “definitions” above mentioned have recently been called into question with the “rearrangement” of the old political map of Europe following the fall of the communist bloc – after the political (and economic) collapse of the Soviet Union - and the reunification of Germany.

The situation in the early nineteenth century, however, would be very different. In that period, Greece was a depressed area occupied by the Ottomans, Egypt a British protectorate, and the influences of French, English and German were felt in badly-defined portions of the Near East – where today we find Iraq, Syria, Lebanon, Jordan or Israel (in addition to the occupied Palestine) – nation-states founded on the territories where Sumerians, Assyrians, Babylonians, Phoenicians and Hebrews had settled, leaving their rich marks of civilization – archaeological, artistic, linguistic, etc ... – to the people who often had little to do with their supposed “ancestors” and, above all, did not have the cultural or economic means, to investigate, protect or make known their precious treasures. From the verification of this reality to the creation of Western archaeological missions – that would also quickly

integrate researchers from other countries including the United States of America – was a short and, we would say, a logical step.

This brings us to the third and most complex variable in this equation: the problem of *circulation* (let us also call it that) of the works of art and of the archaeological artifacts among different countries, emphasizing the moment that the pieces are removed from their places of *origin*, becoming *property* of those that are on the base of their *circulation*. This complex issue is a central discussion in the intricate world of archaeological and artistic museums around the globe – and gained new characteristics with the situation, especially in Europe, of looting caused by World War II – shall be placed in its proper cultural context. Which means, to remove from Athens of 2011, an artistic set of great importance such as the Parthenon frieze would be a crime that national and international legislation would typify. To take away from Greece of the nineteenth century (or Egypt, or Iraq, or even of Portugal ...) archaeological and artistic artifacts that have survived well in the great museums of London, Paris and Berlin – even though it can tweak our national pride – was an effective *safeguard* operation of those same artifacts that are currently adequately protected, treated and studied, and that in their countries of *origin* – in the *specific* context in which this *circulation* occurred – certainly would not have had the same care, having the serious risk of being lost, fragmented (divided to leverage an immediate profit of local "predators"), for absolute lack of critical mass in these countries (from the cultural and economic standpoint, as noted above) at the time that the "transfer" occurred. If this had occurred it would inevitably take these artifacts from the *public* sphere or the *collective* and universal *enjoyment* – in which they were maintained despite the "dislocation" – to a *private* sphere, where its study and collective enjoyment would be hardly even possible.

One should not infer from what was written above that we deem legitimate or acceptable that the *circulation* of artistic and archaeological artifacts is possible *nowadays* without the consent of the appropriate national and international authorities. We only wish to place in a proper perspective, events which occurred almost two centuries ago, evaluating yet the final results that show that, in fact, the initiative of the Count of Elgar or the various participants in the "scientific missions" of the nineteenth and early twentieth century resulted in the *effective* safeguarding of a considerable number of artifacts that could otherwise have been

lost – destroyed or usurped of the public enjoyment – as could the vast knowledge and artistic history that has been possible due to the study of these artifacts, also have been lost.

This statement (naturally debatable) *de facto* leads into further discussion of the aspects related to the *origin, ownership and circulation* of artistic and archaeological artifacts, raising an unavoidable question: if these artifacts were actually saved from destruction or irreparable evasion in the year eight hundred, why aren't they now returned to their "rightful owners", as they are now well established as legal entities, the nation-states from where these *national treasures* were removed? The answer of course is not easy, and is even less peaceful...

First of all, to establish the "legitimacy" of the property is a complex phenomenon and difficult to determine, on which we will not dwell too much. Due to the complex situations as well as to the very different contexts in which many of the archaeological and artistic artifacts were acquired, it is up to diplomacy and *common sense* to negotiate the cases in which the artifacts shall return to their places of *origin*, and those in which they should remain in the places where they were taken. Anyway, this "return to the origin" claimed by many, should not be regarded as a *universal rule* for several reasons.

Firstly for it is debatable whether the legitimacy of these places of *origin* – which, as we have stated, nowadays have very little to do with the cultures that produced the artifact in question, being only part of a coincidence of occupying the same geographical area – overlaps with the legitimacy of those who actually saved, preserved, studied and placed for public enjoyment these artifacts – since all the Cultural Heritage as we may recall – are the property of all humankind.

Secondly, because the establishment of such a rule would imply its universal application, creating a disturbance in the established mechanisms of *property* of Cultural Heritage, as well as their *circulation*, compromising the access to knowledge about other cultures that the diversified collections in museums allow, contributing, through this knowledge of the "other", to a greater tolerance between the very diverse cultures on the five continents. As an example, we may imagine, as

absurd, that Italy demanded the return to their country of all its vast art treasures around the world...¹⁰

We cannot hide, however, the fact that it may occur with the Cultural Patrimony a phenomenon similar to what happens in every political and economic relation between the rich – or the *North* – and the poorest countries – the *South* or *Third World* – with the systematic transfer of natural and human resources of the latter to the former, which because of their leading position in global trade and financial agencies, always get more advantages in this bilateral relationship. The issue here, as it was posed by Giulio Carlo Argan, identifies a situation of *transfer of cultural property* as a *transfer of wealth* of the world's "weak" countries for the richer ones, but without focusing on the specific historical characteristics mentioned before:

In an essentially economic society, in which the value is conceived only in terms of costs and prices, also the cultural and art works, ancient or modern, are considered prized commodities; and the consequent trafficking determines, at best, their remoteness from places of origin. It has been so since the last decades of the last century, a massive transfer of works of art of the economically weaker to the strongest, especially in Europe and Asia to the United States, where a considerable amount of industrial revenue was invested to form private collections and public museums, which sometimes include monumental complex disassembled and rebuilt entirely.¹¹

10. Curious fact: recently the centenary of the stealing of the Gioconda or Monalisa of the Louvre Museum, by a supposed italian patriot, Vincenzo Peruggia, was celebrated. He intended to give it back to "the Italian people", ignoring the fact that the painting had been delivered (sold or offered) to King Francesco I of France, around 1506, when Leonardo da Vinci was effectively at his service...

11. ARGAN, Giulio Carlo (1995), *Arte e Crítica de Arte*, Lisboa: Presença (2ª ed.), p. 37 [our underlinings]: between the specific historic characteris to which we refer above, we have to consider the manifestations of gratitude to the European countries freed from the nazi burdon thanks to the decisive intervention by the United States of America, that the author does

CULTURAL PATRIMONY: CLASSIFICATION AND PROTECTIONS

In order to deal with issues related to *ownership* and *circulation* of artistic and archaeological artifacts, the various national states have developed legal mechanisms enabling them to safeguard their Cultural Patrimony. Unable, for economic reasons, to become actual owners of all this Patrimony, their governments developed *classification* mechanisms (or *registering the sites, putting it under governmental trusts*) in order to ensure that the built Patrimony (and their *protection areas*) would not be destroyed or modified without a corresponding authorization of the competent bodies, usually related to the ministries of Culture. The other Patrimony, the “*movable*” patrimony, as noted earlier, has a more complex classification and a more problematic control, this would be clustered mainly in large collections of national and regional museums, focusing mainly on government monitoring, especially of their *circulation*, making its exit from the country of *origin* (or from the one that assumed its *property*) – even temporarily – subject to strict customs control. This was proven to be a very large mesh, which often went through the archaeological and artistic artifacts, which, because they were not listed or were not in any museum collection (even private collections) did not require export authorization: *temporary* when the movement is only intended to include by borrowing, an exhibition abroad; *definite*, when it becomes a final sale.

The classification of Patrimony, as a key element to its protection, had different models but with clear points of contact. Here are some examples:

In France, the identification and safeguarding of monuments begins to organize itself after the Revolution – still under the influence of the Enlightenment – around the initiative, in the *Convention*, of Abbé Gregoire, meaning to preserve the “*national objects that do not belong to anyone, and therefore, belong to everyone*”, mentioning for the first time the concept of Cultural Patrimony as a collective en universal property. This first initiative would be later structured by François Guizot with the creation of the *Inspection Générale des Monuments Historiques*, since 1830, launching a first inventory national of that Patrimony. Succeeded Guizot, Ludovic Vitet and Prosper Mérimée, which elaborated a first systematic overview of the destruction

not consider on this text.

of Patrimony caused by the Revolution in different regions of France, in order to repair them. In parallel the *Superior Commission of Historical Monuments* is created in 1837, charged with establishing a list of buildings to be protected by the State, the list was originally published in 1840, followed in 1841 by the Law of Protection of Historical Monuments, which for the first time, perform a classification of the most remarkable works and under greater threat.

In the twentieth century specifically in 1913, this French policy of *classification* of the built Patrimony is consolidated. In 1930 it is expanded to the natural patrimony and to the archeological Patrimony (starting with the megalithic sets) in 1943, when they also start to better define *protection areas* around the monuments¹². In France the current tendency is to give, also in the area of Cultural Patrimony, a greater role to regions, with the decentralization introduced since the Deferre law, in 1983. The diversification of the concept of Cultural Patrimony and historical, aesthetic, and landscape importance of urban centers has also led to the adoption of specific legislation in this field, from the Malraux Act of 1962 to the SRU 2000 ("updated" in 2003 by the Law of Urban Planning and Habitat)¹³.

This concern for the *classification* of Patrimony, in order to safeguard it, also inspired the Anglo-Saxon legislators, either in the British Islands or in the United States of America. In both cases, the concern of legislators with the conditioning that a *classification – listing* – could bring to the owners of the "listed" patrimony made that the initiatives in this field were very tenuous. Initially, this concept was implemented through the *Ancient Monuments Protection Act* in 1882, in the United Kingdom, but it was only after the Second World War, due to the destruction caused by it, that an effective classification system was used. As for the United States, legislators and rulers sought, whenever it was possible to ensure the ownership of this classified Patrimony; issue to which we will later return.

12. FOURCADE, Marie-Blanche (2007), *Patrimoine et patrimonialisation: entre le matériel et l'immatériel*, Paris: Presses Université Laval, p. 108 ; CHEVRIER, Jean-François e HAYON, William (2002), *Paysages territoires: L'Île-de-France comme métaphore*, Paris: Editions Parenthèses, p. 370

13. MORAND-DEVILLER, Jacqueline (1996), *Droit de l'urbanisme*, Paris: Éditions ESTEM, pp. 87-89

In England and in Wales the *classification* manifested itself in three ranks, Grade I, which encompasses the greatest monuments of historical and architectural value (including the archaeological and artistic valences) considered at the *national* level; through the Grade II*, where those same criteria are applied at a *regional* level and finally, the Grade II (Grade III until 1970), which affirms their interest at the *local* level. The same principles would guide other two "nations" embodied in the United Kingdom: in Scotland the three levels are basically identical, only making their identification with the letters A, B and C (also used in England, before 1977, for the churches Anglican in service), while in Northern Ireland, the *national* level is designated as A, B + as the *regional*, while the *local* – according to their degree of historical and artistic significance – receives a rating of B₁ and B₂¹⁴. Equivalent organizations, in the sector of culture, are in charge of this classification: the *English Heritage* in England, the *Cadw* in Wales, and the *Historic Scotland* in Scotland.¹⁵

In the United States of America, the *National Historic Preservation Act of 1966*, also assigned a rating of 3 levels, which follow very closely the proposal by the British authorities, but is adapted to the Federal Statute in the country. Thus, the highest level is the *National Historic Landmark*, with over 2,500 buildings and sites – archaeological and natural – listed in the *national* level, considered the most important of all its vast cultural Patrimony. There are also the entries in the *National Register of Historic Places* (equally important in the federal or state level, but less relevant than the first), the conservation of these, as in the previous case, were provided by the State Historic Preservation Office, receiving federal grants for this. Finally there is a third level of protection, which also ensures that the sites listed may not be destroyed, by the simple inscription in the same *National Register of Historic Places*, receiving for their conservation, local grants. Many thousands of other sites and

14. See namely SHARLAND, John (2005) "Listed Buildings and the Historic Environment – A Critique of the Government's Review of Heritage Policy", *Journal of Planning and Environmental Law*, pp. 1552-1558 e "Listed Buildings", <http://www.english-heritage.org.uk/caring/listing/listed-buildings/>

15. Also see <http://cadw.wales.gov.uk> e www.historic-scotland.gov.uk

buildings are still protected at the *municipal* level, in large cities – including New York, Chicago or Philadelphia – that gather lists of buildings and vast areas (here applying a similar concept to that used in France or the UK for urban centers) as their responsibility.¹⁶

In Portugal the concern for the *classification* of built Patrimony started after the instauration of the first Republic, in 1910, when a first list of *National Monuments*, was elaborated, where the monuments were listed according to their architectural and artistic relevance, but also for their historical and symbolic significance. A second level of classification, the *Real Estate of Public Interest* was very similar to the first, ensuring a full legal protection of the classified object – which cannot be destroyed or modified in its structure or nearby surroundings – without the authorization of the competent authorities: the *Portuguese Institute of Cultural Patrimony* (IPPC), since 1980, later transformed into the IPPAR and, more recently, in the IGESPAR, the *Management Institute of Architectural and Archaeological Patrimony*. The definition of the so-called *protection areas* around the classified locations (architectural and archaeological) to slow to some extent, the degradation of their surroundings: by default this area included 50 meters around the classified locations, but often these *areas of particular protection* were defined, which extended substantially, enabled sometimes the protection of entire urban centers

A third level of protection, was the *Municipal Property Value* which ensures protection of relevant sites especially at a *local* level; proposals for classification were mainly made at that level, and its possible "decommissioning" is less complex than in the two cases mentioned previously.

Despite the legal concern for the defense of our Patrimony, the truth is, that the low level intervention of actual ownership of the great *monumental* set (the list of the creation of the IPPC, through Decree-Law No. 34/80, included only about two hundred of these monuments) hindered its effective protection, further aggravated by the chronic lack of resources of state bodies in charge of conservation and restoration: for the built Patrimony the task was assigned to the DGEMN, *General*

16. – MARTEL, Frédéric (2006), *De la culture en Amérique*, Paris: Gallimard, pp. 204-206

Directorate for National Buildings and Monuments, until its dissolution in 2007, which still depended on another Ministry – the one of *Public Works* – making it even more difficult the coordination of the two bodies (aggravated by the fact that the Ministry of Public Works had plenty more "weight" in the successive governments of the Republic ... ¹⁷) for *movable* Patrimony, the restoration was in charged of the *Instituto José de Figueiredo*, until the recent creation of the Institute of Conservation and Restoration, both suffering from the same problem of lack of resources – financial and of technical personnel – that could enable them to effectively accomplish all vast tasks assigned to them.

Finally, UNESCO also took over the creation of a universal list of Cultural and Natural Heritage – *World Heritage* or *Humankind Heritage* – from a resolution adopted by the General Conference of UNESCO on November 16th 1972. Currently this list includes almost one thousand assets in 153 States that comprise the Organization, extending it, in 1992 to the *Documentary Heritage*, and more recently – between 1997 and 2001 – the *Intangible Heritage*¹⁸. Several international "Letters" – that brought together experts in architecture, art history, archeology, conservation, restoration and other areas of Patrimony – established and updated the concepts of preservation and intervention in that Patrimony, extending it to urban centers and the industrial legacy, the *immaterial*, as well as defining the correct way to approach conservation and restoration in order to preserve the *authentic*, distinguishing it clearly of the *new*: documents established in Athens in 1931, in Venice in 1964, in Florence, in 1981 and, more recently, in Krakow in 2000, documents often influenced by the period they were elaborated, by the respective historical context and the locations where they were placed. ¹⁹.

17. DGEMN whose acting we analyse in details in other text of the same publication; also see RODRIGUES, Jorge (s/d [1999]), "A Direção-Geral dos Edifícios e Monumentos Nacionais e o restauro dos monumentos medievais durante o Estado Novo", *Caminhos do Património*, Lisboa: DGEMN/Livros Horizonte, pp. 69-82

18. Cfr. www.unesco.org/culture

19. We refer here once again to our other text of this same publication: "A transformação da realidade: os Monumentos Nacionais" – "The Transformation of reality: National Monuments".

CULTURAL HERITAGE: PROBLEMS AND THREATS

Are all legal and technicians mechanisms we listed sufficient to ensure the protection and conservation of the referred Patrimony? Unfortunately the answer is a clear NO, by a set of reasons:

Firstly due to the gradual *extension* of the concept of Patrimony- even if we consider only the material Patrimony – to vast areas such as Industrial, Scientific, Ethnographical/Popular Patrimony and so many others, require higher competences and larger human and financial means in order study, conserve and make the public presentation possible. These requirements are so complex that the public powers cannot accomplish (there is even a notorious tendency towards *contraction* of available resources in most countries). In this way, there is often, an inability – technical, administrative, or financial – of public bodies that have the statutory incumbency of safeguarding such Patrimony of fulfilling their mission.

Secondly due to the growing *loss of function* of much of this Patrimony – the original function for which it was conceived – leading to their not always adequate adaptation (and never contemplating all cases that would be required) to new functions: cases of the many monasteries transformed into barracks, hospitals or other public buildings after the generalized extinction of religious orders, which occurred since the sixteenth century in Protestant countries, but also in Catholics in the nineteenth century such as Portugal (in 1834), Spain (in 1835) and Italy (about 1866); always associated to important political and ideological convulsions. These extinctions (mainly those of the eight hundreds) enabled the use of architectural structures as social equipment, which would be then very difficult and costly to build. More recently these same monasteries, palaces or castles have been adapted to tourist purposes, as simple or more or less luxurious hotels (not always with the necessary care), being also a solution that has its limits well in sight. The issue of the conflict between the *cultural value*, which justifies conservation of the Patrimony only due to its intrinsic value, and its *utility value* – which reports to the functional value that attributed to this same Patrimony, a long time before it was even considered a patrimony – is one of the most pressing issues in this field: to anyone it would occur to transform the Mosteiro dos Jerónimos, in Lisbon, the Invalides of Paris or the Tower of London in hotel units; but what to do with all the

"orphan" palaces of the noble families (which sometimes still are their owners, but without resources to keep them), or the many churches and monasteries without their faithful or their religious communities?

Thirdly the progressive *dehumanization* of cities causes – with greater frequency than it should – that the solutions found to preserve their *historical centers*, are of true acting, seeking to give a response to a nostalgic appeal of the people to return to a less confuse life and of a more humanly pace. This acting almost transports us to a kind of "amusement park" of ancient urban experiences²⁰:

Even though at no other time such severe laws have been issued, nor services so organized, competent, and well equipped to the conservation of the historical and natural environment and the artistic patrimony, never as in our century the intentional manumissions and the losses caused by carelessness were used to justify the suspicion of a destructive will, not always unconscious. In the course of two world wars and especially of the second, many European cities, whose image was characterized by famous monuments and, sometimes, by the survival of complex ancient environments, were largely destroyed by aerial indiscriminate bombardments; and many works were stolen or came to be destroyed. In peacetime, despite the restrictive laws were contravened with impunity, the real estate speculation explored rampantly and with no discernment the soil of the cities, dilating disproportionately the perimeters, by performing barbaric actions that were after all useless, accumulating blocks of gigantic and unhealthy buildings, distancing from the residential neighborhoods from the historic centers, to use those for commerce and offices, destroying, in short, both the historic "clothing" as the social content of the urban aggregates. The monuments, even when spared, were isolated of their historical context which was foolishly destroyed; the zone of ancient constructions, which even though still formed the living tissue of cities, were razed to allow one more intense harnessing of the terrain. The free zones, the gardens, the open spaces to life of the community were brutally occupied. The city as the residence of one community disappeared ...²¹

20. There are many examples and all over the world: from Carcassone in France, S. Gimignano in Italy, Óbidos e Mosaraz in Portugal, Cartagena de las Indias in Colombia, or Tiradente in Brazil, just to mention a few of them.

21. ARGAN, Giulio Carlo (1995), *Arte e Crítica de Arte*, Lisboa: Presença (2ª ed.), pp. 35-36

This *dehumanization / destruction* of cities, that Argan's so well characterizes, led to one attitude of *musealization* of the Cultural Heritage, patented in the concept of the villages or "historical" villages, which are increasingly applied also to the Natural Patrimony, in rapid destruction, raising the phenomenon of going to "see Nature", in places increasingly protected and *rare*, that is equally mentioned by Argan:

Not better luck had the field, which constituted the natural complement of the city that was in the culture of the past, complementary to the concepts of history and nature. The leprosy of real estate speculation, intensive construction, and of industrial establishments stretched itself to the entire territory, not sparing even the places most celebrated by the beauty of its nature.²²

CULTURAL HERITAGE: POSSIBLE SOLUTIONS FOR ITS PERMANENCE AND COLLECTIVE ENJOYMENT

One cannot truly say that for safeguarding and valorization of the Cultural Heritage, as for other threats of the contemporary society, there is one single, infallible, and universal answer. This doesn't mean that there are no solutions – which increasingly require the active participation of all of us – that can contribute decisively to the resolution of the problems in this field, as we shall try to demonstrate.

The first of these possible solutions refers to a collective intervention in exercising the rights and duties of *citizenship*, *complementing* the action of public bodies that, as we saw before, do not have the necessary response capacity. A good example is given to us by the National Trust, of the United Kingdom, a nonprofit association – *charitable* – that has acquired and preserved a vast set of patrimonial elements that nowadays has over four thousand monuments – palaces, churches, monasteries, parks, archaeological sites – that are placed available to all by the normal price of an entrance ticket – as in any another monument – or through an association, by an individual or a family, to the own Trust, association which can be paid weekly,

[our underlinings]

22. ARGAN, Giulio Carlo (1995), *Arte e Critica de Arte*, Lisboa: Presença (2ª ed.), p. 36 [our underlinings]: the author following refers to, as an example, the case of Veneza

monthly or annually. The maintenance of this association – which for a family will cost around 100 Euros annually (£ 88.5 in 2011) – allows not only entrance to all sites taken care by the National Trust, but also to those who are in custody of the English Heritage, a public body that keeps a fruitful technical collaboration and management with the National Trust.

