

BOOK OF ABSTRACTS

FLUL, 15 March, Room 5.2.

Opening session

Conference - **INTERSPECIES PEACE: LEARNING TO LIVE TOGETHER**

Patrícia Vieira

INTERSPECIES PEACE: LEARNING TO LIVE TOGETHER

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From time immemorial we have conceived of our relationship to other human beings and, by extension, to non-humans, as a permanent state of warfare, punctuated by fleeting periods of truce. Such an approach has colored our view of plants and animals as beings constantly engaged in a struggle against one another, in a contest for the “survival of fittest,” both individually and at the level of the species. According to this perspective, humanity merely follows a generalized condition of life as a ruthless fight for survival that justifies dominating and exploiting those who might further our goals and slaughtering the ones who stand in the way. In this paper, I suggest that we look at interspecies relations from the perspective of peace and not war. Can the “wolf dwell with the lamb / and the leopard [...] lie down with the young goat,” as the Old Testament metaphorically would have it in its image of a righteous Earth? Can humans live peacefully side by side with non-human beings? I will avail myself of theories of cosmopolitanism to delineate the notion of interspecies peace as an alternative to the current war of all against all that characterizes our relationship to other living beings.

Session 1.

Chair: Cecilia Veracini

MECHANISM AND HUMAN NATURE

Adelino Cardoso

SOCIOECOLOGICAL MODELS: HUMAN REPRESENTATIONS OF NON-HUMANS IN A CONSERVATION PERSPECTIVE

Susana Gonçalves Costa et al.

CONSEQUENCES OF FOREST EXPLOITATION IN TWO ARBOREAL PRIMATES

Tania Minhós and Maria Ferreira da Silva

MECHANISM AND HUMAN NATURE

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The mechanism, which became preponderant as natural philosophy in the second half of the 17th century, is accompanied, mainly within the Cartesian circle, by a spiritualistic view of the human being, regarded



as separated and independent from nature. However, such view has turned out to be intrinsically problematic. The point concerned the emergency of a human being: is it the effect of the natural causality or is the divine intervention an indispensable requisite for it? Leibnizian path is elucidating of the relevancy of this issue.

At the period of the *Discourse on metaphysics* and the Correspondence with Arnauld (1686 ss.), Leibniz supported that the production of a whole human being was the result of a trans-creation's act, i. e. a creation mediated throughout time. In the *Theodicy* (1710) Leibniz resumed this topic and, in a first moment (Part I, §§ 78-81), he considers the trans-creation as the best solution, but in a second moment (Part III, § 397), he questions this philosophico-theological perspective, and moves towards a naturalistic position, under a peculiar way of "translation". We will argue that the last systematic work by Leibniz, the *Monadology* (1714), assumes the preformation theory in a dynamic sense and, in this framework, the emergency of the human being is the efficiency of a dynamic process of metamorphosis, implying the passage to a higher degree of perfection, named "elevation" (*Monadology*, §§ 75, 82).

SOCIOZOOLOGIC MODELS: HUMANS PERCEPTIONS ON NONHUMANS THROUGH A CONSERVATION PERSPECTIVE

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The way we perceive and organize the other animal species is symbolically divided in "good" and "bad". From a phylogenetic point of view, nonhumans are classified and organized according to their biologic affinities and characteristics. Sociozoologic models categorize the species according to the roles they play in the cultural context where those living beings are perceived, with important consequences to endangered species protection. In Western cultures, particularly in urban areas, companion animals, livestock, lab animals and many other species exhibiting anthropomorphic features and behavior, are seen as "decent citizens" and therefore as "good". On the other hand, "bad" animals are perceived as uncontrollable and as having the ability to subvert the social order. Wildlife in general, namely endangered species, are not part of the cities' collective consciousness, while in rural areas the opposite is visible, mostly in relation to the native species. This presentation will establish a comparison between two sociozoologic models from two distinct cultural contexts: the Portuguese and the Guinean. A survey questionnaire was conducted (2004-2016) in Almada (N=120), Lisbon (N=300) and Cantanhez Forest National Park, Guinea-Bissau (N=257). Data suggest that apart from the cultural differences – mostly related to religion and gender – duality "good" vs. "bad" is present in both scenarios. Behavioral, utilitarian and aesthetical features are the basis of the species categorizations, regardless to the samples' cultural origin.