The importance of this solution is evident: the active collaboration of citizens enables to acquire, conserve and place at the disposal of all, one vast patrimonial legacy, that *being property of all is not a property of anyone in particular* – as defended already by Abbé Gregoire in the aftermath of the French Revolution – keeping this Cultural and Natural Patrimony in the sphere of public property, making each one of the members of this association a virtual owner of this same patrimony.

The profitable collaboration with the public entities allows potentiating one third pathways also for the patrimony, between *the private fruition and the public of public fruition*, enabling one possible solution for the "future" of the Cultural and Natural Heritage: the *private* assumption of the property – but in a way it is *collective* and with well-defined rules of public interest – so as to return what was closed, for fruition of only some, to the public fruition. Today the National Trust has about 3.6 million of members and more than 5,5000 volunteers to fulfill its mission.²³ Solution that keeps the Patrimony as a *public asset* – without being necessarily of the *State* – and that we would like to see extending to other countries, if possible with the same spirit of collaboration and involvement of citizenship that we found in the UK.²⁴

23. <http://www.nationaltrust.org.uk/main/w-index.htm>

24. This collaboration allows that a cardholder of the National Trust Association can access all the British Patrimony protected by this association and by English Heritage, being taken further in cases where property of a particular site is one of the bodies and the management (for reasons of operating economy) was delivered to the other (which should also join other relatively local charities or organizations that contribute equally to the English Heritage). An example which we find on the field the various solutions are more than a hundred and fifty kilometers of Hadrian's Wall, with its forts, museums and archaeological sites

On the other hand it is vital to continue to invest, at the same time, on knowledge of patrimonial goods, this systematic study contributing to avoid the "second death" that in already spoke Vasari in the sixteenth century: the one of *oblivion*. This investment in systematic research – historical, artistic, archaeological, biological, and geological – enables not only the *knowledge* of the Cultural and Natural patrimony but also its adequate *disclosure*, added to its protection and development: it is much easier to mobilize resources and support of public opinion to defend something that is known and considered than of what is ignored (or its true value is unknown).

We may not equally forget that all archaeological and artistic production – like any other product of human activity – is a *symptom* of its presence and a historical *source* of study; the values we will have to add later, after their specific merits – artistic, aesthetic, and symbolic, or others. On the other hand we cannot forget that any patrimonial good – whether material or immaterial – is necessarily *mortal and finite*, as much as we try to extend its permanence: if the material goods succumb fatally to passage of time, once achieved the limits of its resistance, the immaterial goods run the risk of perishing due to lack of adequate use or registration. In another case, however, the systematic study of patrimony will preserve its perennial meaning and its role in history in the period where it was inserted. Even if its mortality takes place under violent and traumatic conditions, as for instance the destruction of Buddhas of Bamyan, in Afghanistan, which played probably a role so or more important in international intervention – that was made against the Taliban – than on the deaths of the many Afghan men and women under their yoke. This is a sad reality: human death became banal in such a way on daily news that the destruction of patrimonial good manages to capture more attention and mobilize more wills!

If the mortality of Patrimony is a fact, due to "*carelessness of men, the malignancy of the times or the will of heaven*", in some cases, however, there will be unavoidable choices to take, because it will not be possible to continue to preserve and monetize *all* the growing patrimony. And this will be by a set of reasons: *economic*, by the difficulties already listed before, *social* due to the desire for new elements, that makes it harder to constantly adapt the existing Patrimony (specially the built ones) for the necessary public and private functions, *cultural and artistic*, in this context it

may be likewise considered the need to give opportunity to breeders – architects, artists, planners urban – to put into practice new and more effective solutions and that – above all – reflect the dominant thought of each generation, without which there would be the risk of transforming ourselves in mere "conservatives" of a sterile historicism, without testimonies of contemporary creation, what is neither possible nor desirable.

The recognition of the *mortality* of Patrimony (especially material Patrimony and, among these the built properties – architectural, urbanistic and archaeological, which generally requires more resources) enable us to concentrate essentially on preservation of most important and significant patrimonial goods - applying in these the necessary technical and financial means – allowing the natural course of events to be taken in the remaining cases, after having ensured their rigorous study and registration, who shall guarantee that the knowledge of them have not been lost.

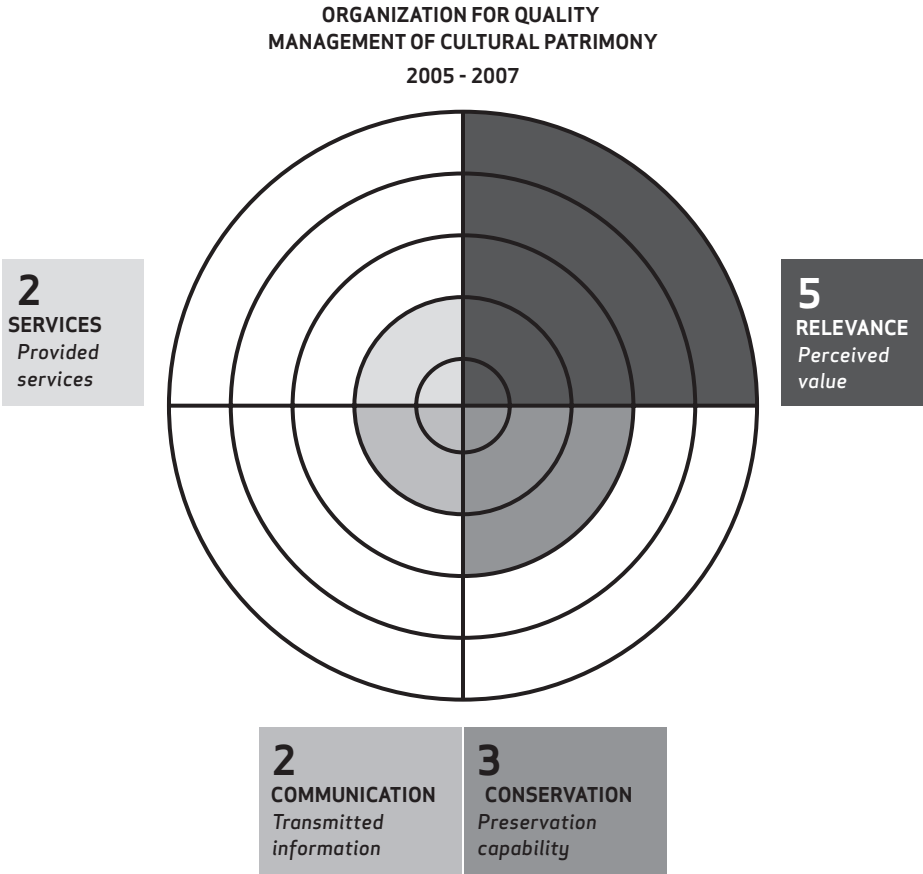
Finally, and despite the *limits* we noted before, will be necessary to invest increasingly in a *cultural tourism* of good quality, while duly framed in what was previously mentioned, that will allow – in the majority of cases – to transform a cost or charge into an *opportunity or value*, which may be central in an *integrated and sustainable development* of Patrimony.

Naturally, also in this field, the solutions are not always peaceful, being fundamental to ensure that the profitability and management of Cultural and Natural Heritage is performed through strategies that do not endanger its dignity and identity – indivisible and inalienable – in which the cultural and natural valences will always have to prevail over the commercial, ensuring the adequate protection and conservation of sites through the control of visits, the edition of informative and formative material (suitable to the various levels of interest and economic capacity of the public) and producing one merchandising culturally acceptable : *yes* to faithful reproduction of pieces of historical and artistic interest or to the contemporary intervention; *no* to the objects without dignity, as the plastic "towers Pisa" of all sizes. Altogether, the levying of entries to visitors, the selling of publications – of own editing or of other editors, on a consignment basis (as we find with frequency in the monuments and museums of Europe and America) – and, above all, the merchandising, can contribute decisively for the sustainability of Patrimony.

As regards to architectural and decorative interventions in edified Patrimony and in museums, possible solutions may go through daring proposals – in which the new contributes to valorise the patrimonial goods – as we find in “charming” hotels such as the Hotel Kruisheren, in Maastricht, which brilliantly adapted an ancient medieval monastery to new functions, without having the new colliding (or even touching) with the original; or in museums like the Louvre, in Paris, in which the “pyramid” of Pei brought one new fluidity of movement and connection of the several sectors of the Museum, at the same time that it introduced an element of novelty and one vast commercial area; or still in Queen Sofia, in Madrid, where the addition of Jean Nouvel – that includes the beautiful and excellent restaurant Arola – gave one new life, from the functional and aesthetic point of view, to the old and heavy building.

The valorization of these museums passes equally by one adequate communication strategy at the level of internet, with sites that provide attractive and informative multimedia content, that enables a better planning of the visit and that often contributes for the own cultural development of communities in which they are inserted, as in the exemplary case of the Pre-colombian Chilean Museum of Art of Santiago in Chile.

Finally, the need to promote one adequate *management and quality control* of the patrimonial “product”, we advise the certification of monuments and museums resorting, to the HERITY system, the only one that gives a democratic classification made by *managers*, by *specialists evaluators*, and by the *public*, in four specific criteria: value, conservation, communication and services, being that the more technical criteria – value and conservation – are mainly decided by managers and specialists – while the remaining – communication and services – are mainly decided by those to whom the most interest: the public. Objective and universal, the HERITY system contributes not only for classifying the Patrimony – in a “target” with 4 quadrants corresponding to the referred criteria of different colors and with values from 1 to 5 in each one – but also, thanks to the intervention of independent specialists from diverse origins and formations, to elaborate one diagnostic report which is a valuable assistant for managers of each patrimonial good evaluated.

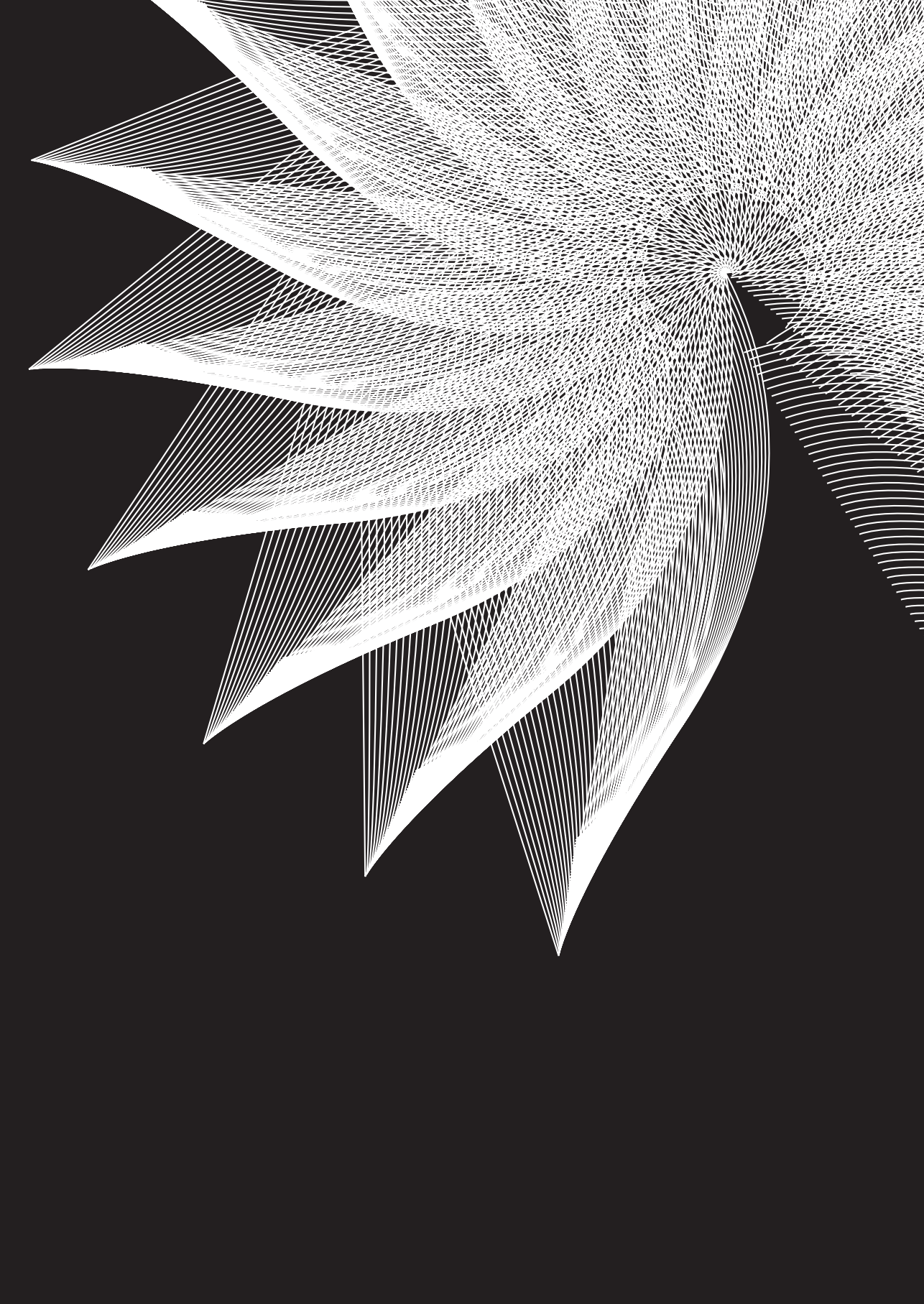


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MANAGING CULTURAL HERITAGE: PLANNING, OPERATION, CONTROL AND IMPROVING QUALITY IN THE VIEW OF HERITY

MAURIZIO QUAGLIUOLO

The Cultural Heritage, as already stated, is essential to maintain our identity and to build new identities consistent with our history.

This heritage, as has also been said, is one of the key elements to enrich the characteristics of a territory, allowing it to be more attractive, even economically.

For this reason, it needs to consider interventions in order to achieve knowledge, protection, dissemination and enjoyment of cultural heritage, not as a luxury called into action only when the economic system allows, but as a structural element to developing a balanced and aware territory, which enhances the possibility of survival, continuation and improvement of quality of life of a community.

This concept has not been explained in terms and in places where it would be more urgent and timely to support. Or at least, has not been supported with adequate strength. The review of the overall objectives for 2015 can be expected to arise with due clarity: *because there are no poor countries with regard to Cultural Heritage.*

PLANNING ASSISTANCE IN CULTURAL HERITAGE

If this is true, particular attention should be paid to actions that are put into practice in relation to Cultural Heritage and the objectives of their programs.

The Cultural Heritage, in fact, as the first statement of International HERITY of 1998, it constitutes of the collective memory of mankind: a quality management of such assets should be directed to their conservation in the context of a compatible and sustainable development.

Plan its activities requires particular skill, because:

1. Interventions in Cultural Heritage will require particular attention as to make up on non-renewable resources and in an sector with development not yet consolidated;
2. It frequently show significant differences in content on which they operate and the strategies that are used;
3. developed in cooperation it favors problems of standardization of processes; satisfaction of all stakeholders.

For these reasons the interventions in the Cultural Heritage, in their projections, require:

- a. knowledge of the subject;
- b. ability to systematize;
- c. Ability to organize resources;
- d. Predisposition to programming, including financial, on medium and long term;
- e. competence in the promotion of heritage.

The set should be developed through a team effort in which the expectations of people, institutions and enterprises involved assume also and above all, an important role. Such interventions therefore must rely on professionalism, interdisciplinary and strong local conviction. Thus, first of all there must be project control.

This can be done using the technique Project Cycle Management, capable of monitoring projects at large-scale territorial range, but the biggest reason to adopt

it on a local scale, besides the quality control standard, is also due to the fact that it is easier to develop the expansion of interventions foreseen and especially appropriate coordination with regional, national and international programs.

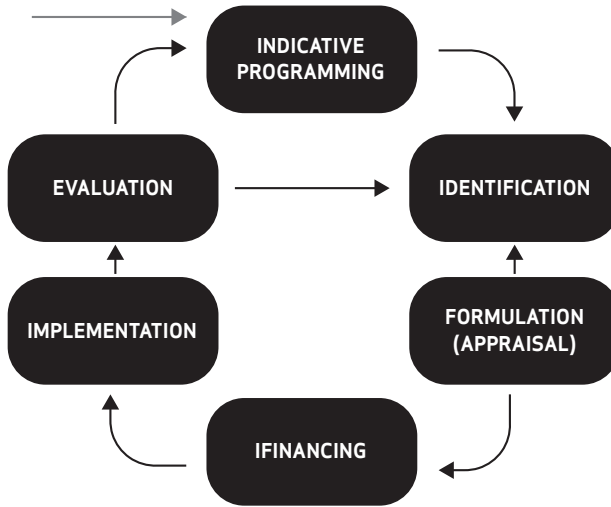


Figure 1 – Scheme of Project Cycle Management

The adoption of a conceptual scheme and of work of this kind permits the verification of the course of action and pre-established deadlines, the achievement of the fixed objectives and the feasibility of the program in course of time. Most importantly, it allows modifying, as conditions vary, the strategies and actions more timely, keeping the steps with new scenarios.

The project cycle, through a series of detailing documents, verifies, particularly, *sustainability*, that is, the capacity to stay and grow in time beyond the initial *input*. This is the only feature that can guarantee success until the achievement of the predetermined goals. The project cycle is controlled and validated in its development, with a synoptic instrument, represented in the *Logical Framework*.

Overall objective(s)	Objectively verifiable indicators	source of verification	
Project purpose	Objectively verifiable indicators	source of verification	Assumptions
Results	Objectively verifiable indicators	source of verification	Assumptions
Activities	Means	Costs	Assumptions
			Pre-Conditions

Figure 2 - Scheme of the Logical Framework

The main feature of this matrix is to allow validation, the glance, the causal link between the various objectives and intended actions; the results produced, measured by processing of the established indicators; the effort in terms of time, instrumental, and financial and human resources used to obtain it. But above all, the advantage of this instrument is also included in the validation also factors that escape the control of the same project, but can influence its progress or its success by introducing the overall scheme of preconditions and specific issues. Naturally Logical Framework is enriched with a series of detailed documents for each of these situations.

Regarding in particular the natural activities and its realization, it become useful tools to further include other typology of matrices, Gantt charts and PERT diagrams (*Program Evaluation and Review Technique*), more adapted to follow the detailed technical aspects relating to the performance of intended actions.

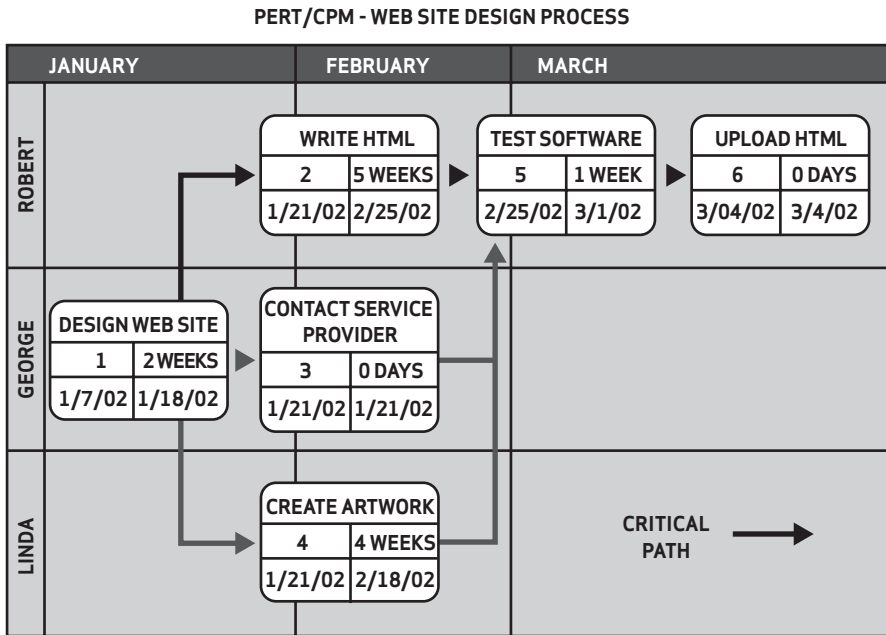


Figura 3 - Um exemplo de PERT

An appropriate control program allows then:

- implementing the "regola d'arte" (well done) all that was projected;
- the execution of corrective interventions that may result necessary in case of problems or unexpected events, the need for which can be judged before it happens;
- a progress report periodically updated, useful to the manager or promoter of the program;
- compliance with the requirements of transparency that interventions should possess.

ACTION IN THE INTERVENTIONS ON CULTURAL HERITAGE

In view of HERITY, interventions on Cultural Heritage are neatly grouped into four criteria:

- Value
- Conservation
- Communication
- Service

In regard to the Value, the main aspects are related to the recognition of features in the past history consigned for a particular asset (museum, monument, site, library, archive or special project). In this context, one should not forget the importance of the appreciation, that is, all those actions that allow, through good management, the increase of the perceived value of an asset.

In reference to Conservation, the main aspects are those that maintain an asset for future generations (since an adequate inventory, the establishment of appropriate deposits, control of maintenance and exposure conditions, the possible restoration needed). This is the most delicate, since the moment at which, in general:

- a. if not adequate, it precipitates the effective fragility of the Cultural Heritage;
- b. interventions for conservation cannot guarantee some visibility to policy and decision makers, which therefore may consider them secondary or forget them.

As for Communication, a lot of attention is needed to the possibility of transmitting a message in the understanding that is meant about a particular good. Strategic variables are multimedia (understood not as the use of new technologies, but as involvement of the 5 senses) and the different target sought, or that, by chance, can be achieved.

Finally, the Services need the knowledge of dialogue with many different actors, from the ability to make people enjoy the place to the visit to a specialist as to the tourist, meaning to perform a complex mix ranging from accessibility given to the disabled until the enchantment of a cultural week-end.

MONITORING THE INTERVENTION IN CULTURAL HERITAGE

Once a project control is adopted, and the required actions are implemented, day by day conduction of a *cultural asset*, it is necessary to periodically and constantly assess the successes.

The methodological control is good for this. It is based on the expertise of each discipline undermined the intervention in a given project. For this to happen there must be a coherent methodology of intervention and, above all, that this methodology is explained. This then allows the exchange of scientific experience and the ability, on the part of other subjects, to exercise their critical faculties, affecting the conceptual *way* the performers adopted in the project.

One can think, for example, in the case of an excavation: this is a destruction of a connection, which will then be reconstructed, necessarily by partial views, at the end of study, propagation and promotion. The essential element of control comes, therefore not from the objects, or from the outcome of the investigation, but from the procedure of the investigation itself.

The methodological control considers:

- a. Elements of cohesion with an indication of the international and national organizations of the sector;
- b. interior skills of various disciplines;
- c. Specific objectives of the interventions.

All these elements need to be validated in a multidisciplinary way, based on minimum common denominators, which allow them to express the admissibility of choices that are necessarily different from person to person, from place to place, from moment to moment.

THE HERITY GLOBAL EVALUATION SYSTEM (HGES) AND QUALITY CONTROL

Quality control for interventions in the Cultural Heritage must be guaranteed, then, by comparable parameters regardless of place, object, property and the period in which it is executed.

In this sense, it is possible to validate, by verifying the existence of requirements for membership based on HERITY criteria, the different areas interested in the project (research, training, legislation, cataloging, prevention, restoration, enhancement, promotion, etc..) and assign them a "score" on the inside, respectively to the perceived value, conservation capacity, communication and services offered.

Quality control for interventions in the Cultural Heritage is defined, therefore, as a complex transaction of monitoring based on analysis of processes. To improve the quality, HERITY created a system, HGES, which presents itself under the scheme as follows.

By applying the model and the procedure of international certification HGES, HERITY aims to help measure the performances of interventions in the cultural patrimony by an independent validation, involving the responsible, the experts of HERITY and the public. The HERITY intend, in fact, to encourage the involvement and cohesion of all stakeholders, which in the case of Cultural Heritage, are represented by all mankind.

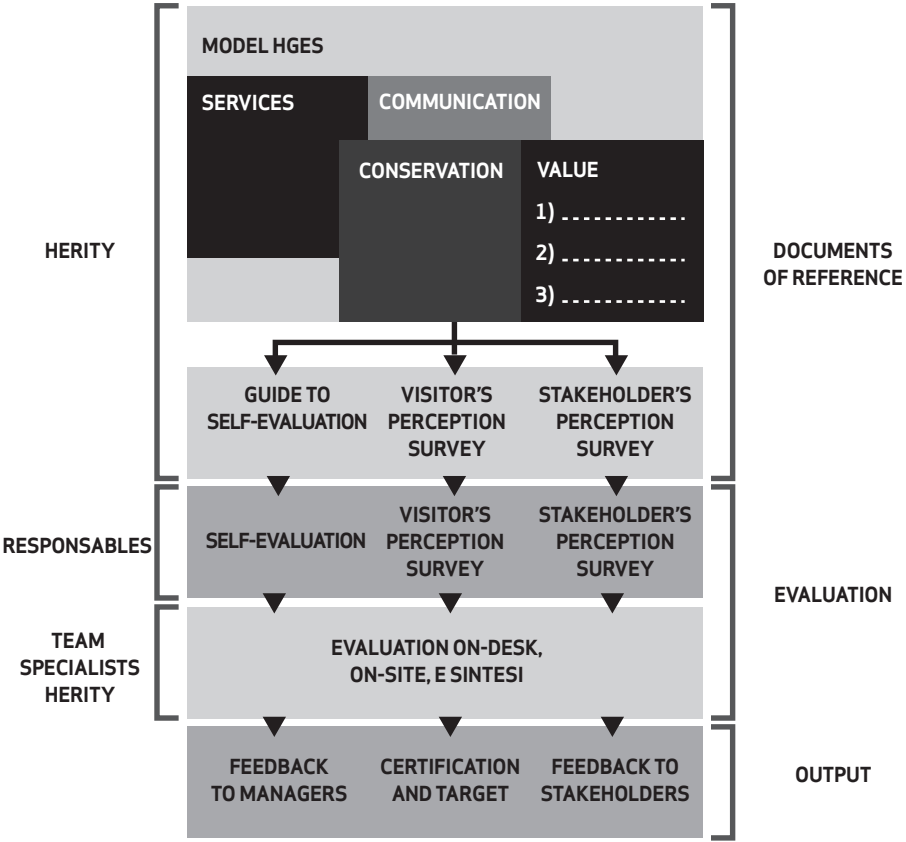
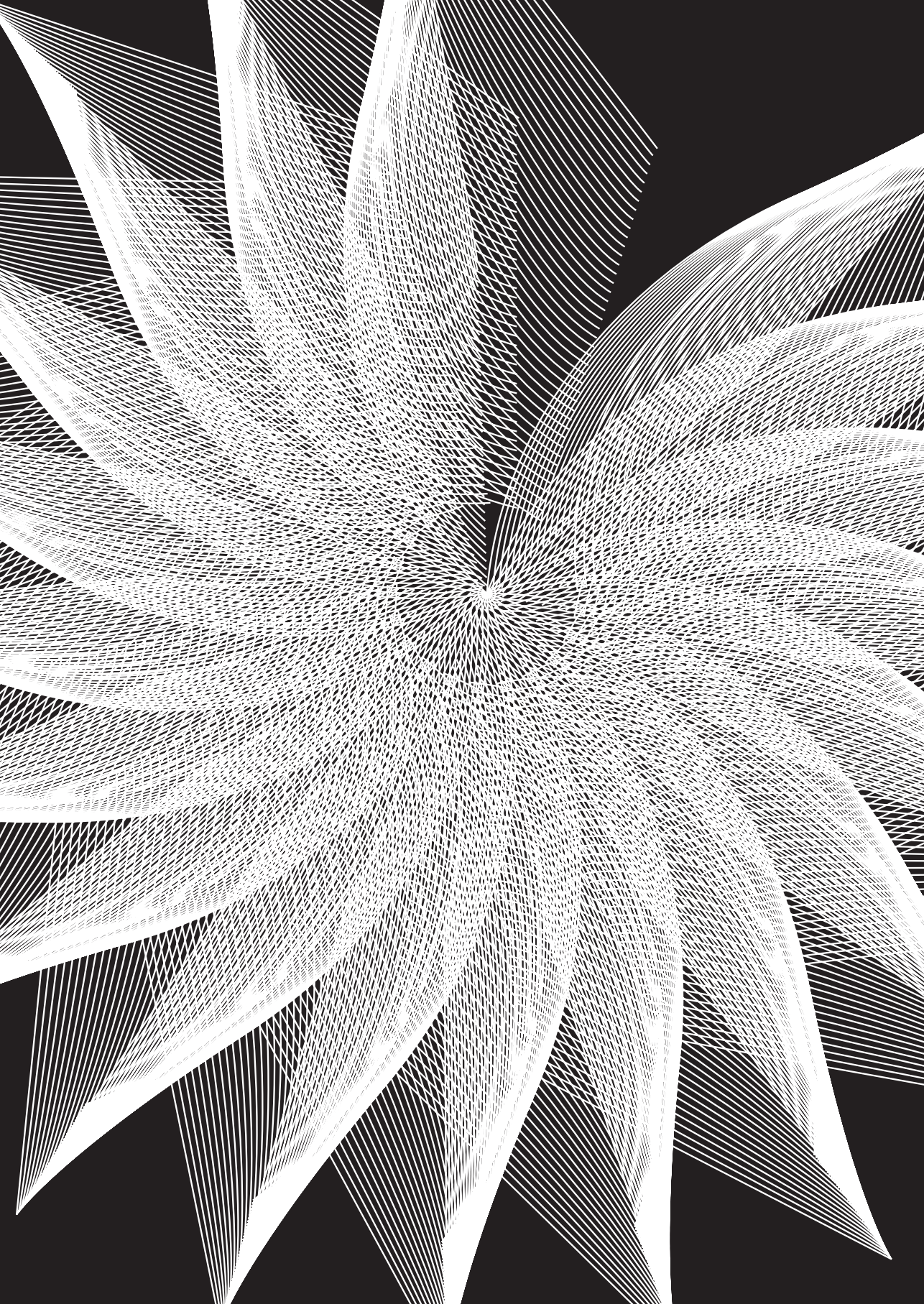


Figure 4 - The procedure HGES



PATRIMONY, MEMORY AND TERRITORY

ROSSANO LOPES BASTOS

The themes that involve patrimony, memory, and territory have in common among them the feeling of belonging, which means that whatever may be the bias of each approach be, this attribute will always be present.

Bergson (2006: 48), in his construction about the nature of memory, argues that the duration of our lives isn't a moment that substitutes another moment: if this were the case, only the present would exist, there would be no extension of the past; there would be no evolution, no transformation and no effective duration. The duration and the continuous progress of the past, gnaws the future as it advances. Once the past grows steadily, it conserves itself indefinitely.

Memory is not a faculty of classifying recordations in a drawer and simply registering them. There is no register, no drawer, no here, properly saying, not even a faculty; for a faculty is exercised intermittently, when it is desired or possible, but the accumulation of the past over the past continues unabated. In reality, the past is conserved by itself automatically. Our role is to exercise and debug it, so it doesn't return as a tragedy.

In this sense, the focus of Patrimony is to encounter itself with the memory and give sense to it, in a way that it may expose to the territory the conflict of identities that fight to firm themselves as an ideological mechanism, aiming at the power dispute.

It is not about recovering a memory or to recall a period in history. The truth is that we'll never attain a past if we do not put ourselves at its exit.

Among the memory diseases that exist, the most harmful to society is the one that insists on being forgotten. The most costly example is to make people disappear and take away from future generations their ancestral memory. If they disappear from memory is because the antagonic elements where the actions were rested was modified or destroyed.

These actions are crimes against humanity, that cause intergeracional harm, which, according to Bittar (1990), apud Lemos (2008:17), is an injury to the patrimony or a reduction of it; it suffers an offense of its protected values, in a loss or a partial or total decreasing of elements, or of an expression that composes the structure of goods, be them psychic, physical, moral or material.

The problem of the construction of memory may be similar to the construction of identity, for the memory and the identity accuse the pathology of these categories, formed to delimit the territory of its elites.

Tiburi (2009:39), recalls that Alberto Mussa restored a translation of *My destiny is to be a Jaguar* (Record, 2009), a myth of the legendary Tupinambá people, that became famous ever since the terrifying story of Hans Staden about the devouring of which he escaped unhurt in the 16th century was told. The translation, in itself, had two main problems: the interpretation of the world by Hans Staden and the translation of the work.

In this sense, we may consider that the translation was a literary rearrangement of the universal cosmography of the priest Thevet, who reported stories about the Tupinambás. The myth, explains the origin of the world in the Tupinambá point of view which the author recounted – there is no text in the tupi language, at least how we conceive it, there is only the text in French – with the authorization of who receives an ancestral inheritance, and the freedom of the writer in appropriating himself of the epic narratives.

Given the resurgence of documents of various periods of time, being them of any nature (bone, iconography, materials, oral, architectural, archaeological, and human) a transdisciplinary investigation is adequate. One which does not seek a revival of the past, but its memory, its identity, its correlation of forces that made possible events that marked the territories as landscapes and as a symbolic and live world.

The foundation of asset protection policies would be a consensus that transcends ideological cleavages and cultural distance. It is clear that this foundation

would be closer to success if the election practices of what would be the patrimony, could include not only the diversity of ethnicities of the classes through the urban knowledge and practices, but also to create mechanisms to democratize the process of turning an element into a Patrimony. That is, the real possibility of being able to choose those adequate elements that truly represent the references that were to be the object of their memory; of a patrimony to be transferred and lived as a culture to their descendants. A contrary case and certainly very common, is that over consensus, the politics of Patrimony may, hide an urban project conformed to particular interests. In this sense, they are an ideal mean to legitimize an intervention on the public sphere, an efficient instrument of adherence to a project.

If nowadays more of 70% of the world's population live in a distance of less of 50km from the ocean, we may say with no fear of exaggeration that the future of the cities is anchored to the solution of the conflicts that may pass through these cities.

Until recently, the approach of the city, both in the practice of urban interventions, as in the context of specific theoretical discourse, was given priority in terms of rationality, functionality, cleanliness, efficiency, and sorting functions, as if the city were to be amorphous, lifeless, or rather of vegetative life.

The circumstance of spatial, social and cultural changes (Zukin, 1996:205), which stimulate those who have written about cities in recent years, is loosely compressed in the term "postmodern urban landscape."

Generally speaking, affirms Zukin (1996; 205) post-modernity is not only a social process of dissolution and redifferentiation, but also a metaphor of this cultural experience. Consequently, the social process of constructing a post-modern landscape depends on an economic fragmentation of the old urban solidarity and reintegration which is strongly affected by the new modes of cultural appropriation. The geniality of real estate investors in this context is to convert the narrative of the modern city in a fictitious link, an image that is a large package of what people can buy, that is, a dream of visual consumption.

Landscape is the key concept for us to take hold in the spacial transformation. A postmodern urban landscape not only maps culture and power, but also the opposition between the *market* - the economic forces that detach people from established social institutions - and *place* - spacial forces that anchor to the social world, providing the basis for a stable identity.

As new categories of residents occupy the cities, the places of an insurgent citizenship are found at the intersection of these processes of expansion and erosion.

These places vary on space and time and include:

1. the universe of the homeless
2. the immigration networks
3. the autoconstructive peripheral zone
4. the territory of the gangs
5. the fortified condominiums
6. the urban invasions
7. the camps built by migrants
8. and the zones of the so called new racism, just to mention the most evident ones.

In this sense, the residents with great economic power will frequently decide, through the most democratic means of the processes, to segregate its communities from the “external evil”, closing, fortifying and privatizing their spaces in relation to who is considered undesirable.

The lesson here is that the planning of a city that intends to be sustainable needs to involve not only the development of the insurgent forms of the social, but also the resources of the state to define, and occasionally impose, a more comprehensive conception of the rights of what sometimes we may find at a local level.

Holston (1996: 252) states that planners, architects, geographers and other thinkers of the city should cover a new kingdom in their professional practice. It is a different kind of practice diverse, at the same time, in its objectives and methods; this difference implies a new kind of concept.

In what regards practice and method, I emphasize the ones used by the urban ethnographer. In this proposal, I do not suggest that planners, architects, geographers and administrators become anthropologists, because anthropology is not reducible to ethnography.

What I do suggest, is that they learn the methods of detection of ethnography and also work as anthropologists and archaeologists in the perspective of incorporating knowledge and understanding that may make a difference on the quality of life of the territory, here understood as the place of being, making, living and dying.

Certainly, the territory approach still needs to look strictly to the cultural and biopolitical landscapes in order to establish spaces of living that may contribute to the effectiveness of a policy of harmony and peace.

THE NEW TRANSFORMATIONS OF ARCHEOLOGY FOR THE UNDERSTANDING OF A TERRITORY: CULTURAL AND BIOPOLITICAL LANDSCAPES

The landscape is a look made through the human lens, therefore, it has always been historical, whether we want it or not. Introducing it in the urban category is to distinguish it on the universe of the cities. The City, that derives from the polis, the citizen, the citizenship, of the exercise of the *ágora*, the place of discussion of the concepts, that consequently affects the greek compromise of democracy, the city governed by its citizens. In this perspective, our patrimony holds a set of elements, that with rare exception is included inside the conception of national state, contributing to expand the construction of the “subcitizenship”, in that its representation doesn’t correspond to the existent diversity in our country, but constituted by the memory built from “up to below”.

In this manner, to analyze the concept of archeological landscape leads us into our capacity of seeing, looking and understanding how a territory is formed. We may admit that the landscape has meaning in the ability to look, when we reduce arbitrarily a set of natural and cultural assets and assign to it the name of landscape, whether archaeological or any other to be defined; whether these assets are designated by their naturality, understood as a natural nature or its culturality, understood as a transformed nature.

Yet, we should note that there is no nature outside culture, so nature, strictly speaking is also culture. In this way, it would be prudent now to investigate the *urbis*, the urban, the urbanity and its construction through time and space and the formation of the idea of territory. How to address a wide range of propositions and concepts, not missing any of them, without giving privilege to one of the proposed forms? Here we face a challenge that fosters the development and the construction of at least three categories of concepts that should be thought of together, and also separated: the landscape, the urban and the historical (archeology), founding elements of the territory.

We are facing a new category, a new concept when we talk about "urban archaeological landscapes," and this is what we will seek to address. At the same time we also hope to answer the following question: "What is the history, the archeology of an urban landscape?" To do this, we'll invoke the "landscape archeology", for in this manner we will work on a space-time bias, which would make us look in different directions by proposing the formation of the landscape through "process."

We shall address the first three categories of concept listed above; however, the dynamics of the approach would lead us to think on how many variables would be possible.

The demand for this discussion occupies a special space, exactly now that we are living in a society of non-place, of the liquid territory, when post-modernity has been giving demonstrations of failure, where the globalization of prejudices and the privatization of profits are being proposed by Nation-states, known as neo-liberal, pointing as the solution of the great crisis of international capital, the relief of the State, which means giving taxpayer money to the international capital. Now, what is evident is the fraying of a predatory model, unjust and wicked, where usury, the pursuit of profit for profit, power for power, equity capital, consumes itself. How does this discussion of social economic crisis, apply to the proposed theme of "urban archaeological landscapes"? It is inserted in that discussion, because both point to the same difficulty, to the same problem: sustainability.

Modernity has perfected the instruments of memory and solitude. Santiago (2006:14) writes, "Modern loneliness, not anymore romantic, is an unavoidable extreme experience of the individual seeking citizenship. From this experience, that sociability can be built - in a century marked by poverty, injustice, corruption and violence by the censorship, repression, war and fear of socialization." (Santiago 2006).

Loneliness on the other hand, continues Santiago (op.cit) makes room for a radical reflection about contemporary society and the blunt criticism of its problems. In an excellent update, the author paraphrases the Cartesian *cogito*, by Albert Camus in *The Rebel*, "I rebel, and therefore we are."

From the self-reflective solitude; - teaches Santiago (op.cit.) – which questions the societies in which modern man lives, is that links and connections that are critical, insurgent, revolutionary and collective forge "more engaged" modernists

such as Carlos Drummond de Andrade and Mario de Andrade two exponents in the formation and formulation of concepts of national memory, among others.

There are still today teachings from the heroic phase of the formation of the IPHAN (Institute for the Historic and Artistic National Patrimony) that are not applied or well understood by the Institute, being so that they are not present in their policies for ignorance as for malice. I have the tendency to believe it is mostly due to the former, for if it was not, it will lead me to disillusion.

As Duarte explains, if we proceed in the historiography of anthropological knowledge, it is legitimate to equate the degree of association/dissociation between anthropology and anthropological museums. In this manner, we relate it to the different mechanisms of objectification of knowledge which the discipline appealed to throughout its development. To understand currently the territory in its genesis, we must start by understanding the museums and their formation. Duarte (1997), focusing his attention on the last two decades, sought to analyze in this issue the recent movement of rapprochement, seen from the early 80s, between anthropology and museum institution and museographic practice, equating it with contemporary disciplinary reformulations. That is, relating it with the contemporary ideological and epistemological ruptures and to the kind of anthropological knowledge underlying them. This is not strange, since Duarte talks and refers to Portugal and its museum institutions in Brazil, this thinking led to the withdrawal of museums from the IPHAN sphere.

Here we highlight the statement "An equal and happy humanity will not be constructed by the repression of the attributes of a unique personality; it will not be the product of one-dimensional beings." (Santiago 2006). The equality human-ity will be constructed by plurality, by diversity and true democracy, not by its imitations with a totalitarian and "Stalinist" face.

Starting the analysis in Duarte (1997) about decolonization of museums and of its factors it is important to refer the changes in the social political and ideological spheres that came about with the phenomenon of decolonization. Here we may highlight the toppling of the Berlin Wall, which brought to the world a discussion about the real purpose of capitalism. The European colonial rule, which had been maintained for many years and even reinforced with special force in the period of affirmation of the "international anthropology" characterized before, enters quickly into total collapse. Independently that in many cases it had been replaced by situ-

ations of economic neo-colonialism, and military dictatorships in "independent" countries aligned to the colonizer or the new colonizers.

The political independence of former European colonies resulted in significant changes in the relations between the Western countries (where anthropologists came from) and the companies that were traditionally constituted as their object of study.