CONSEQUENCES OF FOREST EXPLOITATION IN TWO ARBOREAL PRIMATES

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The rapid pace of forest degradation stands as a major challenge to the ability of forest dwelling primates to adapt to changes in their habitat. We used behavioral and genetic data to compare the socio-genetics and demographic history of two sympatric primates – the Western black-and-white colobus (*Colobus polykomos*) and Temmick's red colobus (*Procolobus badius temminckii*) – in the fragmented Cantanhez National Park, which is one of the last pockets of forest in Guinea Bissau. We found that both species exhibit changes in their behavior (e.g. dispersal patterns, social relationships) that could be explained by the recent changes in their habitat. Moreover, we detected a strong and recent demographic bottleneck for both species, which we inferred to have resulted from the anthropogenic exploitation of forest resources in the last centuries. The very low estimated effective population sizes for both primates and the known demographic tendencies indicate that they are under imminent risk of extinction in the park, and by extension in Guinea Bissau, if urgent action is not taken. The stronger bottleneck in *P. b. temminckii* and the fact that this species is absent from the most degraded forests in the park, suggest that *P. b. temminckii* is particularly susceptible to human disturbance. This trend for *P. b. temminckii* is reinforced by the fact that we detected that adult females are cooperating with non-kin partners, possibly as a response to increased intra-group competition resultant from degradation of their habitat.

Session 2.

Chair: Cristina Brito

SHARK AS DANGEROUS OR FASCINATING ANIMALS: THE SOCIAL DIMENSION OF MARINE ANIMALS' CONSERVATION

Carlotta Mazzoldi et al.

AN ANALYSIS OF THE NETWORKS OF (SITUATED AND 'POLYRATIONAL') ETHOLOGICAL KNOWLEDGE PRODUCTION IN THE STUDY OF MARINE MAMMAL BEHAVIOR

Carolina Alves d'Almeida

AQUATIC WORLDS: THE ITALIAN PANORAMA BETWEEN SCIENCE, EXPLOITATION, AND PERCEPTION IN THE FIRST HALF OF THE TWENTIETH CENTURY

Elena Canadelli

SHARK AS DANGEROUS OR FASCINATING ANIMALS: THE SOCIAL DIMENSION OF MARINE ANIMALS' CONSERVATION

Ioannis Giovos¹, Cristina Brito², Diego Borme³, Lara Enrizzi⁴, Claudio Barria⁵, Periklis Kleitou⁶, Monica Barone⁷, Alison MacDiarmid⁸, Kerstin Forsberg⁹, Sezginer Tunçer¹⁰ and Carlotta Mazzoldi^{4*}

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Sharks continue to raise contrasting feeling in human, from fear to fascination. They have been often represented as ferocious animals in historical drawings and in recent books and movies. On the other hand, there is an increasing interest for eco- and diving tourism, especially for the largest species. Several shark populations are today severely depleted and their conservation is urgently needed. Management strategies are driven by a complex interaction of environmental, economic and social issues, therefore

public perception and attitude can play an important role in driving the development of conservation and management measures for vulnerable species.

In order to assess the social and cultural dimension in shark conservation, we developed a questionnaire aimed at evaluating public perception and attitude towards sharks. The questionnaire available online is compiled anonymously and it is composed by three parts. The first is constituted by some demographic and general information of the responders. The second part includes 13 statements used to measure the attitude of the responder towards sharks; this section follows the classic study of S.J. Kellert (1996), in which he describes the attitudinal dimensions towards wildlife. The third part aims at evaluating the knowledge of the responder towards sharks, and will be used to analyse how knowledge is affecting the attitude toward these animals.

The questionnaire has been translated in 15 languages with the goal to compare answers of people from different geographic areas, having different ages, education levels and backgrounds. In the first two months from its release, we collected more than 4000 answers from 93 countries. The first results of this survey will be presented and discussed.

AN ANALYSIS OF THE NETWORKS OF (SITUATED AND 'POLYRATIONAL') ETHOLOGICAL KNOWLEDGE PRODUCTION IN THE STUDY OF MARINE MAMMAL BEHAVIOR

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Social and cultural studies of science have opened up new ontological and epistemological spaces that question the universalist epistemology, arguing that all knowledge is situated, that all sciences (including 'modern-sciences') are local knowledge systems. The study of marine mammal behavior developed through a web of historic relations between different actors (navigators-travelers-explorers-fishermen-naturalists), as can be seen in Cristina Brito's papers about the temporary progress of this study and its historical occurrence in the travel reports through the Atlantic, from the 14th to the 18th century. I will attempt to discuss how these reports, as well as the local knowledge of sailors, fishermen and harbor populations, resulting from experiences, coexistence and generations of accumulated knowledges about marine animals, contributed to the multi-methodological development of Ethology in Brazil. Biologists recognize the importance of dialogue between fishermen, scientists, investors and environmentalists in order to make these scientific practices feasible, as well as for the fishermen animal-ethical awareness. Such dialogue allowed hunters to become protectors, as well as that traditional knowledge about behavior, location and migratory-pathways of marine animals be incorporated into scientific practices.

Brazil is an "onto-ethological" experiences laboratory, due to its nature-cultural multiplicity, which encompasses different types of apprehension of animal alterities, local rationalities, ontologies and cosmovisions on nature. The participation of 'traditional-actors' in scientific research is indispensable, given the richness of their ethnobiology knowledge. The presence of hybrid beings of human-cetaceans-fishes in the imaginary, myths and cultural-representations of fisheries, riverine and indigenous populations, is quite significant. In Laguna-SC, there is the "cooperative fishing", where dolphins collaborate/cooperate with artisanal-fishermen in fishing for mullets. Could these dolphins cooperate with ethologists in scientific practices?