Moreover, decolonization has also brought great changes on the new independent territories in their socio-cultural, economic and political conditions. On the one hand, the previous "prehistoric and indigenous people" are now incorporated into nation-states which struggle - barely withstanding the existence of tensions and infighting, or for that same reason - to build and develop unified national identities. On the other, trying to free them from economic dependence inherited from the colonial regime, these new countries seek to alter the traditional technical-economic structures, which itself, alone, cannot fail to involve multiple transformations also in the rest of the socio-cultural structures.

For the interest, hereby, we may briefly summarize the effects of some aspects of decolonization. Firstly, given that power relations have been completely modified, in the post-colonial context the access to the traditional empirical sphere of anthropological investigation becomes more difficult, and with more restrictions. Secondly, in a relatively sudden manner, national units that could be called "mixed societies" start to emerge. These would be countries where organizational and socio-cultural elements, characteristic of "modern societies" and "traditional societies" coexist, without being, however, identical to the previously known models of each one. It is the emergence of the Third World and the "developing countries".

Thirdly and consequently, the "primitive people" or "tribal people" as defined above, *vanished*; these groups were incorporated into new political units. Finally, a few years after the independence of those new nations of Europe which until then had remained mainly as a center of emigration, became the place of destination for immigrants from former colonies.

If, as Geertz (1983) affirms, we accept that the discipline of anthropology is a "cultural institution", ie, an entity inevitably situated in time and space, we are easily led to recognize the inevitability of those new realities influencing the further development of the discipline. In terms of defining the object of study, it is no longer "(...) realistic, even normatively, to look at the recovery of the pure, the

unadulterated non-European 'otherness' as the privileged focus of anthropological research." (Stocking 1982: 176).

Given this new situation, that some (Fabian, 1983; Clifford, 1986) call "the crisis of the object of study," the discipline is moving in the direction of extension of this object to also include the study of complex societies. This extension does not mean, of course, the exclusion of the former object of study, and even in the "at home" anthropology the interest for this "Other" may be preserved given the fact that Western societies have come to include as its component parts non-European ethnic-cultural minorities.

Beyond, however, the possibility of anthropologists to conduct their research focusing or not on the study of the extra-European "Other", what the expansion of the object of study clearly facilitates is a more comprehensive and less isolated perception of society and of sociocultural phenomena. On the other hand, archeology, anthropology's sister, also calls to itself the constant advances in anthropology, and also of history; as it does with the more even recent and complex field called "patrimony."

That is, the expansion of the new object of study favors the emergence of a new notion of what is *global*, one that goes beyond the previous atomistic and compartmentalized conception of societies, or types of society. It now refers to the intricate linkages between local and global level of the planet. This same phenomenon can be observed for archeology, particularly the one practiced by researchers from Latin America, being Brazil and Argentina in the spotlight.

Still, concomitantly with this substantive extension, the global post-colonization reality facilitates the perception of the interdependence of the phenomena that affects different societies and that, moreover, is translated by the new concept of globalization. If until then the permanence of the colonial system allowed keeping large areas of the globe as secondary, and without direct participation in the international arena, with the end of colonialism, the political and economic scenery has to take into account a considerable number of new players.

Here we highlight the key role that Brazil assumes in the new global order. This was largely due to the posture of our independent foreign policy, which has in the late President, Luiz Ignacio Lula da Silva (Lula) the audacity characteristic of the "Brazilianness", that our noblest intellectual and former president Fernando Hen-

rique Cardoso was unable to accomplish. The striking difference between President Lula in relation to Fernando Henrique Cardoso (FHC) was his ability to present himself as “us” Brazilians, while FHC, mingled with “them” (me, the President, like you, Europeans) a professor at the Sorbonne, scholar of books and many languages.

Simultaneously, the repositioning of power relations among nations leads to the extinction of previous exclusive zones of influence of some countries over others and to the growth, in diversity and complexity, of the relationships among the several States. Moreover, the rapid economic and sociocultural transformations through which the newly independent nations pass, demonstrates how the previous “immobility” was conditioned by the situation of the colonies.

The fact that all these changes and their multiple consequences, national and international, have been triggered by a single phenomenon, which was the process of decolonization, requires a confrontation with the evidence that between local and global, as well as between present and past, interdependencies are varied and relevant.

In this sense, decolonization itself contributed to the emergence of a new perception of sociocultural phenomena that led to the adoption of new perspective approaches, and generated a movement of theoretical and conceptual reorientation in the discipline of anthropology. That is, the understanding that it is necessary to address the multiple, dynamic and complex relationships between societies eventually triggers the rupture of the theoretical structural - functionalist framework.

The theoretical and conceptual scenery, hitherto prevalent, relied on the rule of the dominant structures, social or mental, seen as constraining of individual behavior. It elected therefore, the identification and explanation of the functioning of these structures as their primary purpose.

Its exclusively synchronic character and the fact that social practices and symbolizations, even though varied, were seized in all cases as reproductions of stable social structures, has as its reverse, on the one hand, the granting of no epistemological relevance to the analysis of possible changes, or transformations of the social system; and on the other hand the apprehension of the sociocultural reality as a reality closed in itself.

In other words, the adoption of the theoretical structural-functionalist sphere led to a conception of social systems seen essentially as static, as self-sufficient enti-

ties to which it was possible to access through isolated knowledge from the respective cultures, and consequently a limited view of the construction of the territories.

In generic terms and for what interests us here (the identification of the factors that contributed to the rapprochement of anthropology to museums), the theoretical and conceptual rupture operated in the decade of 1960 was based on the inversion of a key assumption: between the social and the individual there is a constant interdependence. That is, even though the behavior of social actors are conditioned by social determinations, their actions are perceived as capable of causing changes and transformations in the social system and therefore in the territory. The theoretical and conceptual framework that was emerging starts to explain the production of the social by the action of social agents that interact with each other, now constrained by social relations in which they participate.

Such theoretical and conceptual redefinition is reflected in the adoption of new perspectives for addressing the socio-cultural phenomena, leading to what one might call the *rehabilitation of diachrony* as an instrument of anthropological knowledge. To conceive the action of social actors as potentially generating of social changes, involve perceiving the social systems as essentially dynamic and constantly changing entities, for which a purely synchronic perspective approach may be simplistic and inadequate.

The consideration of the temporal dimension arises, therefore, as necessary to access a reality perceived as essentially dynamic. On the other hand, providing theoretical relevance to the interaction of social agents also implies apprehending social phenomena as non-reducible to any formal structures against which their meanings would be revealed. If society is conceived as a complex network of subsystems that maintain relations more or less fluid with each other that are also in constant mobility, the explicitation and understanding of social phenomena can only be achieved by clarifying the meaning of those relationships and that mobility. That is, the intelligibility of social phenomena, given its eminently dynamic character depends on the elucidation of ideological and political contexts that frame, and have long been framing the action of social agents.

In conclusion, the rupture of the structural-functionalist theoretical frame translates, on the one hand, on the reintegration of the importance of history and, on the other hand, on the emergence of problems that give special attention to ideological and political constraints. We, therefore, start to be in the presence of what

G. Stocking refers to as the change of the theoretical framework of anthropology "(...) towards more sociological and historical problems." (1982: 177).

By definition, despite the theoretical and conceptual options, methodological positions cannot stop suffering adjustments so that those new territory issues may be dealt with. In addition to the use of written sources that the substantive enlargement itself provides and to the exploration of historical materials, (sometimes including the re-analysis of previous ethnographic collections) granting importance to the temporal dimension, implies the introduction of some modifications on the practice of participant observation itself.

According to the formulation made classic since B. Malinowski, the participant observation was based exclusively on the synchronous approach so that, suppressing the time factor, disabled the analysis of evolutionary processes and led to the construction of a general model identified by the culture and by society. Assigning this mode of exercise of participant observation as an "appropriate method of illustration," M. Gluckman (1959 and 1963) proposes to replace by the "method of cases", which consists in considering a number of specific events that affect the same people or the same groups for a long period of time.

Thus it would be possible to verify how those incidents are linked to development and change of social relations between those people or groups entering the analysis of such transformations in the framework of their respective sociocultural system. This change in the course of participant observation which refocuses it to the analysis of a series of "cases" linked to each other and therefore, processed in the same area of social life, switches the previous practice of observation of a "society" by the study of a concrete "social field", as well as replacing the previous monographic descriptions, which were unable to cope with the social dynamics of understanding the territory by the analysis of social processes that have evolved over time.

In a recent event, IPHAN² seeking a base foundation for the recognition of cultural assets that could be submitted for evaluation as a World Patrimony, considering the established operational guidelines of the Convention on the Protection of the World Cultural and Natural Heritage (UNESCO, Paris, 1972), introduced the Cultural Landscapes. At this moment it considered the clearly defined landscape designed and created intentionally by man: it covered gardens and parks created in

aesthetic reasons which are often (but not always) associated with construction or religious groups. It also classified landscapes organically evolving, what it called the result of a requirement of social, economic, administrative or religious origin and reached its present form by association and in response to its natural environment. They can be characterized as:

- a. Relic Landscape (or fossil): a landscape that was subjected to an "evolutive" process that was interrupted, but its essential features were maintained. Here, the preservation of the cores took place in one way or another.
- b. Live Landscape (or continuous): a landscape that conserves an active social role in contemporary society, closely associated with the traditional way of life and in which the "evolutive" process continues. Here where the knowledge and traditional flavors survived in spite of television and massification of false desires.

It also lists the associative cultural landscape, which defines the landscape justified by the strength of the association to religious, artistic, cultural or natural elements phenomena, rather than by cultural material remains that may be insignificant or nonexistent.

The landscape was the subject of a reflection by Mario de Andrade, and therefore, it is not new to the academic sphere. It is highlighted here, a correspondence to Carlos Drummond de Andrade, worked by Santiago (2006:24), in which he gives his friend Carlos a great responsibility, stimulated, as it seems, by the influential words of Maurice Barrès, developed in the novel "The Uprooted" (*Les déracinés*):

The displacement caused by the education in Foreign books, contamination by foreign customs because of the innate foolishness that still exists in primitive beings, not because of the less worth of universal masterpieces of other people, but, because of their minor private, national works, this displacement is even more fatal, there is no doubt, in a primitive and of little tradition country like ours.

Mario de Andrade accused the young poet from the State of Minas, Drummond, with the identification of the "Tragedy of Nabucco" and says that we actually suffer from "Harassment of Nabucco."³

In accordance with our patrimonial tradition, based on Andrade, there is a need to broaden the discussion of the concept of cultural landscape, exorcizing various colonialisms in order to tradicionalize the Brazilian reality. So, our heritage concern has come a long way, trying to replace the diversity of which we are truly heirs.

It would not be excessive to recall here the *Manifesto Pau Brasil*, by Oswald de Andrade, as the landmark of “tupiniquim” tradition where there is a clear need to reinvent ourselves as a nation, and build our own territory, keeping a critical distance from imported works. We shall not take these works as our roots, for there is the risk of them being our displaced root.

BIOPOLITICAL LANDSCAPES

The transdisciplinary practice was already *in nuce* in the period of the early Romantics, who were critics of reason and of the institutionalization of knowledge. Its legitimacy was confirmed by a construction given by memory and the affirmation of their preserved patrimonial material. The change that we are operating comes from the exhaustion of the speeches of central institutions, still largely tributary of positivism. The decline of the modernist perspective of Patrimony comes with the decline of these modern *epistemes* grounded in the memory of the ecclesiastical, military and aristocratic elites. In Brazil, this patrimonial view is strongly identified in the valorization of the Baroque, and in the monuments of Brazil as a colony, which up to today has its defenders, who aren't few, for the reaffirmation of colonization and the subsequent legitimation of inequality.

Here, we may elaborate on the perception of the policy “casa grande (e velha) e senzala” (big - and old - house and slave quarters). In this policy the preservationists practices of the state are sintonized with the conservation of the big and old house forgetting the slavequartes and the resistance practices; that history taught and practiced in schools try to erase by all means. The most impressive and frightening is that this was a state policy, which has the IPHAN as its most obedient and servile Institute, regarding the development of policies to reinforce the symbolic, social, and territorial exclusion, still trampled in the old paradigm that the Patrimony is a technical recognition for technicians in favor of the community.

It was only recently that we achieved some diversity, a shy, poor, invisible, and not linked to actions policies diversity, that was only obtained due to some Patrimony technicians and professionals, who insisted on being a dissenting voice of the *status quo*. It is worth remembering that the human resources policy in the area of Patrimony always seeks to discredit the mass of dissidents and different people in favor of hiring new staff, with unequal salaries, which are available to meet the guidelines of the oligarchic board.

Within this policy of reaffirmation of the "old", we are faced with a new patrimonial twist, which is hungry for new territory that are yet to be perceived by the ruling elites, who are blind to everything that is not architecture; since the new order of cultural belonging emanates from environmental turn, which brought in the wake of constraints, and of negotiation of environmental impact studies, the cultural variable, where the demand for the archaeological patrimony gain characteristics of a guiding field to all the other demands of cultural history.

If one could realize that everything in the cabinets is archaeological, and if it is not, it will still become, perhaps the perception of the dynamics of new understandings of the archaeological record and its aftermath could enlighten the new generation to launch state policies more consistent with the realities.

More important for us to know, is that despite the official inattention to archaeological themes, they walk inexorably to their role as social protagonists, where the strength of local knowledge and power will run over the reductionist pragmatic and excluding thinking about the official policies.

The issue of ordinance IPHAN N. 230/02, made by the coordination of archeology of IPHAN in 2002, of which we are authors, accompanied the changes in the national scenery and responded to the demands of precaution and preservation of the archaeological Patrimony, including the dynamics of the process. A "making" of education, which goes by the name of patrimonial education, that acts as a factor of aggregation and social commitment with the various social actors involved in the dispute of the environmental and cultural hegemony.

The technical and political techniques, for example, in the case of environmental impact studies and all its variations over time tend to eliminate the dichotomy between nature and culture, or between environment and society, taking increasingly into account the complexity of problems arising from the works of infrastruc-

ture and their feasibility. They incorporate more and more variables and tend to see the multiplicity of perspectives that calls for transdisciplinarity.

Latour (2009:17)⁴ puts it plain: where nature and culture are ways of making politics, of bringing together things in two different communities, for reasons that come from modernity. The concept of "nature" has no meaning, for there is in fact no nature. This amalgam of independent beings, this group of beings that we call "nature" is an ill-formed community. On the other hand, we can show that society is ill-formed, inappropriate, improper, unbalanced, unfair, and perverse.

With the dissolution of the concepts of nature and society, we dissolve this modernist dichotomy that much delayed new associations and its connections. It is urgent to strengthen the political grouping, now pursued by a new archeology, by a new anthropology.

From the moment that the two large "communities" of the modernist tradition, society and nature, were diluted, I mean, distributed and divided because of the ecology crisis, the notion of meeting or restoration of these collectives - whether human or non-human - has become the most important thing.

Seligmann-Silva (2009:38)⁵ proposes that this depletion was the result not only of a wear of certain patterns of interpretation, that due to the repetition over time began to lose its force of attraction. The Patrimony repeats the elitist standards of all empowered matrices, and thus loses its strength, which ultimately is diluted by lack of belonging. Aloisio Magalhães has a famous statement on this manner: "The community is the best guardian of Patrimony," and if it does safeguard the Patrimony, there is still a long path for the preservation policies carried out to find in the community not just a repository of unfulfilled expectations, but the community effectively will perform a leading role, worthy to assume the commitment with preservation.

This perspective will be possible only to the extent that conservation actions are performed by the community, by new local power groups, not a policy from one to another, not from the thinking elite of patrimony for the community considered a great ignorant mess.

Another major driving factor of decisive changes in the human sciences is our recent biological turn, already detected in the 60's by Hannah Arendt and in the 70's by Foucault, who signaled to the path to the biological and taught us to read in

Western history, especially since the French Revolution, this intrusion of biological thought colonizing our way of thinking and acting in politics and economy.

The biopolitical thinking draws strength from the life process, ie, "the most powerful necessity that we know", as stated Arendt. If we no longer believe in the cultural history told through monuments, by the standards of an anthropomorphic saga of their formation. On the other hand our relation with the past became more predatory: the past, we reread and re-create from our present, ultimately it does not exist, but is affirmed using itself as the bricks for our new poetic-intellectual creations.

The human sciences, literary theory, arts, and Patrimony need to be up to these new Biopolitical landscapes and imagistics that determine our culture now.

The Patrimony is a part of this biopolitical game in that it promotes the captive history of memory, the construction of knowledge, activities, flavors and odors that legitimize or challenge authority, in our case, Brazil, they legitimize more than contest.

Therefore, the patrimony that has already been constituted as a field of thought and political practice, where the speech is moving towards dismissing the monopoly of such discourse and practices of the disciplinary field such as architecture in Brazil, as of history in other countries, calls for a more complex thought that goes beyond the garages and the big old house, but establishes new forms of participation for the reinvention of Patrimony, as a field of open thought, complex, cumulative and liberating.

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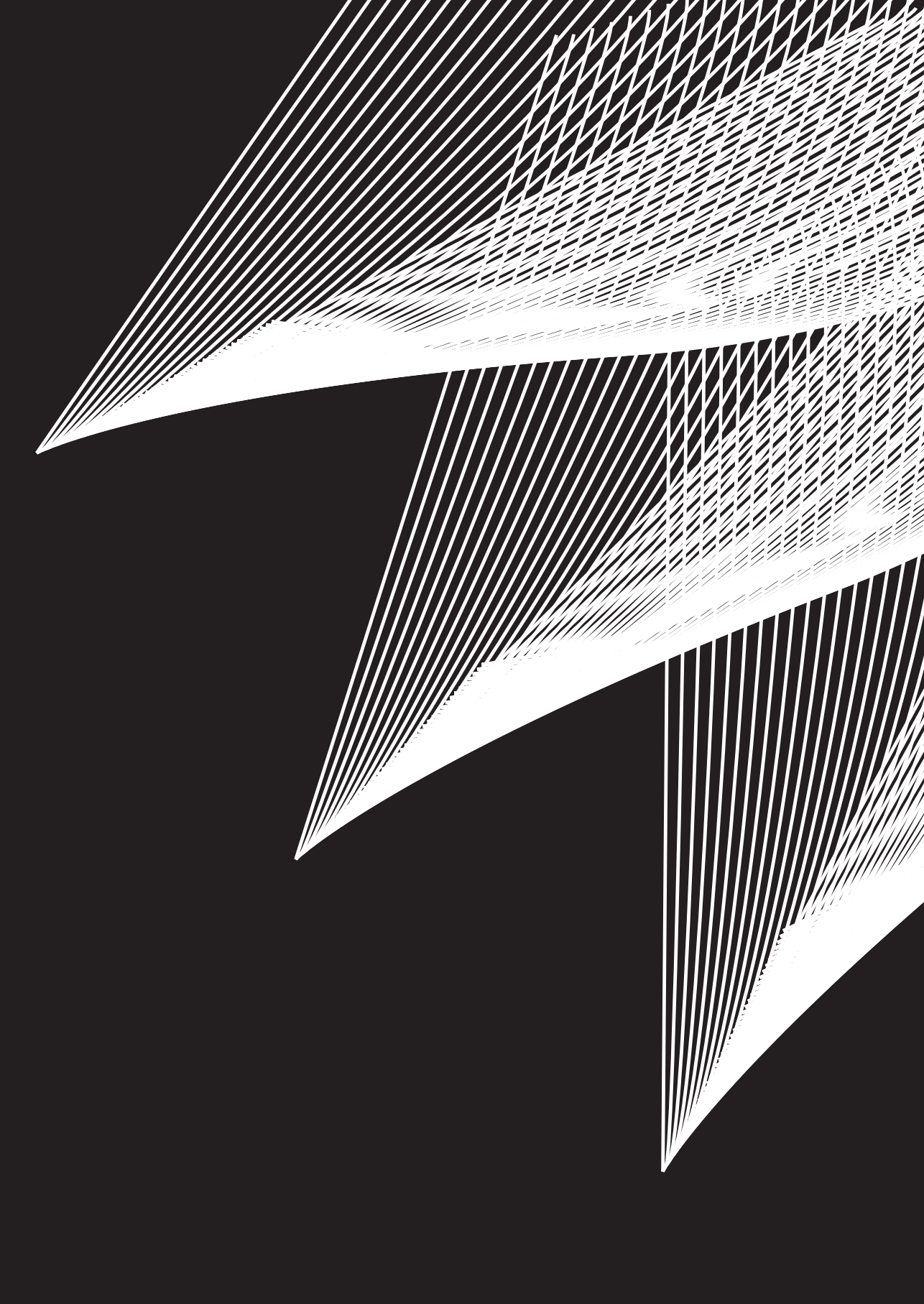
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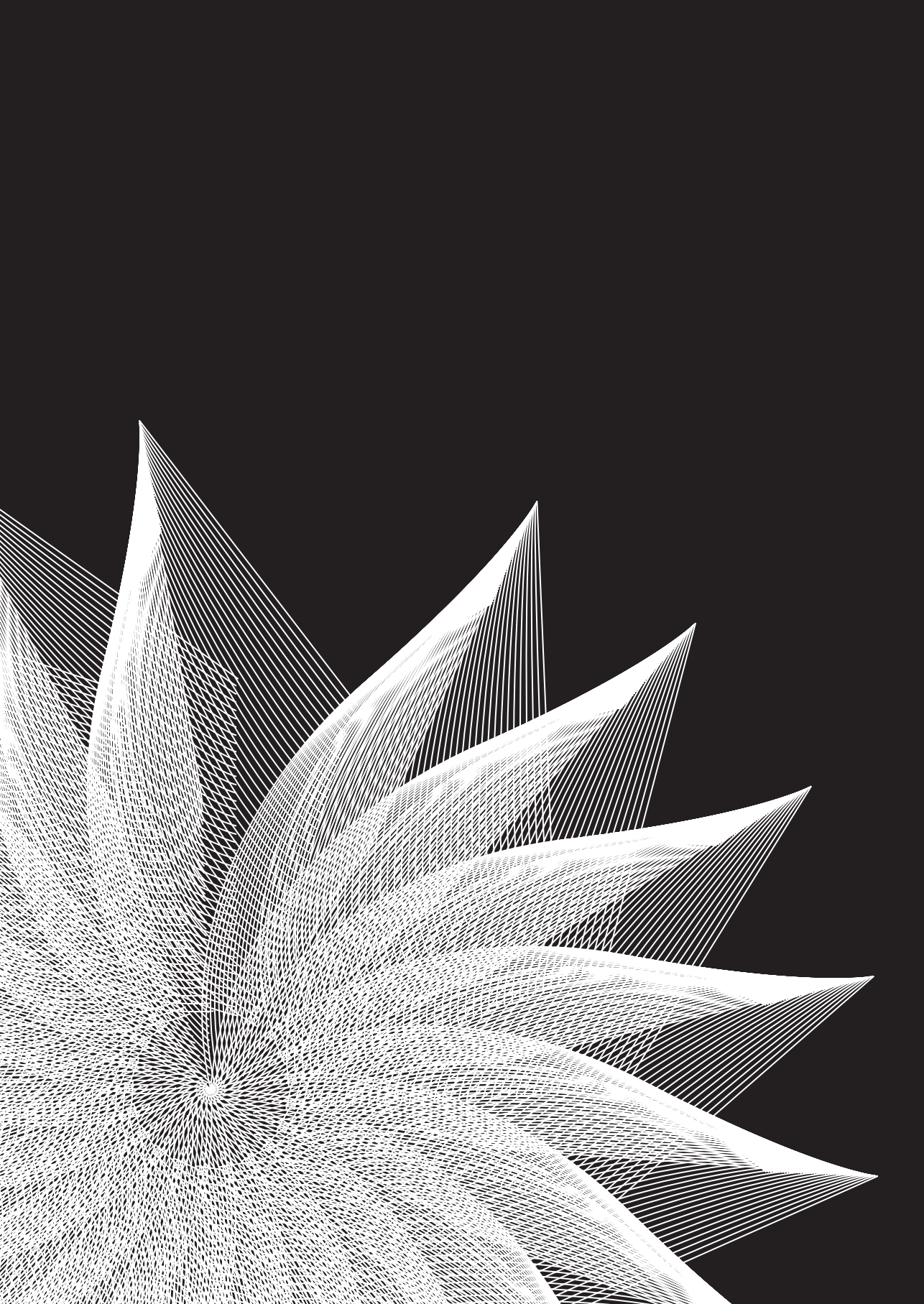
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PART III

Contexts



SMALL PROPERTIES, MANAGEMENT, DEVELOPMENT AND SUSTAINABILITY

JACINTO MOREIRA DE LANA

SMALL PROPERTIES

1. *The Formation Process*

The distribution of rural areas is driven mainly by the proximity of high density population, behaving, therefore, as a front for colonization of the territory by human activities. This distribution is given by the need to occupy the territory forced by population density, and can promote the recovery of land, intensifying even more the division of rural plots, because of the opportunity created by the business of land.

Besides this observation, which occurs at the local level, on the outskirts of cities, it is also noted at the regional level, that this trend is similar for the allocation process of municipal territories. As an example, in the State of Minas Gerais, there is a notable predominance of smaller municipalities in the eastern, southeastern and south, where settlements started in Minas territory. This is a tendency that culminates with urbanization, if not legal or structural measures are not taken to contain this process.

The smaller properties distributed around the population density tend to the intensive use of natural resources, and can become very profitable for the consumer proximity. However, it is necessary to manage resources that match the agricultural production with the environmental preservation. In a way that the income

generation makes viable to the population to remain in rural area and ensure the conservation of species and natural resources that are essential to the balance of the agricultural ecosystems.

The smaller properties distributed around the concentrations of population tend to the intensive use of natural resources, and can become very profitable for their proximity to the consumer. However, it is necessary to promote uses of resources that are compatible to the agricultural production with the environmental preservation, in a way that income generation makes it viable for the population to remain in rural area and ensure the conservation of species and natural resources that are essential to the agricultural ecosystems balance.

2. Socioeconomic Aspects of Small Properties

In general, the small properties with family homes tend to be diversified about the soil use, especially if they consist in the main source of income and livelihood. This situation can be observed in the municipal districts in areas of the original domain of the Atlantic Forest, in the State of Rio de Janeiro, Espírito Santo, Minas Gerais, São Paulo, Paraná e Santa Catarina, especially in small properties located in mountainous reliefs and near urban centers.

Generally, it can be observed the intensive uses, including agricultural systems that range from horticulture from grain culture, besides the breeding of animals of different sizes. However, there are properties in advanced process of soil exhaustion, with consequent water resources degradation and loss of biodiversity of flora and fauna.

These facts usually bring about the migration of populations to urban centers and reduction or even the abandon of agricultural activity in the properties. It can be emphasized, as well, that in many cases small agricultural properties become tourism and leisure places, with the total extinction of farming and cattle raising activities, but with great potential of income generation.

It is notable the potential of small properties to generate income for the rural families, specially because the diverse uses of the soil that can guarantee the economic stability, due to factors such as diversification of products and minimizing risks of losses in cultures.

3. *Small Properties and Environmental Aspects*

3.1. *Landscape Ecology*

The landscape of an area is the set of all historic, ecologic, social, cultural and economic attributes that influence the formation of the present environment.

Ecology is the set of many interactions that occur between the living beings and the environment, including the aspects that drive the evolutionary process, both, forms of life and ecosystems.

Therefore, the landscape ecology adds, besides the formatting aspects of the present environment, those that are acting in order to design the future landscape. So, landscape ecology seeks to understand the flow of the species on the planet, as well as the interdependences of these flows with the factors that make easier or harder this flows, included in this context the human being activities.

In this way, it can be affirmed that landscape ecology is a science, and as such, provides the understanding of the processes that act for the natural or altered environments formation that can be observed nowadays. In addition, it offers tools to plan the future landscape, seeking compatible goals that combine the conservation of species, ecosystems, evolutionary process and the coexistence with the economic and cultural activities.

Its applications contribute for the integrated management of the territorial space, seeking to plan the soil use for the future, based on the understanding of aspects that worked in the past, those that work in the present, of the proposals for changes and expectations for the future, considering the many needs of all living beings.

The tools used by the landscape ecology to plan the space territory for the future include: the use of mapping resources, scientific knowledge of conservation biology, in which the need for movement of the species must be respected; geomorphology and geology knowledge, especially considering water as an unstable and an itinerant component of the geological system; the economic activities that generate fundamental resources to human life and its environmental impacts and; the regional cultural aspects.

The use of the tools mentioned above allows the landscape planning seeking a dynamic balance between human activities and nature conservation. This way, the goal is to guarantee the socio-economical development and the ecology of meta-populations, that is, the existence of populations inhabiting the conserved remnants of natural habitat and interacting with each other.

Thus, the landscape ecology allows planning the landscape, including a net of conserved remnants of natural habitat with high connectivity, so that there is a permeability that allows both the occurrence of human activities and the existence of meta-populations.

The application of tools offered by the landscape ecology for territorial planning does not mean just restrictions on the economic use of the soils; on the contrary, it offers conditions to perpetuate human activities and wildlife populations. It provides elements that help the understanding of retrospective and prospective about the future use of territorial space.

3.2. Planning the Rural Land Use

As examples of society initiative for rural planning stand out the environmental laws applied to land use, especially those laws that provide the maintenance of areas that aim the conservation of natural ecosystems. In Brazil, the main examples are described as areas of legal reserve and permanent preservation areas. Such regulations are understood by some sectors just as limitations of the space to be used for economic activity and their applications which occur, in most cases through environmental licensing.

The most appropriate tools to apply the environmental legislation in rural area are the ecological and economic zoning, which besides presenting a diagnosis of the factors involved in the formation of landscapes, also provide a land use appropriate to a more balanced future, considering the potentials and risks presented by regional peculiarities.

The definition of priority areas for conservation and the laws of soil use, and occupation are also valuable tools for the management of the use of the territorial space.

THE PROCESS OF LAND OCCUPATION

The land occupation is given from a continuous habitat matrix, which can be forest or country land, as shown in figure 1.

With the land occupation for the human activities, the matrix of original habitat gives space to other kinds of soil use, with greater or lesser degree of fragmentation of the original matrix and different patterns of spatial occupation (figure 2).

The planning concept used here does not necessarily imply a territorial occupation appropriate to local conditions. It just means that the land is used with the criteria of exact delimitation of the use of space, which allows the management of natural resources available in the territorial space used.

This process of territorial occupation must be planned using the guidelines provided by landscape ecology, considering the potential of local and regional environment, economy and social, respecting the environmental laws and other regulations on the uses of land.

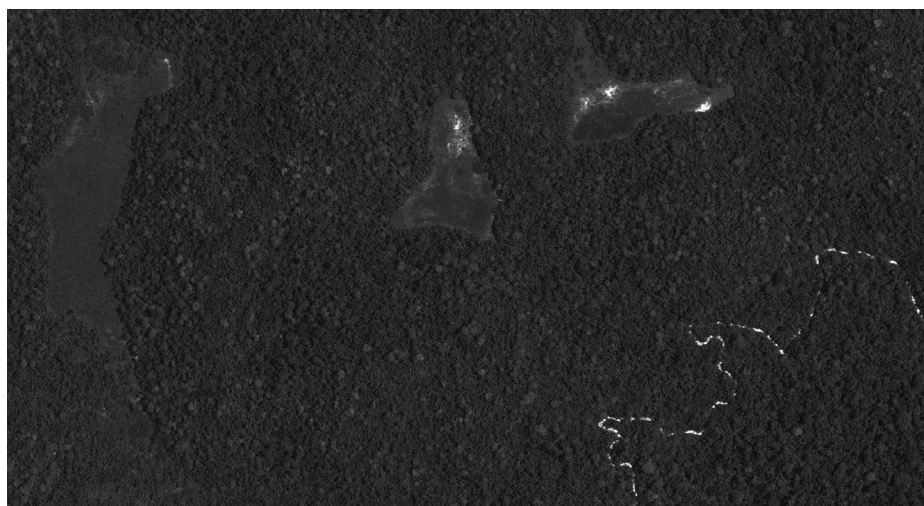


Figure 1 – Matrix of the continuous forest habitat without human occupation. Notice natural discontinuities of the forest matrix by lake environments

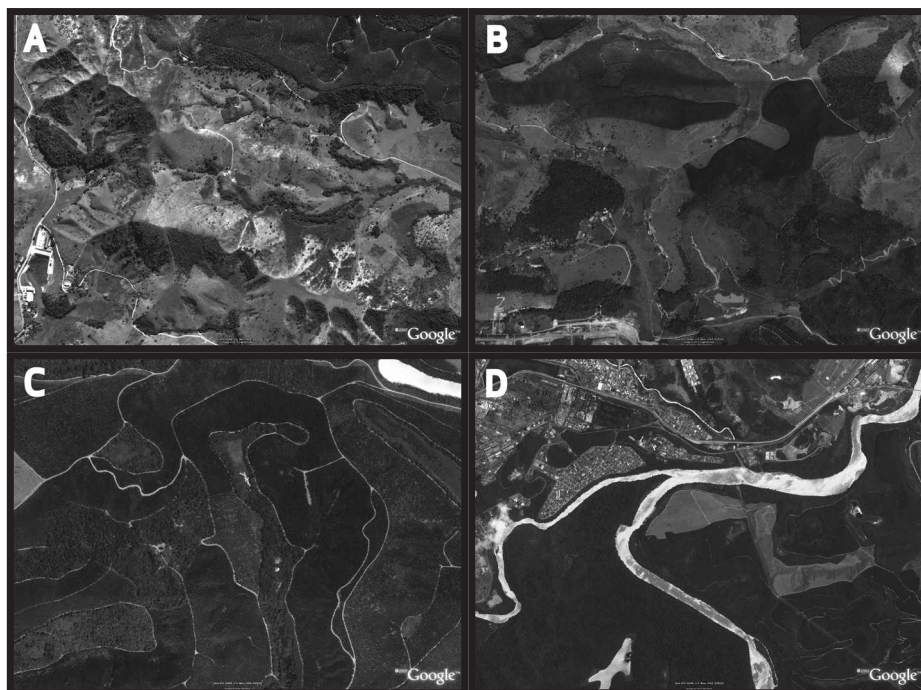


Figure 2 - Different processes of fragmentation of the matrix of original habitat, where there is:
A = matrix of disordered fragmented habitat; B = matrix of semi-ordered fragmented habitat;
C = matrix of ordered fragmented habitat; and D = matrix of ordered fragmented habitat
rural and urban

The image segments of the territorial spaces shown in figures 1 and 2 were extracted from Google Earth and obtained in the year of 2008 (figure 1, 2A, 2B e 2C) and 2009 (figure 2D), and presents landscapes from the east of Minas Gerais.

The matrix of original habitat shown in figure 1 is predominant forestall, but presents interruptions on this matrix where occur temporary lake environments, with predominant vegetation of herbaceous, especially macrophytes.

In figure 2A can be noticed that the fragmentation of the matrix of original habitat, that was predominantly forest, was transformed into a landscape with, predominantly, pastoral use. There is little remaining left of the original habitat, presented with many changes, isolated from each other and without an exact delimitation of its scope, which can indicate that they are given way to neighboring

pastoral activities. In this figure it can also be noticed that there are no appropriate protection for the existing water courses in the segment of the landscape and that the soil is already in degradation processes, which can be related with the lack of delimitation for use, that is, lack of management.

Figure 2B shows a territorial space where the original matrix was fragmented, but there was a semi-ordering of the soil use after the human occupation. It is noticed that there are spaces without exact definition of soil use boundaries, especially in areas adjacent to watercourses.

Figure 2C shows an ordered rural territorial space, where, besides showing the exact delineation of soil uses, it can be noticed that areas around the watercourses were maintained with remnants of original habitat. Yet, figure 2D shows territorial planning in rural and urban areas.

3. ASPECTS OF MANAGEMENT IN RURAL PROPERTIES

In order to illustrate the differences in applied management and its impacts on the occupation of rural territory in areas where small rural properties predominate, satellite images were obtained in an area equivalent to 12 square kilometers in some areas of Brazil, included in the original area of the Atlantic Forest Biome.

The images shown in the following figures highlight different forms of soil management and its effects on socioeconomics and natural resources conservation.

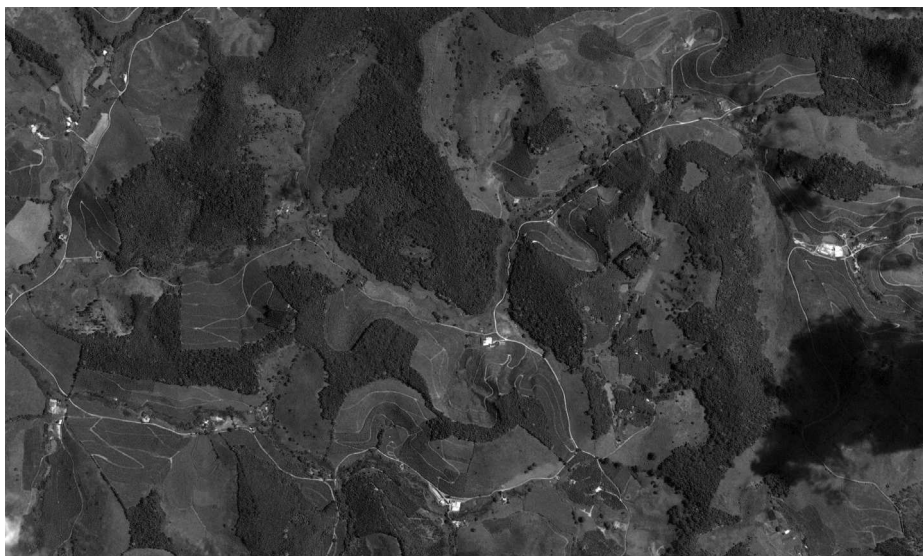


Figure 3 – Rural area in Viçosa, Minas Gerais Forest Zone

Figure 3 (Viçosa – MG) shows characteristics that mark the occupation of the rural space in the area of Minas Gerais Forest Zone. Note that forest remnants are in secondary regeneration stage (Lana, 2010), which means that the places that held this fragments were deforested for agricultural use in the past. Specifically in this region, many forestall remnants regenerated from the abandoned coffee plantations, which are still present under the canopy of these forests. Currently, predominate in this region managed coffee plantations, and pastures, predominantly, focused on dairy cattle.

Figure 4 was obtained from the image showed in Figure 3 and shows, more precisely, the occupation of space in rural areas. Note, above all, that the use of the rural territory in the region showed in the image, did not predict measures to conserve water resources such as it is stated in federal and state environmental laws, considering the conservation of riparian vegetation. It is also observed in Figure 4 that if there were riparian vegetation at the watercourses that drain this region, these riparian forests would consist in the main promoters of the connectivity between forest remnants in the region.



Figure 4 - Mapping obtained from the image showed in Figure 4, that in: dark brown = remnants forest; light background = pastoral and agricultural uses; dark lines = watercourses; and light brown = projection of areas of permanent preservation in order to form a strip of riparian forest with the width stated in the environmental legislation

Figure 5 shows a characteristic of human occupation in rural territory, limited by mountain topography and rocky outcrops that occur in the rural zone of the municipality of Ipatinga, eastern of Minas Gerais. This municipality, like many others in this area, is characterized by great altitudinal variation in their rural areas, with amplitudes that reach 1000 meters.

These geomorphologic features consist of limitations for agricultural and pastoral uses and, therefore, land use is concentrated at the bottoms of the valleys, with rivers and roads. The agriculture is almost inexistent in rural areas of the region shown in Figure 5.

Figure 6 shows a segment of the rural landscape of the municipality of Parai-buna, in the Vale do Rio Paraíba do Sul, in the State of São Paulo. This region has a soft wavy relief sit near large urban centers, which makes the human occupation in the rural areas to be meaningful, both with agricultural uses, livestock and the formation of small villages that already have urban characteristics. The existing

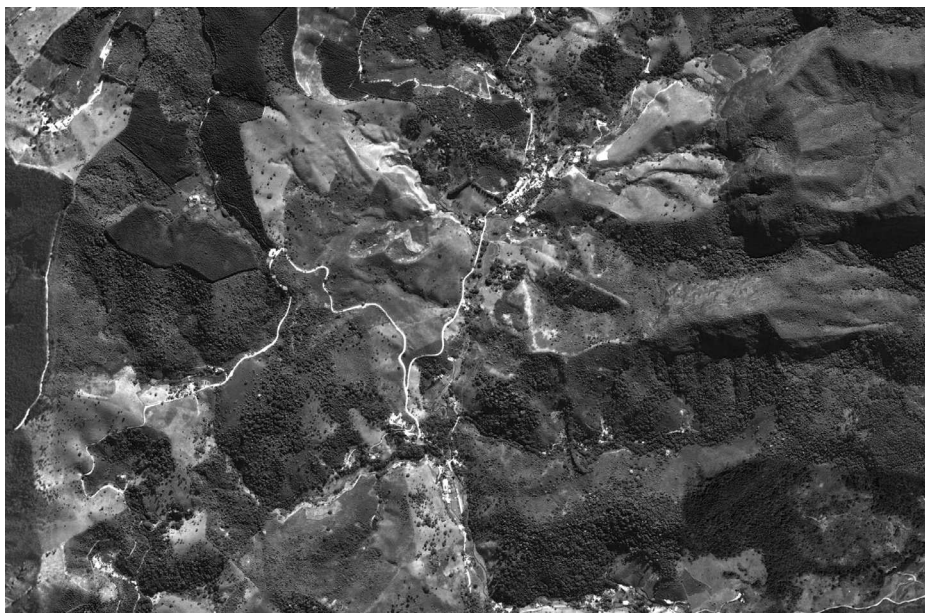


Figure 5 - Rural zone in Ipatinga, eastern of Minas Gerais



Figure 6 - Image that shows a segment of the rural landscape in the municipality of Paraibuna, Vale of Paraíba do Sul River, in the State of São Paulo



Figure 7 - Segment of the landscape area in the middle of Vale do Rio Doce, municipality of Governador Valadares, State of Minas Gerais

remnant forests are isolated from each other and there are no autochthon forest formations along the watercourses.

Figure 7 shows a segment of the rural landscape of the municipality of Governador Valadares, located in the middle of Vale do Rio Doce, State of Minas Gerais. This region has its anthropic influence relatively recent, which began just over a century with logging and later with the total deforestation for charcoal production and cattle pasture. Livestock activity remains since then, but presents a significant production decline, attributed mainly, to the low level of technology applied, and the lack of spatial territory management. The pastoral activity, with the same intensity, both in flat areas located in the lower sections, on the bottom of the valleys, on the slopes and tops of elevations, where the soils are drier and erodible, has been causing significant degradation processes of soils and watercourses, by sedimentation and reduced leakage, due to compression. There are in this region many properties of various sizes, with no dwellings and being used only for extensive breeding of cattle, having a fence only in the boundaries and with vegetation cover, mainly, exotic grass species.

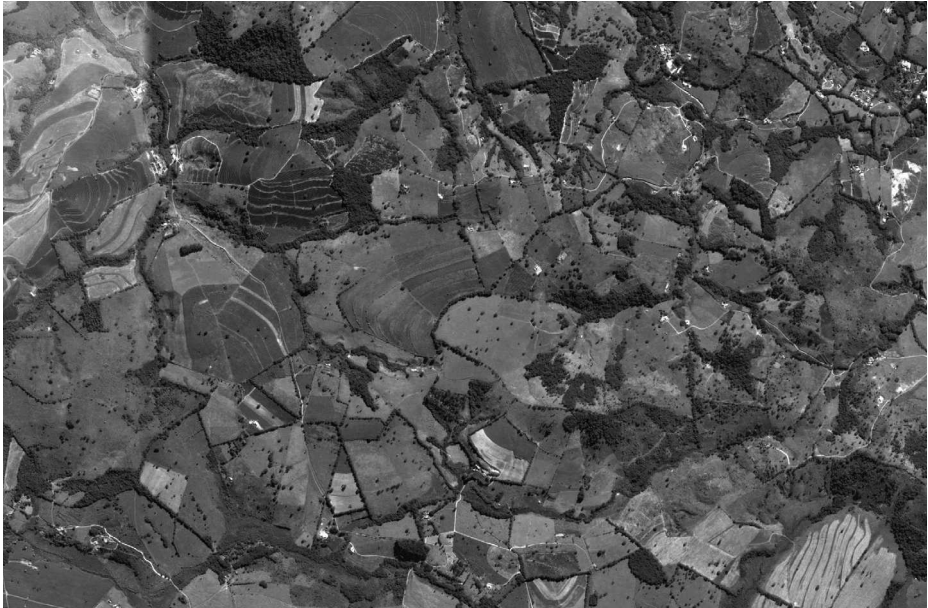


Figure 8 – Aspect of the rural territory occupation in the area of Lavras, Minas Gerais

Figure 8 shows a remarkable characteristic of the rural anthropic occupation in the region of Lavras, Minas Gerais, where can be noted agricultural and pastoral uses and few native forests formation. This very intense occupation of the soils is a characteristic usually found in the areas where there are no topographic and edaphic limitations for agriculture. Note, a complex net of lines of trees along the boundaries of the properties, forming vegetation corridors, however, does not interconnect significant remnant significant of native vegetation. However, it must be emphasized the importance of these lines of trees, as considered by Castro (2004), for its significant floristic diversity and importance as shelter and as corridors for birds and other wildlife groups of small and medium size.

The great capillarity of these vegetation lines increase the landscape permeability for many species of regional fauna, which can be an important strategy to increase biodiversity and ecological stability of the farming systems there are in this region.



Figure 9 – Aspect of the rural territory use in Jacupemba, Espírito Santo

Figure 9 shows a general aspect of rural areas of Jacupemba, State of Espírito Santo. This region shows no topographical limitations for farming activities and therefore, the rural territory is heavily used. It highlights, however, the pressure of the use of water resources for irrigation and the few initiatives focused on the conservation of these resources, especially those related to conservation of riparian forests. The distribution of the rural territory is due to the influence of proximity of the cities, federal highways, with heavy flow of vehicles and from the coast, where there are significant urban mass. Also noteworthy is that the model of rural territory use in Jacupemba, concentrated in the region large areas with continuous agricultural uses, where the forest vegetation remnants are rare. In this region there are significant forest remnants, but they are concentrated in large areas of corporate property. In small properties these remnants are rare, small and isolated.

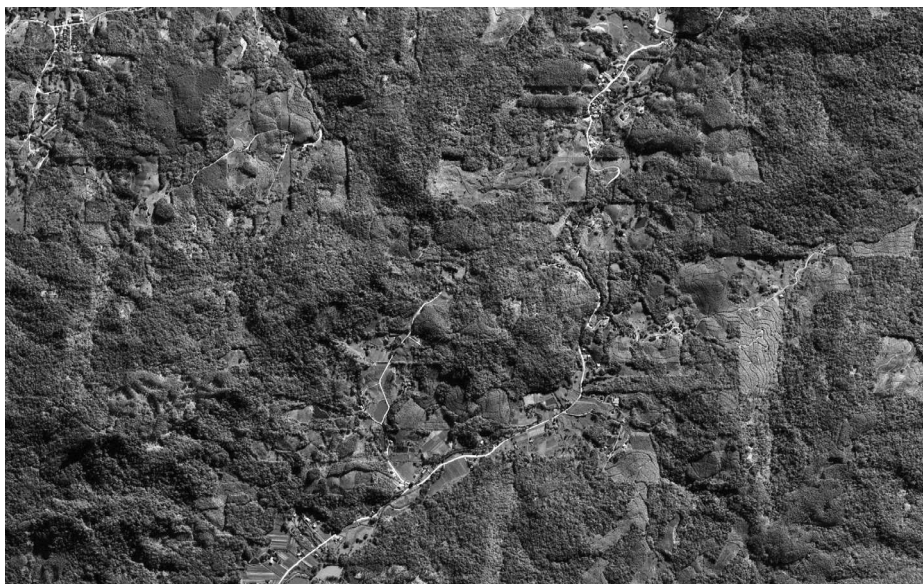


Figure 10 - General aspect of the rural territory use in Vale do Rio Itajaí, Santa Catarina

Figure 10 shows remarkable characteristics of the River Itajaí Valley, in Santa Catarina, which are: the predominant use of the lowlands near to watercourses and the maintenance of vast areas with forests in the rural properties, especially on the higher areas of the landscape. Much of the vegetation in this area consists in forest remnants in good conditions, but it also highlights the silviculture and other tree culture. Unlike, the farming systems which occupy small percentage of the properties areas, they are important employment and income generators, therefore, keeping families in the rural areas with a good pattern of life quality.

It also stands out that in this region rural properties have poly-cultures with diverse agricultural uses, having in the same property, production of grains, vegetables and fibers, animal breeding of various sizes, orchards, silviculture and even agro-industrial small unities.

A characteristic of the managed rural areas showed in Figure 3 to 10, is that the highest percentage of intensive land use, with monocultures and intensive mechanization does not necessarily imply on higher income for the farmers. The images prove that the rural areas with higher incomes have this point related with diversification that can be: poly-cultures, diverse uses of soil and ecosystems. These fac-

tors are interrelated, also, to the diverse processing of agriculture products at the properties, which causes a significant aggregation of value and employment generation in the rural area, and greater biodiversity conservation.

It is also observed that in regions where the rural land uses are usually more diverse the economic stability tends to be higher, especially because there are lower the risks of losses in cultures, and the less need for farmers to get food in markets.

Also noteworthy, is that the risk of losses in cultures related to plagues and diseases tend to be lower in more diverse properties and with higher percentages of native vegetation cover. This fact can be related to the diversity of cultures in the property, which increases the landscape permeability for the native fauna species. The presence of high biological diversity with the farming systems widens the cultures bio-protection, especially for the biological control of plagues and diseases.

FOMENTATIONS: ECOLOGY AND ECONOMY IN SMALL PROPERTIES

1. *Legal Aspects*

The Law 4.771 of September 15, 1965 (Brazilian Forest Code) established the legal reserve and permanent preservation areas as indispensable to natural resources maintenance and mandatory to all rural properties and defined as follows:

- a. Permanent preservation area: area protected in terms of the 2^o and 3^o articles of the Law 4.771 of 09/15/1965, covered or not by native vegetation, with environmental function to preserve water resources, landscape, geological stability, biodiversity, gene flow of wild fauna and flora, protect the soil and ensure the well-being of human population;
- b. Area of legal reserve: area located within a rural property or possession, except for the permanent preservation, necessary for the sustainable use of natural resources, the conservation and rehabilitation of ecological processes, to biodiversity conservation and to shelter and protection of native fauna and flora.

The Forest Code implementation, in order to establish the areas of legal reserve and permanent preserve, must be oriented in way to contemplate the existence of agrosilvopastoral use and natural resources conservation, preferably with defined guidelines set by a regional planning.

Still, the Law 4.771, of September 15, 1965 (Brazilian Forest Code), it is considered in the Second article, section V, of social interest, and therefore, possible to be made in permanent preservation areas, the sustainable agrosilvopastoral management activities practiced in small rural family properties or possession, that does not uncharacterized the vegetation cover and does not harm the environmental role of the area.

Agroforestry systems are properly considered by the Forest Code as ecological productive systems and compatible with biodiversity and water resources conservation. These systems are considered as such for having high diversity of species and for being forest throughout the crop cycle, giving cover and protection to the soils and watercourses, high nutrient cycling, shelter and refuge for wild fauna population.

2. *Potentials*

Agroforestry systems have great potential to combine income generation with environmental conservation on small rural properties, considering that great part of the small rural properties have permanent preservation areas. Usually, the properties borders are adopted as water divisors, located in the line of ridges that connect the highs and the watercourses, physical natural limits. That said, and considering that in mountainous areas, where there are a bigger division of the rural territory, most of the rural properties have significant percentage of permanent preservation areas, both on watercourses margins, as on steep slopes.

Considering the legal permission for use of permanent preservation areas for cultivation under agro forestry and the possibility of formation forest remnants networks connected through the riparian forests (Figure 4), the ecological use of these territories can provide conciliation of the agricultural production with the environmental conservation.

It is also noteworthy that the soil in permanent preservation areas along the watercourses, are, in most cases, very fertile and very moisture which is very favorable to many plants species, which highlights even more the potential of these areas for use in agro forestry systems scheme.

2.1. *Backyard Agriculture*

In small properties the delimitations of the territorial space commonly lead farmers to grow more portions of a wider range of cultures. Besides that, it is equally common around the rural residences the concentration of different useful plants, both for feeding providing fruits, grains, leaves or roots, and also fibers, wood and drugs. Still, on these spaces around the houses are the raising of little animal's, that are fed mostly with products extracted from vegetation grown nearby.

These production systems may be called as "backyard agriculture" and are in many cases, mostly arboreal, whose stratum is represented by fruit trees, palms, and native trees that regenerate propagules brought by wildlife. In the lower canopies are grown trees and herbaceous species, and the animal raising, especially birds, limited or not enclosed in spaces.

Figures 11 and 12 present, illustrated in profile, two backyards agricultural systems. The illustration of Figure 11 shows a backyard agricultural system, located on a flat terrain and with different species on its composition. This system was documented on the municipality of Resplendor, eastern of Minas Gerais, and it is located around a property residence where the main use of the soil is extensive pastoral.

The profile shown in Figure 11 represents a five meter wide range, where were grown simultaneously, the following species: acerola, lemon grass, citronella, papaya, manioc, okra, yams, taro, banana, guava, sugarcane, lemon, annatto, coffee, coconut, mango and avocado. All these species coexisted with poultry farming (chickens, turkeys and ducks).

Figure 12 presents a backyard agricultural system located in a land with sloping topography and it is a property located in Viçosa, Minas Gerais. This property has about five acres, of which one of them is used for eucalyptus silviculture in the highest portion of the property. The rest of the property is situated entirely on the margin of a watercourse in a permanent preservation area.



Figure 11 – Profile of a backyard agricultural system documented in the municipality of Resplendor, Minas Gerais



Figure 12 – Profile of a backyard agricultural system documented in the municipality of Viçosa, Minas Gerais

This illustration (Figure 12) represents a range of five meters wide, where were grown the following species: manioc, cotton, sugarcane, papaya, lemon grass, banana, yams, taro, lemon, orange, avocado, mango, palm and coffee. In this system there are trees and several other native plant species. It was also shown significant occurrence of wild birds in this production system, especially *cracideuns*, which are considered forest dependent.

The cultivation of permanent preservation areas as agricultural systems similar to those documented by Figures 11 and 12 can be considered sustainable agroforestry management systems, therefore of social interest, in accordance with the Second article, incise V of Law nº 4.771, of 09/15/1965 (Brazilian Forest Code). This is a condition for these systems to be practiced in permanent preservation areas, however, restricted to small rural properties.

Both systems shown in Figures 11 and 12 characterize the conciliation of farming production and conservation of environmental resources, and for this reason, can be recommended to be promoted in similar situations in many regions of Brazil.

The use of the permanent preservation area by a productive system that has many of those functions of the riparian forests, with emphasis on the watercourse protection and providing shelter to wildlife can be recommended for land occupation located on permanent preservation areas. However, this recommendation must be restricted to those conditions allowed by the environmental legislation, that is, for the case of the small rural properties.

2.2. *Silviculture*

Silviculture for the purpose of producing wood for industrial use and to meet the demands of the property use is also an activity with great potential to be promoted on small properties.

In the rural area the use of wood is intensive, notably to construct fences, buildings, bridges and firewood, reason to justify the cultivation of trees.

Also considering the high and increasing value of wood currently observed, the surplus produced sales can generate income, especially because the cultivated land use, for this purpose, does not necessarily conflict with the suitable land to agriculture.

The silviculture can be intercropped with annual crops during the first years of the cultivation cycle and livestock in the final cycles. An open canopy forest plantation can provide wood in a shorter cycle, meeting the demand for use in buildings and as firewood. This canopy openness increases light entrance in forest plantation, boosting the growth of forage for livestock. The remaining trees of the

first crops could be managed for many uses, considering a longer cycle; these trees could be managed for the production of lumber, which is the most profitable product from the silviculture wood activity.

The space limitation of small properties may consist in restrictions to silviculture activity, but still, the trees growing can be developed on the property borders, combining the wood production with the boundary fence, and provide protection against winds for other cultures.

In many regions of Brazil, silviculture is promoted both by the private initiative and by government institutions, which makes it a consolidated economic activity, especially in the regions where there is a supply chain that has wood as raw material.

Silviculture is practiced in every cycle of cultivation, medium and long terms if compared to other agriculture cultures, condition that makes it less harmful to wildlife population, considering that the most significant interventions happen in the moment of the harvest and during the plantation reform. This condition helps the use of cultivated spaces by wildlife and gives greater protection than those offered by herbaceous and bush crops of short cycles.

Silviculture and agro silviculture system is also to be noted for its higher nutrient cycling in relation to small cultures. This is due the deeper roots reach of trees, which recover nutrients leached back into the superficial layer of soil, increasing the organic matter and nutrients through the decomposition of leaves and branches.

Additionally, the vegetation coverage, mostly, by trees and shrubs, grant, both in silviculture systems as in agro-silviculture, the provision of a lower an erosive impact of rainfall and the superficial flow of water; these conditions promote higher rates of water infiltration in soils. These conditions lead to larger surplus of water on the emanation and more regularized outflows on those watersheds where silviculture is practiced, if compared to those that practice pasturing or annual crops (Sabará, 2010).

Given a context in which it seeks sustainability of small rural properties, it is fundamental the promotion of profitable and diversified agro-silviculture activities, that besides providing income and livelihood in rural areas, will provide better conditions for the conservation of natural resources.

RURAL SUSTAINABLE PLANNING

The guidelines for planning the rural territory use aiming sustainability are provided by landscape ecology, legislations and guidelines defined by the economic and ecological zoning.

Landscape ecology provides a scientific basis to permit that the economic use of the rural territory is compatible with biodiversity conservation. The laws applied in rural properties define the areas of the landscape that must be for preservation and the percentage of the rural territory that must be restrained to economic use. Economic and ecological zoning present guidelines that direct, by region, the criteria for economic use and for biodiversity conservation, considering the potential and natural, economic and social restrictions.

Landscape ecology is a science that provides ground for applying the legal requirement to allocate reserve areas in order to improve the biodiversity conservation, which is basic for rural properties sustainability.

Considering that species circulation is vital to genetic interaction between populations, the connectivity between remnants of native habitat, in order to increase landscape permeability for wildlife is a strategy that facilitates biodiversity conservation, especially for the most demanding species.

Figure 13 shows the aspects that build the statement above. Note that in this figure the dotted lines indicate the species flow on a determined territorial space. Note also that the species forest-dependant, considered as the ones that inhabit just forested areas, can circulate in silviculture systems, despite the preferential flow of the most demanding birds will be, in most cases, for the areas with native vegetation.

In order to promote a connectivity increase to enhance the conservation and make the rural activities more sustainable, it can be performed the following ways when planning the allocation of legal reserve areas:

- a. Allocation of legal reserve areas with permanent preservation areas.

This case applies to mountainous areas, where the valleys are inserted, the interfluvies are small and the natural drainage net is dendritic and much branched. In this case, the allocation of legal reserve areas with permanent preservation areas is enough to form a network of habitat remaining connected with each other. This

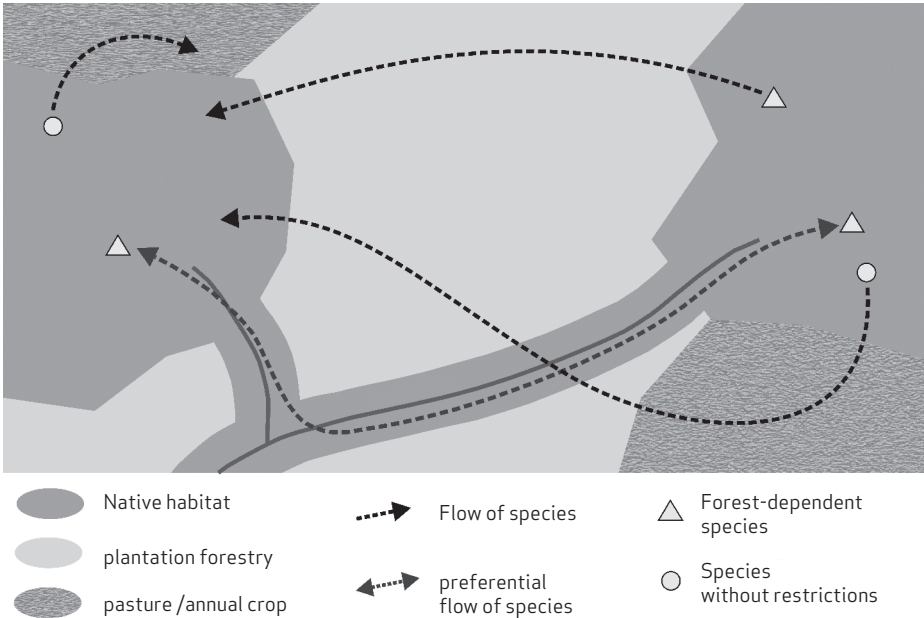


Figure 13 – Theoretical model of species flows in agricultural, forestry and native habitats systems (Adapted from Firme, 2006)

condition, illustrated in Figure 14A, allows the species flow in the native habitat remaining and the genetic interaction needed for the meta-populations to exist.

b. Allocation of legal reserve areas connecting with permanent preservation areas.

This case applies to areas that are flatter and with wavy reliefs, where the valleys are broad, the interfluves are intense and the natural drainage net is a little more branched. In this case, the allocation of legal reserve areas must be arranged into bands in order to connect the permanent preservation areas, across the interfluves and interrupting large extensions of agricultural, pastoral or forestry production system.

This condition is illustrated in Figure 14B and shows the role of the native vegetation band for the promotion of the connectivity and interruption of large rural production systems.

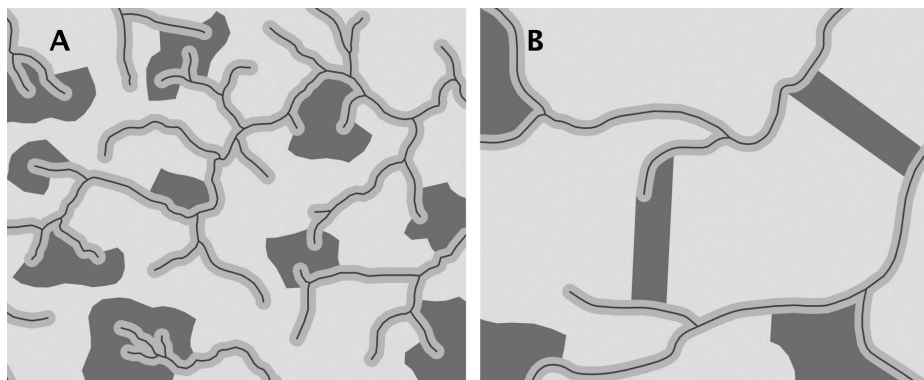


Figure 14 - The promotion of the connectivity through the allocation of legal reserve areas (dark brown), in mountainous relief areas (A), and in areas of flat relief (B). In light brown are the permanent preservation areas; in light background, agricultural, pastoral and silviculture uses; and the dark lines are the watercourses

The pictures shown in Figure 15 demonstrate real situations of these conservation strategies being applied that seek to increase connectivity between remnants native habitats through the allocation of legal reserve areas.

In areas where small farms predominate, these strategies for regional sustainability must be conducted as public policy, for they transcend the territory boundaries of rural properties.

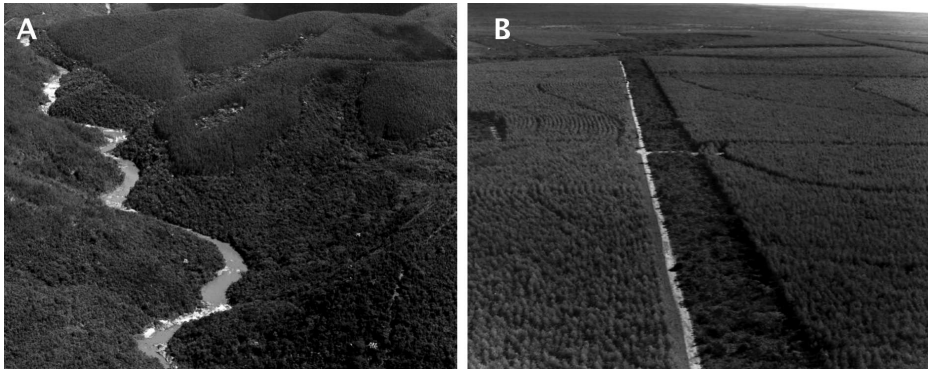
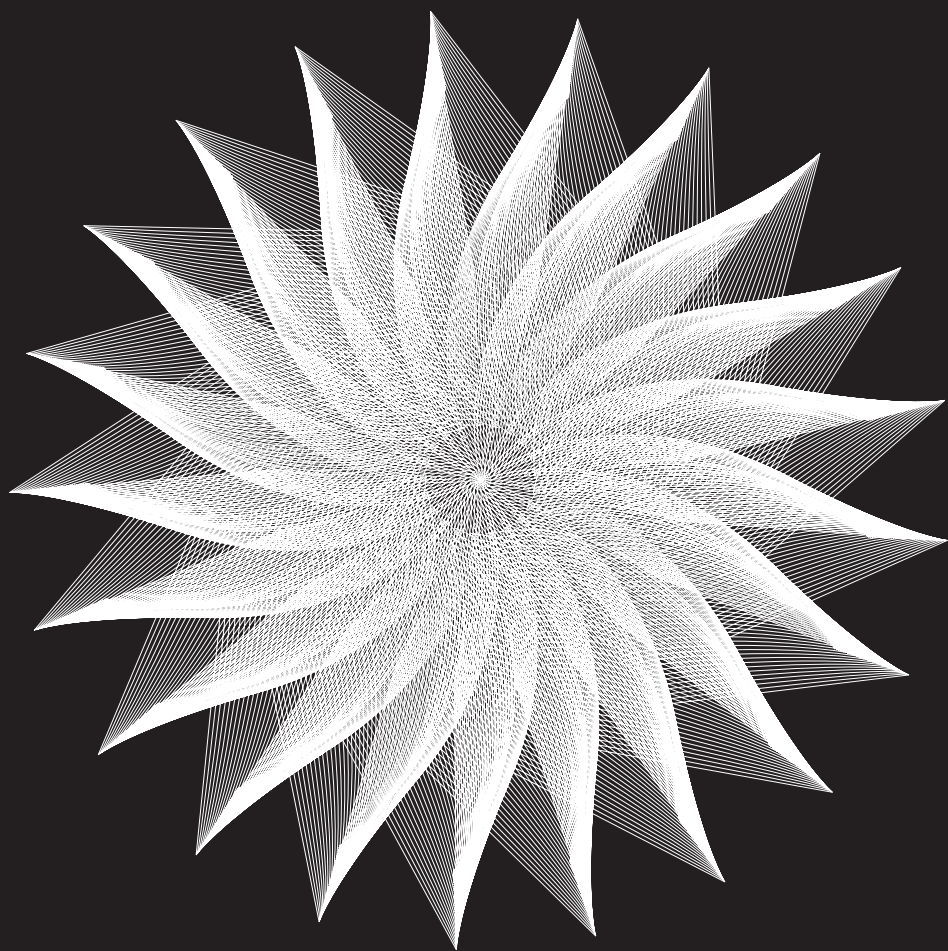


Figure 15 – Examples of promoting connectivity through permanent preservation areas, in a mountainous relief region (A) and through legal reserve areas, in flat relief region (B) (Pictures: CENIBRA (A) e V&M (B))

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MINING ACTIVITIES X CULTURAL ENVIRONMENT IN MINAS: HISTORICAL AND LEGAL ASPECTS

MARCOS PAULO DE SOUZA MIRANDA

The safety of the environment cannot be compromised by corporate interests or become dependent on motives purely economic in nature, even if this economic activity, considered the constitutional discipline which governs it, is subject, among other principles, to that which focuses on 'environmental protection' (CF, art. 170, VI), which reflects broad and comprehensive notions of the natural environment, cultural environment, the artificial environment (urban) and the labor environment. (Supreme Court – ADI MC-3540 / DF – Min Rep. Celso de Mello. J. 01/09/2005)

CULTURAL HERITAGE AND MINERAL RESERVES: TWO RICHNESS OF MINAS GERAIS

The State of Minas Gerais is fortunate to congregate in its territory one of the largest collections of cultural properties on the planet. 1578 prehistoric archaeological sites, more than 2500 natural underground cavities; 3500 registered items, from furniture, buildings or isolated urban centers; 03 assets recognized as world cultural heritage; two hundred tourist towns formally recognized by EMBRATUR (Brazilian Tourism Agency), plus dozens of paleontological and geological sites worthy of studied and of preservation, some of those carry references of the outstanding memory and formation the society of Minas and that, under the Constitution, are worthy of state protective custody.

In another turn, as a result of its geological peculiarities, the State of Minas Gerais, as its name implies, holds a great diversity of mineral commodities. Besides gold and diamond that supported the foundations of the colonial economy for over a century, other minerals – like iron and manganese, eg – Are important sources of resources for the state today.

Even in the nineteenth century, the Danish botanist Eugenius Warming, research companion and fellow countryman of the renowned spelunker, paleontologist and archaeologist Peter Lund (true icon of the research and preservation of cultural heritage of Brazil) on the economic value of mineral deposits in Minas he highlighted that:

There are peaks and long stretches formed exclusively micaceous hematite (itabirite), so pure that the iron content reaches 90% at times. I had several opportunities to visit the Serra da Piedade, one of these mountains of iron, a cone 2000 feet high, whose value would pay the debt of England, according to calculations made by an engineer.²

This purely commercial view on the extraction of mineral resources of our State has prevailed since its discovery by explorers from São Paulo, in the late seventeenth century, until the last decades of the twentieth century.

Such degradation was caused by gold mining in the region of Mariana – MG in the first quarter of the century XVIII, that on September 26 of 1721, Don José Lourenço de Almeida, Governor and Captain-General de Minas Gerais, issued a norm which determined as follows:

any person who opened a hole will be required to cover it so that the land remains equal and to avoid the misfortunes that have happened in these hills where mining with holes take place, and those who have left open, and any person of any quality or condition that do the opposite of the above disobey my orders this will be held in jail in this Village for two months, infallibly, the first month loaded with irons.³

Despite this intimidating punctual action, whose effects are not known, the truth is that for nearly three centuries the mining activities were developed freely in our state without any concern for the preservation of the environment (in its natural and cultural aspects)⁴, so the losses left by such developments over the

centuries, that preceded the emergence of concern with the preservation of these values in the collective interest, is immeasurable. However, there are few studies, to date, on the tragic environmental consequences of the indiscriminate extraction of natural resources over time.

Impacts on the natural landscape and water resources due to the destruction or mangling of geological formations, for example, scientists and foreign travelers who visited Minas Gerais during the nineteenth century recorded their astonishment at the excavations and erosion in the hills of the Captaincy.

The Baron of Eschwege admired the large number of blocks rolled in the region of Vila Rica, Mariana and Sabara and at the famous Congo Soco mine, and reported that

the dismal service of open carving had destroyed almost completely the terrain.” Spix and Martius, referring to gold holdings in the region of Santana do Sapucaí they wrote that “by far they seem like dug trenches. On the slopes, forming terraces, open ditches were some feet deep and wide, which carried the rainwater by the flanks open in the red clay. The washed up clay was in a heap and elsewhere, or covering the ground on plains or on steep artificially grooved. It gives a sad aspect of savage destruction, the very roads are damaged, and this saddens the traveler landscape, painfully.⁵

Baron de Langsdorff, while traversing the Mariana region in 1824, wrote:

we passed a poor and arid valley, where the river St. Joseph runs, cloudy by the washing of the gold and at whose margins are seen piles of gravel, some already covered with grass. It's hard to imagine a sadder vision than this valley, once so rich in gold.⁶

Concerning the impacts on flora and landscape, the French botanist Auguste de Saint-Hilaire recorded:

the region I crossed, leaving Tapera to go to Congonhas, shows for about a league and a half, mountains that once were virgin forests, but where you only see today but some woods and lots of space ... It is not credible that all these mountains stripped of

their ancient vegetation suffered these losses to cultures. The same thing happened here as in many other place where there were mines. The discoverers and explorers of these mines wanted to have the land stripped and to this end, set fire to the forests.⁷

These historical records illustrate and confirm our assertions.

CONFLICT BETWEEN CULTURAL HERITAGE AND MINING ACTIVITIES

Faced with the picture above, it is not needed to be expert in mining or environment to intuit that given the existence of such wealth of cultural property and the great diversity of mining in the territory of Minas Gerais, the clash of interests relating to the exploitation of mineral resources and protection of cultural heritage would be inevitable.

The earliest record of this conflict we can identify the date of the eighteenth century and concerns the destruction of paleontological heritage as a result of gold mining in the region of São João del Rei.

According to a letter from the Governor-General of the Province, Luis da Cunha Meneses, addressed to the Minister Martinho de Melo e Castro, dated August 26, 1785, it was discovered by slaves who worked with levers on a gold mine of the Village of Rolling Meadows, near the Vila de São João Del Rei, a skeleton, 56 feet long (about 11 m) and 46 feet (about 9 m) tall. The bones, partially destroyed by the slaves, were later rescued by the naturalist from Minas formed in Europe named Pires Sardinha Simon (son of legendary Chica da Silva) and shipped in a crate for more detailed analysis, in Portugal. Also according to the letter, three other skeletons had been found in the County of Rio das Mortes.⁸

More recently, it became iconic in the State of Minas Gerais the partial destruction of Peak Itabirito, that for its exceptional beauty and the geological rarity, and for the fact of being a representative mark in the days of exploration of the interior of Minas territory, it was declared as federal heritage and was listed in the Book of Tombo Arqueologico (for archaeological preservation), Ethnographic and Landscape on June 26, 1962.

However, the company St. John Del Rey Mining Company, which owns the rights on surface, the Novalimense Mining Company, which holds the concession of mining rights and Icominas S / A, lessee of the right of exploitation of the mine, brought an action seeking the cancellation of Preservation at the Presidency of the Republic, claiming injury to property rights and the occurrence of economic losses of about 100 million dollars, although in fact the exploitation of iron ore could be carried out near the Peak, without the destruction of the massif. On June 8, 1965, President Castelo Branco upheld the refuse brought and ordered the cancellation of the preservation of the Peak. On July 7, 1965, IPHAN (National Heritage and Artistic Institute) filed request for reconsideration of the presidential decision, consolidating it in the opinion of Counsellor Arinos. Despite the efforts of conservationist IPHAN, on March 14, 1967, was confirmed the decision that had ordered the cancellation of preservation.

Considered such nonsense committed in detriment of Brazilian cultural heritage in order to benefit international economic interests that Senator Jose Ermírio de Moraes recorded in memorable speech:⁹

Speaking of Hanna, I'm taking notice, terrified, of the decision of the President of the Republic of delivering to this U.S. company, through its affiliate, New Limense, the Itabirito Peak in Minas Gerais, to be reduced to exportable ore, thus destroying indelible mark of our past, until now protected as historical monument protected being overthrown by the "Service of the National Historical and Artistic Heritage."

When, as President of the National Directory of PTB (Brazilian Labor Party), I was in Belo Horizonte, following the work of its Regional Convention, I had the opportunity to receive poignant appeal of representatives of the municipality of Itabirito all upset with this government decision, which is reported to be based in the opinion of Consulting or the Attorney General's Office, and classified as completely wrong, by the eminent professor of Commercial Law, Faculty of Law, University of Minas Gerais, Rui de Souza. And no one better than the great poet Carlos Drummond de Andrade from Minas to, within a few verses, published in the "Morning Post" of 16 of the current, to synthesize the just revolt of the people of Itabirito when he says:

*The Peak of Itabirito
will be milled and exported
but will remain at infinity
its heartbroken ghost
With so much ore runs
can be extracted
if the Icominas hurries
and even don't pay attention
to the serious call of History
that cut out this image
a blue frame memory
and a jewel of the landscape
noble peaks towering
yielding, with sobriety
from home and to the outsiders
a course of eternity.
The duo, aggressive company
thinks everything can be exported
and the nature galas
are lights of a dead star
Export body and soul, quickly,
sweating the ripped shirts.
The holes remain?
Well,
what matters are the earnings
that covers other "holes"
of the National Treasury,
leaving around the cases
of a colonial country.
And from above an order authorizing:
Throw it down.
Role everything from top to bottom,*

as in the wind, an imbaúba tree!
And the peak of Itabirito
will be ground and exported.
and only remain in the infinite
Its heartbroken ghost.

Do you see Senators, what is going on in this country, authorizing the removal of a historic monument, symbol of the greatness of this land, only because it offers extreme facility in the extraction of ore. Unnecessarily, because we know that in Minas there is 30 billion tons of iron ore.

I know well that privileged region, Mr. President, because in the distant year of 1922 and 1923 I worked there as an engineer of mines of Morro Velho. The surroundings of the Peak Itabirito represent less than 1 billion tons, and it is worth much more by what it means as keeper of our healthy nationalism, which should be extreme without being extremist. The peak of Itabirito should be kept as a warning, to say, to both nationals and foreigners, that this land has owner, and it is symbolic guarantor of our steel industry.

Another major embezzlement of cultural heritage of Minas Gerais due to mining activities, resulted from the destruction by explosives, the Arch of Lapa, an archaeological site filled with

Prehistoric cave paintings located in Caxambu Farm, Municipality of Matosinhos, in the Central region of the State. The site was totally destroyed in 1989 by a mining company that exploited limestone in the region and had already been notified about the existence of the monument inside the property prospected. After ensuring the raw materials for its industrial activities, this company has shown interest in “resolving the issue,” being willing to finance the archeological rescue of the Lapa Arch, but as one would expect no trace of cave paintings that existed in site was found in the rubble of the monument.

ENVIRONMENTAL LICENSING AND IMPACTS TO THE CULTURAL ENVIRONMENT

As it is a degrading activity par excellence, the mining activity received special treatment by the Brazilian Federal Constitution, which in art. 225, § 2 provide:

Whoever exploits mineral resources is required to restore the degraded environment, according to the technical solution required by the competent public agency, as provided by law. The Constitution also stipulates in its article. 225, § 1, IV, that: "It is incumbent upon the Government to require, as provided by law, for installation of work or activity that may potentially cause significant degradation of the environment, a prior environmental impact study, which shall be made public."¹⁰

According to José Afonso da Silva¹¹, the previous study of environmental impact – (EPIA) is to evaluate the proportions of possible changes that an enterprise, public or private, could bring to the environment. Its function is to reconcile economic and social development with the preservation of environmental quality, and assumed the constitutional effectiveness of the right to an ecologically balanced environment, being one of the legal instruments of the National Policy on Environment (Law 6938/81, art. 9, III and IV). According to Luiz Roberto Tommasi, the objective is to make that the studies of the environmental impacts of projects, programs, plans or policies are considered, providing information to the public, with their participation and adopt measures that eliminate or reduce these impacts to acceptable levels.¹²

For the development of mining activities is always required the preparation of EIA / RIMA (Environmental Impact Study/ Environmental Impact Report) and submission to the classic licensing process, because the significant environmental degradation in this case is presumed *ex vi legis* (Environmental National Council- CONAMA Resolution 01/86 09/90 10/90 and 237/97 and art. Act 16 of 7805/89 and Decree 97.507/89)¹³

Considering that cultural heritage is part of the broad concept of environment, of course that all impacts on cultural materials (such as caves, archaeological and paleontological sites, historic buildings, urban complexes, landscape and geological monuments) and intangible¹⁴ (such as ways of living, doing and expressing tra-

ditional places and reference memory) must be properly evaluated to determine the feasibility of the project and to propose corresponding mitigation and compensation measures. For this reason, we can state that the licensing process is a means of precaution and protection of cultural heritage as well, finding bases on art. 216, § 1, in fine, c / art. 225, § 1, IV of our Constitution.

The destruction of historic ruins to open road to the mining area; the changing of the traditional ways of life and socio-cultural relations as a result of the relocation of an entire community to build an ore processing plant; landscape impacts and loss of spatial reference and the memory of popular culture, provoked to a mountain, caused by mining activities; the removal of an underground natural cavity with archaeological remains that are an important tourist attraction and point of social life, to build a tailings dam, are some specific cases that show evident damage over the so-called cultural environment.

It is not uncommon, though, that air pollution caused by mining activities and steel accelerate the natural process of deterioration of historic architectural buildings, causing damage only noticeable over the years. As noted Waemberg Eloisa Garcia,¹⁵

Stone materials, metal, glass and wood come in large part of the historic architecture. Its mere secular stay determined in an environment or its natural aging is, in itself, obvious causes of deterioration. But it is a reality that in a short time, the damage to the estate caused by environmental degradation are vastly greater that what it would undergo through centuries or other environmental circumstances. It is something found that both the losses and the survival of environmental assets and property are closely related.

The requirement of the analysis of impacts to cultural heritage assets within the scope of environmental studies is present in the legal systems of different countries on the planet.

In Brazil is not different. CONAMA Resolution 01/86 establishes in its article 6º the environmental impact study will develop at least the following technical activities:

I – Environmental diagnosis of the influence area of the project, complete description and analysis of environmental resources and their interactions as they exist in order to characterize the environmental situation of the area before the implementation of the project, considering: ... c) the socio-economic middle – the use and occupation of land, water uses and socio-economy, highlighting the monuments and archaeological, historical and cultural sites of the community, the dependency relationships between the local society, and environmental resources and potential future use of these resources.

However, despite the express legal provision, it is clear that in most cases the environmental impact studies neglect the analysis of the negative impacts to cultural assets, relegating them to a condition of secondary importance, which apart from being pitiful under the practical point of view, is reprehensible under the legal point of view.

Evident that for the appropriate analysis of impacts to cultural heritage in the context of environmental studies is necessary the presence of qualified professionals trained in the appropriate development of these works, such as archaeologists, historians, anthropologists, architects, geographers, etc...

However, in the practical field it appears that many of the technical staff responsible for environmental studies does not have properly trained professionals to detect impacts to cultural heritage, despite the express statutory requirement of multidisciplinary technical and constant qualification stated in art. 17, § 2. Decree 99274/90, art. 7 of CONAMA Resolution 01/86 and art. Res. 11 237/97.

The TJMA (court of Justice Maranhão) has ruled invalid the Environmental Studies produced by a single professional opportunity that remains enshrined in aresto that

the EIA / RIMA should establish the conditions for environmental feasibility of the project, and it should be developed with a strategic, consistent and comprehensive setting, defining the compensation and environmental compatible mitigation programs, so enabling the implementation of the project in the desired location. This study, as stated earlier, should be performed by a multidisciplinary team consisting of various experts (geologists, biologists, engineers, archaeologists, sociologists, law-

yers, etc.) evaluating any changes that may be caused by the installation to the region, whether positive or negative.¹⁶

This type of conduct is extremely serious in that it exposes to risk the right of the community to know and enjoy fully, in a healthy, its cultural heritage, which is expressly protected by the Constitution in force.

As can be noted the article contained within CONAMA Resolution 01/86 the overall analysis of impacts to the property included in cultural heritage is based on the mandatory Environmental Impact Studies.

However, in most cases the technical analysis performed in this respect when made, is restricted to only some aspects of cultural heritage, not fulfilling the intent of the standard protection that, obviously, intends that any impact to cultural heritage material (historic, touristic, artistic, scenic, archaeological, speleological, paleontological, geological, scientific, etc..) or immaterial (ways of being, doing, living, to express etc.) is properly identified and interpreted, indicating the corresponding mitigation measures and compensation.

The preparation on the part of the environmental and cultural heritage protection agencies, of terms of reference to guide the analysis by the teams responsible for environmental studies is as healthy as guideline establishing minimum aspects to be addressed, allowing the realization of more consistent studies.

It should be noted that the analysis of impacts should be on all tangible or intangible cultural property in the area directly or indirectly affected by the project, whether such property be protected or not by any administrative action (protection, inventory, record) or by law.

As to the minimum content of speleological studies, the CECAV (National Centre for Research and Conservation of Caverns) edited basic guidelines on the subject.¹⁷

As for the archaeological heritage, in order to match the stages of obtaining environmental permits (with proceedings before the organs of environmental licensing) with preventive studies of archeology (with proceedings before the IPHAN); the IPHAN edited Ordinance 230/2002.

In addition to studies on the impact of cultural heritage (lato sensu) that must be undertaken within the licensing process, there is a need, also ,to make effective,

in its own, procedures managed by IPHAN to studies relating specifically to the archaeological heritage (be it historic or prehistoric).

The favorable opinion of IPHAN on the diagnosis on the project impacts to the archaeological heritage should be required by the body responsible for environmental licensing prior to the granting of the Preliminary License,¹⁸ since the conclusion of IPHAN may impact on the location viability of the enterprise.¹⁹

Where is the mandatory public hearing in the course of the licensing process, the Archaeological Diagnosis should also be made available for community review in conjunction with environmental studies themselves, enabling the public consultation and discussion on the impacts to cultural heritage.

Just as occurs in the earlier stage, before granting the License Installation environmental agency shall require from entrepreneur the manifest of acceptance by the IPHAN, of Rescue Archaeology Program, for the LI, pursuant to art. 8th., II, CONAMA Resolution 237/97 authorizing the installation of the project or activity in accordance with the specifications of the plans, programs and projects approved (among these, of course, the program of archaeological rescue), including the environmental control measures and other conditions, which are decisive motives.

Before the grant of License to Operate shall be conducted salvage archaeological work at sites selected in the previous phase, through exhaustive excavations, detailed record of each site and its surroundings and to collect statistically significant samples of material culture contained in each archeological site. While these requirements are not met the LO cannot be granted, because it can only authorize the operation of the activity or project, after the verification of effective compliance with the licenses listed above (Art. 8., III, CONAMA Resolution 237/97 .)

It should be noted that the development of archaeological studies during the various stages of licensing involves laboratory and office work (cleaning, sorting, recording, analysis, interpretation, appropriate conditioning of material collected in the field as well as Heritage Education program), which should be provided in contracts between entrepreneurs and archaeologists responsible for the studies, both in terms of budget and schedule. In the case of allocation of custody of the archaeological material removed, during archaeological research, archaeological remains in custody should be guaranteed by the entrepreneur, be it in the modernization, expansion, strengthening of existing units, or units in the construction of specific museum.

LEGAL CONSEQUENCES OF INADEQUATE ANALYSIS OF IMPACTS TO CULTURAL HERITAGE

Once proven the omission or negligence on the analysis of impacts to cultural heritage, this could result in administrative suspension or revocation of environmental permits been granted (Article 19, II, the CONAMA Resolution 237/97²⁰) or even the judicial recognition nullity of environmental impact studies, because it can and should make the judiciary control over the content of the EIA²¹, including with regard to scientific and technical consistency of the analysis undertaken by the team that developed, since:

The completion of all analysis and evaluations provided for in Resolution 001/86 of CONAMA as part of the content of the environmental impact study shows to be of fundamental importance, because the neglect of the EIA in relation to any of the points shown in arts. 5 and 6 undertakes, in the end, the validity of the whole licensing process to which it is attached.

Indeed, as a rule, the environmental impact study is required as a condition for licensing of works, activities and projects potentially causing significant environmental degradation. The EIA, thus, part of the licensing process provided for in arts. 9, IV, and 10 of Law 6938/81, in the arts. 17 and 19 of Decree 99.274/90 and Resolution 237/97 of CONAMA, shall be required for the expedition called the preliminary environmental license, an administrative procedure that certifies the initial environmental viability of the enterprise.

Thus, the absence of the EIA, when required, or the inadequate implementation by the failure of the minimum content required, carries the possibility of invalidating the entire licensing process in progress or already completed and, by consequence, installation, the start-up and continuation of work or licensed activity.

Both in the absence of the EIA, and in case of failure of the EIA, the addition that these irregularities lead to the licensing process are of a substantial nature. Consequently, inexistent or insufficient the study of the impact, work or activity cannot to be licensed and if by chance, it is already licensed, this will be invalid.²²

Apart from that, such conduct may also involve the criminal responsibility of entrepreneurs and professionals in charge of environmental impact studies (Art. 69 of Law 9605/98, with imprisonment from three to six years and fine²³), without interfering with civil responsibility, in the objective modality, for the material and moral damages possibly caused.

As for the requirement of environment licensing, the CONAMA Resolution 01/86 and 237/97 list, as an example, some activities and projects that require the obtaining of it, such as open air pit, including alluvial, with or without processing, manufacturing steel and steel products; dams and dikes.

In such cases, any license granted without the preparation and approval of the EIA / RIMA and without observing the IPHAN Ordinance 230/2002, constitutes an act tainted with illegality and therefore null and void.

As TJMG (court of Justice Minas Gerais) had the opportunity to decide:

PUBLIC CIVIL ACTION – ENVIRONMENTAL DAMAGE – LACK OF ENVIRONMENTAL IMPACT STUDIES – ITS INDISPENSABILITY. If the area is a site of relevant Environmental interest and covered in special guidelines, any license to build on it must be preceded by prior environmental impact study, and their absence leads to nullity (its license). Given their indispensability, the environmental impact study is not a mere formality that can be postponed. The irreversibility of the alleged factual situation at the construction site legally unauthorized (construction of several buildings by the violator), has not the power to empty the object of public civil action. (TJMG – 1.0000.00.274059-5/000 (1) – Des Rel. HYPARCO IMMESI – j. 06/24/2004)

The environmental impact studies are essential to verify the feasibility of locational specific project (eg, indicate the need for the adequacy of local bus of a dam to prevent the destruction of an archaeological site of great importance), as well as establish mitigation measures (eg, deployment of underground electrical transmission line to minimize the impact on the landscape to a place of cultural value and tourism), and countervailing measures (eg the restoration of a historic building, a recognized cultural value, as compensation for the dismantling of an archaeological site), in order to reconcile the exercise of economic activities with the preservation of cultural heritage of Brazil²⁴ (belonging to the present and future generations), achieving in this way, the desirable sustainable development.

BEYOND LEGAL: RESPONSIBILITY AND ETHICS OF ENTREPRENEURS

It is common to find that large national and international entrepreneurs, causing significant environmental degradation, claiming before the media and of society, condition of being responsible companies from social and environmental point of view, with the argument that they are generating jobs, paying large sums of taxes and possessing the required licenses issued by the organs of environmental protection.

If at first glance the statement can prove seductive and convincing to the less informed, the argument does not withstand a more careful analysis.

However, the strength of the employees is a requirement without which the activities of companies cannot be developed. The payment of taxes and obtaining environmental permits no more than primary requirements for any activity to be carried out lawfully. Thus, the supposed blessings resulting from such ventures do not pass the strict fulfillment of evident requirements.

There is an abysmal distance between mere compliance with legal duties and taking a responsible position under a social and environmental condition which must be guided much more by taking the defense of values based on ethics than by attending to petty legal requirements. As, already, pointed out by Judge Environmental Chamber of the Court of the State of São Paulo, José Renato Nalini, “the economic interest divorced from ethical sense is a cancer that causes the metastasis of social communion.

We are witnessing a time when the fight rampant for easy profit, and often blind, confuses entrepreneurs, and corrupt institutions and seeks to intimidate away the social perception of something that is rooted in the convictions of even so-called primitive civilizations: we did not inherit the Earth from our ancestors, but have it, momentarily, borrowed from our grandchildren. But this notion of intergenerational solidarity, which appears so basic even in the text of the Brazilian Constitution, it is often stifled by the folly of economic interests that seek to delegitimize or several ways to circumvent the action of those who propose to defend a heritage of which the present generation is more than a guardian.

This state of affairs, we perceive, has routinely placed society in antagonistic position t – that is increasingly aware of their rights and their duties to the future of our planet that cannot be confused with a supermarket take and pay- unlim-

ited supply – and the business men, which often seeks shelter under the defensive shield of the lawsuit or of the advice commissioned from renowned law firms, without the worry of discerning what is legal, what is ethical, what is just. This type of conduct intends to segregate, unnecessarily, the social segment of the productive sectors that could, legitimately, interact and dialogue in search of points of common interest.

Investing in production techniques of a less aggressive nature (although more expensive than traditional), reduce waste and recycle products, developing new technologies aimed at reducing effluent; spontaneously create protected areas; find sources of clean and renewable energy; sponsor, at no cost, social, environmental and cultural collective interest, are just a few of the many actions that can be adopted by entrepreneurs who want to earn and bear the label of environmental responsibility and actually contribute to a more caring and just future.

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21. Revealing the social cost of the relationship between costs and benefits of economic enterprise impacting the environment, to be higher than the particular economic advantage, environmental preservation must prevail. In principle, the judiciary controls only the appearance of strict legality of the administrative act, ie, the validity of the plan. However, when dealing with rights of third generation, involving diffuse and collective interests, as with negative affectation of the environment, control of legality must be broad. If the administrative act affronts constitutional principle, it cannot prevail. (TJMG – Ap. Civ. 1.0194.03.031452-1/004(1) – Rel. Des. Caetano Levi – j. 14/02/2006).
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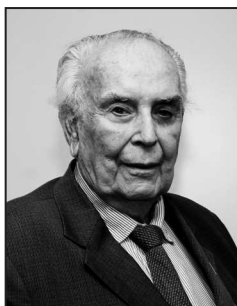


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BA and BS in History, Master in Archaeology, Doctorate in Brazilian Archaeology. Professor at the Department of History of UFSM, substitute coordinator of the Post-Graduate Studies in Social Sciences UFSM, President of Memorial Culture Japanese Immigration memorial of the state of Rio Grande do Sul, a member of the coordination of the Municipal Museum of Santa Maria and Counselor to the Municipal Council of History and Culture of Santa Maria.

**ELIEZER BATISTA**

Eliezer Batista da Silva was born in Nova Era, Minas Gerais, in 1924. He graduated in engineering and geology from the Federal Engineering School of Curitiba and is an elected member of the Russian Academy of Sciences. He was President of Vale do Rio Doce Company transforming it into one of the largest mining and logistics company in the world. He was Minister of Mines and Energy and Strategic Affairs of the Brazilian Government. He served as program director of the European Union. Member of more than forty companies Board around the world during much of his career and remains active in this area. The only foreign holder of the Rising Sun Medal, highest honor granted by the Emperor of Japan, and awarded the highest honors from countries like Germany, Portugal, Austria, Brazil, among others. Currently, Vice President of the Councils of all companies EBX Holding, FIRJAN collaborator and member of Board of IBio.



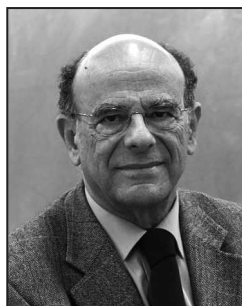
FERNANDO ORTEGA SAN MARTÍN

Iron and Steel Metallurgical Engineer, Bachelor of Industrial Engineering, Master in Business Administration, PhD in Global Business Administration. A specialist in Foresight, Strategic Planning, Innovation Management, Policy Development Industrial Development, with emphasis on promoting small and medium enterprises. Developed the system for identifying investment opportunities INVESTNET. He is one of two Latin-American teachers selected to deliver virtual courses at the Polytechnic University of Madrid (Spain) (Course of Foresight). Winner of the Robert Maes Award 1990, 1991 and Robert Maes Special in 1992 of the Post Graduate School of the University of the Pacific. Co-author of Pre-Enterprise method for developing entrepreneurial skills, with more than 15,000 people trained in Peru and Bolivia. Trainer and international speaker on issues of foresight, innovation, competitiveness and entrepreneurship. Director of Foresight and Innovation National Council of Science, Technology and Innovation Technology (CONCYTEC).



FERRUCCIO FERRIGNI

Expert on protection of historical built-up in seismic prone areas by recovering the “Local Seismic Culture”, an original concept and a new approach that he defined in 1987, now accepted worldwide. Lecturer, organizer, coordinator of international congress, seminars and workshops in Algeria, Colombia, France, Greece, India, Italy, Macedonia, Portugal, Spain, Turkey and Venezuela. He collaborates with governments and international agencies to organize researches and training activities on protection of cultural heritage, management of Cultural Landscapes and on disaster prevention by recovering the Local Risk Culture. He edited more than 60 town plans. He is author of books and publications on reducing vulnerability of historical built-up.



FILIFE DUARTE SANTOS

Coordinator of the Research Unit SIM - Systems Laboratory, Instrumentation and Modeling in Science and Technology Environment and Space (www.sim.ul.pt) and Director of the Doctoral Program in Climate Change and Sustainable Development Policies, initiated in the academic year 2009/2010, which involves the three public universities of Lisbon, Lisbon University, Technical University of Lisbon and Universidade Nova de Lisboa. Editor's review of the 5th Report of the IPCC and Vice-President of the United Nations Committee on the Peaceful Uses of Outside Space. of Sciences of Lisbon. Published over 140 scientific articles in national and international journals and books in various areas of Environment, Global Change and Climate Change. Coordinates and participates in several national and international projects in the areas of physics, Global Change and Adaptation and Mitigation to Climate Change.



INGUELORE SCHEUNEMANN

Expert on Integrated Landscape Management, member of European University Center for Cultural Heritage Scientific Committee, Member of HERITY International Advisory Committee, former Coordinator of Society and Science area of the Iberoamerican Program of Science and Technology for Development, former Rector of Federal University of Pelotas and of Vale do Rio Doce University.



JACINTO MOREIRA DE LANA

Is a Forest Engineer from the Federal University of Viçosa, with specialization in Environmental Management from the Federal University of Lavras and holds a Master degree in Botany (Ecology, ecosystems), Federal University of Viçosa.

At present he is Advisor for environment, forest certification, forest resources management and environmental monitoring at Celulose Nipo-Brasileira SA .He was a Researcher at the Society of Forestry Research / Federal University of Viçosa, consultant in environmental projects and professor of the University President Carlos Antonio. Coordinated environmental impact studies and participated in projects with traditional communities, forest resources and uses of medicinal plants. He is co-author of the book "Medicinal Plants: cultivation, uses and marketing." He is a member of the Council of Forest Dialogue for the Mata Atlântica and Pampa, the Advisory Board of State Park of Rio Doce - MG, the Council of Environmental Development in the municipality of Santana do Paraíso - MG and the Joint Committee of the State Forestry Institute of Minas Gerais.



JAMES ALLEN GOMES DE CARVALHO

Holds a Post Graduate degree in Integrated Management of Territory for Sustainable Development from the Polytechnic Institute of Tomar-Portugal/IPT, University of Ouro Preto and BioAtlântica Institute Rio de Janeiro, 2010. He graduated in business administration, in 2007, at the School of Law, Administrative and Economic Sciences at the Vale do Rio Doce University-UNIVALE. In 2011 he became Integrated Management of Territory Consultant giving technical support to BioAtlântica Institute regarding the preparation of the Master Plan for the Açú Super Prot project, an EBX venture. From 2009 to 2011 he was Coordinator Nucleo Cidade Futuro, responsible for the strategic planning activities for cultural and community groups, development and financial budget control of information for decision making. In 2007/2008 he became Manager of Democratic management at the Municipal Planning Secretary of Governor Valadares in the State of Minas Gerais where, among other activities, he developed a work with community leaders.



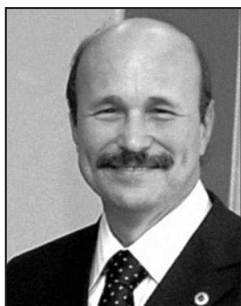
JORGE RODRIGUES

Degree in History from UL, Master and PhD in Art History (Medieval) by UNL, Professor of Art History at the New University of Lisbon since 1993 and curator of collections of Islamic and Oriental Art Museum Gulbenkian Foundation (at the Foundation since 1989), has also taught in ISCTE and the Federal University of Ouro Preto. Specialist in Romanesque Art and the Art of the Jesuit Missions of South America, with several publications on Medieval and Modern Art, including the Monastery of Santa Maria Flor da Rosa (w / Paul Pereira, updated version 2009). National Representative at meetings of several Councils in Europe and National Coordinator HERITY since March 2008.



JOSÉ ÁLVARO PIMENTA

Is a postgraduate in Integrated Planning and Cultural Heritage from University Vale do Rio Doce - UNIVALE - 2008, and holds a post-graduate degree in Software Engineering also from UNIVALE - 1998, and receiving a degree in Electrical Engineering, at the same University, in 1986. In March, 2008, he became Municipal Secretary of Planning of Governador Valadares, State of Minas Gerais. Among other positions he was also Director of Budget, the Municipal Planning of this locality, Director of the Department of Public Work, and Vice President of the Development Institute of Governador Valadares - IDGV. He developed several activities in the region of Governador Valadares such as: planning and coordinating regulatory urban housing programs, the promotion of participatory budgeting, consolidation and control of budget execution and coordination of information services within the City.



JOSE LUIZ DE MORAIS

Graduated in Geography at the University of Sorocaba (1974), MA in Archaeology from the University of São Paulo (1978) and Doctorate in archeology from the University of São Paulo (1980). Associate Professor in Archaeology at the University of São Paulo (1999). He is currently a professor at the University of Sao Paulo. He has experience in archeology, with emphasis in Prehistoric Archaeology, acting on the following themes: archeology, Brazilian archeology, Paranapanema, environment and Piraju.



LIANA PORTILHO MATTOS

Is a lawyer and urban planner, with a Master degree in Law from the State University of Rio de Janeiro – UERJ, professor of urban law and Attorney General Office of the State of Minas Gerais, was chairman of the State Institute of Historical and Artistic Heritage of Minas Gerais - IEPHA / MG (2007/2008).



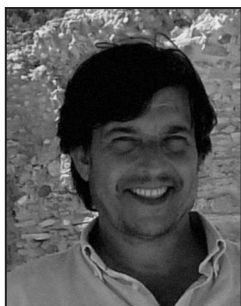
LUIZ OOSTERBEEK

Graduated in History, PhD in Archaeology. Member of CIPSH (International Council for Philosophy and Human Sciences) and Secretary General of the International Union of Prehistoric and Protohistoric Sciences. Conducted research in the fields of archaeology, heritage and landscape management in Portugal, Africa and Southern America. Corresponding member of the Deutschen Archäologischen Institut (Römische Germanische Kommission – Frankfurt, DE), member of the Centro Universitario Europeo per i Beni Culturali (Ravello, IT), of CEIPHAR (PT) and of several scientific societies. Is the author of papers, books and member of the editorial board of several scientific journals on archaeology, heritage, philosophy and landscape management. Pro-President of the Polytechnic Institute of Tomar. President of the Instituto Terra e Memória (Portugal). Director of the PhD programme on Quaternary, materials and cultures of the University of Trás-os-Montes and Alto Douro (PT) and co-ordinator of the Portuguese component of the Erasmus Mundus Master in Quaternary and Prehistory.



MARCOS PAULO DE SOUZA MIRANDA

Coordinator of the State Attorney Office for the Defense of Cultural Heritage and Tourism of the State of Minas Gerais. Specialist in Environmental Law (University Gama Filho). Doctorate in Law and Social Sciences (Universidad del Museo Social Argentino). Secretary of the Brazilian Association of the Public Ministry of the Environment - ABRAMPA. Coordinator of Cultural Heritage of Latin American Network of the Environmental Public Ministry. Professor of Procedural Environmental Law and Cultural Heritage Law.



MAURIZIO QUAGLIUOLO

Born in Naples, he is an archeologist, museologist, manager of Cultural Heritage, advisor of logic matrix in cultural projects and holds a Bachelor of Archaeological Sciences, PhD in Prehistory, Ph.D. in research, cataloging, documentation, Use and Revitalization of cultural heritage, and a two years European Master in Management of Cultural Heritage. He is a Member of the European Association of Archaeologists (1993), Member of International Council of Museums (former Vice-President of the National Committee Italian) (1994), Member of the International Committees: 1) New Technologies in Museums, 2) Training Personnel, 3) Merchandising of Cultural Property (1995), Member of the American Association of Museums (1996), of the Italian Society for the Protection of Cultural Heritage by the Convention, The Hague (1997) and Coordinator of the NGO World HERITY for Quality Management of Cultural Heritage.



MAURO PASSOS

Doctor of Science in Education from the Salesian Pontifical Università of Rome (UPS) Italy. Professor of the Master of Religious Science program at the Catholic University of Minas Gerais. Member of the Brazilian Association of Oral History (ABHO), Brazilian Society of History of Education (SBHE), Study of Church History in Latin America (CEHILA) and the Brazilian Association of History of Religions (ABHR). His field of academic activities and research relate to the themes: Christianity and politics in Brazil, Brazilian popular Catholicism, Christianity and education in Republican Brazil.



PASCUAL FERNÁNDEZ MARTÍNEZ

Professor of Applied Economics at King Juan Carlos University in Madrid. Director of the Center for "Economy of Madrid" (ECMS-URJC). Chairman of the Economy and Environment Committee of the College of Economists of Madrid. He has been Secretary of State for Water and Coast at the Ministry of Environment, and Director General of Budget Programming at the Ministry of Economy and Finance of Spain. He has published dozens of articles and 7 books. He is a regular economic news columnist.



PIERLUIGI ROSINA

Bachelor Degree in Geology, DEA in Quaternary Geology and Ph.D. in Environmental Dynamics, and Human Behavior (2004). Adjunct Professor at the Polytechnic Institute of Tomar, assuming the duties of Director of the Department of Territory, Archaeology and Heritage (2005-2011). Member of the Scientific-Technical Council of the School of Technology of Tomar. Technical Director of the MA in Archaeology of the IPT. Works with several disciplines of Science and Ecology of the territory in undergraduate programs, master's and doctoral programs. He is a member of the scientific R & D Unit of the Centre for Geosciences - Group Quaternary and Prehistory, University of Coimbra - Faculty of Science and Technology (uID73). He is coordinator of the project "Rupscience" (approved by the FCT, 2010-2013) and participates in several European and national projects. He is author or co-authored over 40 scientific articles published in Portugal, England, France, Spain, Italy, Brazil and Romania.



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Degree in Territory Engineering, Master of Geographic Information Systems (2001) and attending a PhD program in Quaternary, Materials and Cultures. Associate Professor at the Polytechnic Institute of Tomar (IPT). Group Member of the PRE-QUATERNARY HISTORY Centre for Geosciences (uID73 - FCT). Coordinator of two editions of the Master in Management and Conservation of Nature, and of Technological Specialization in Geographic Information Systems. Course Coordinator for trainees on Territory Management. Coordinator of the Geographic Information System for the Review of the Spatial Plan of the Natural Park of Serra de Aire and Candeeiros. Coordinator of projects in the area of Geographic Information Systems. Organizer of the various editions of the Conference on Territory Management. Author of several publications in the field of Geographic Information Systems.



ROSSANO LOPES BASTOS

Archaeologist at IPHAN / MINC, Ph.D. and Professor of Archaeology at Brazilian Museum of Archaeology and Ethnology at the University of Sao Paulo, where he serves as visiting professor. He also develops activities as a teacher and tutor in Master programa at Erasmus Mundus European Commission of Pre-historic and Rock Archaeology . Organized and published 14 books on Archeology and Heritage.



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