Through these reflections I intend to highlight the multiplicity of actors involved in the networks of ('polyrational') marine mammals ethological knowledge production, that challenge the monorationality and universality of northern epistemology.

AQUATIC WORLDS: THE ITALIAN PANORAMA BETWEEN SCIENCE, EXPLOITATION, AND PERCEPTION IN THE FIRST HALF OF THE TWENTIETH CENTURY

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During the second half of the nineteenth century aquatic life started to fascinate naturalists, artists, writers, architects, and common people. The aquatic world raised attention also from an economic point of view in relation to pisciculture and fishery management. Public aquariums were built for amusement across Europe and the US, whereas hydrobiological stations were dedicated to scientific research, aquaculture, and fish farming. In the light of the theory of evolution and the emerging discipline of ecology, it becomes increasingly necessary for biologists to study nature in the field. The aquatic environment appeared to be particularly suitable for research on evolution, embryology, physiology, anatomy, and organism–environment interactions. From another point of view, marine stations also served as sites for the study of fishery management, fish farming and aquaculture. Since the second half of the nineteenth century the Italian biological and zoological community has sought to combine theoretical and applied biology aiming at better organize the exploitation of marine resources. This paper aims at briefly outlining the Italian panorama during the first half of the twentieth century, focusing on some minor and little known case studies, such as the civic Aquarium and Hydrobiological Station in Milan, built on the occasion of the Universal Exhibition in 1906, and the Hydrobiological Station of Chioggia, founded in 1940 on the Venetian Lagoon by the Italian zoologist Umberto D’Ancona. While the Milan Station tried to combine a public aquarium and a scientific facility, Chioggia allows historians to point out the involvement of scientists in the study and management of marine resources in a specific area. Although with different perspectives and aims, this kind of institutions has sought to deal with topics such as education, marine biology, fisheries management and conservation of fish stocks in the Italian context. They contributed in changing the perception of aquatic environment and brought a new awareness on topics which remain as relevant today as they were in the past.

FLUL, 16 March, Room 5.2.

Conference - WHAT'S SO SPECIAL ABOUT HOMO SAPIENS IN TERMS OF ENVIRONMENTAL HISTORY?

Carlos Assis

WHAT'S SO SPECIAL ABOUT HOMO SAPIENS IN TERMS OF ENVIRONMENTAL HISTORY?

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Since the beginning of its existence, the human species has multiplied its populations, grown in numbers, colonized all habitable regions around the planet, exploited all kinds of natural resources, prolonged its lifespan, and promoted changes in its environment in order to suit its purposes and to provide for its growing needs. Do these actions mean that *Homo sapiens* is a special species in terms of population ecology and environmental history?

Departing from some basic concepts related with population growth and regulation, and community complexity, a comparative analysis is made between the environmental history of *Homo sapiens* and that of all other species in terms of habitat use and intervention on habitat characteristics, in a planet subjected to constant change.

The role of human communication, both the ephemeral (oral) and the long-lasting (written), cultural development, social complexification and scientific progress will be used to justify the present human species hegemonic position on Earth.

The topics and examples presented will provide information to understand the historical tendencies of the environmental history of Man and to provide an answer to some relevant questions:

- Is the omnipresence of *H. sapiens* unnatural?
- Is the growth tendency of *H. sapiens* populations so different from that of other species?
- Is the growing intensity of exploitation by *H. sapiens* unnatural?
- Is *H. sapiens* the only species that causes the environment to become inappropriate for the subsistence of other species?
- Is *H. sapiens* the only cause of species extinction?

Session 3.

Chair: Carlos Assis

SADO RIVER SEDIMENTS AS A MAJOR SOURCE OF INFORMATION TO RECONSTRUCT MESOLITHIC LANDSCAPES

Ana Maria Costa et al.

ENVIRONMENTAL AND CLIMATE CHANGES DURING LITTLE ICE AGE IN CENTRAL PORTUGAL

Cristiana Ferreira et al.

TEN MILLENNIA OF PLANT AND ANIMAL EXPLOITATION IN THE SABOR VALLEY (NORTHEAST PORTUGAL): LONG-TERM HUMAN AND ENVIRONMENTAL DYNAMICS

João Pedro Tereso and Cleia Detry

SUSTAINABLE MANAGEMENT OF SITES WITH VALUABLE NATURAL AND CULTURAL LANDSCAPE

Kimon Hadjibiros

THE NATURAL ENVIRONMENT OF THE AEGEAN ISLANDS IN THE BRONZE AGE (2ND MILLENNIUM BC)

Marco Massetti

SADO RIVER SEDIMENTS AS A MAJOR SOURCE OF INFORMATION TO RECONSTRUCT MESOLITHIC LANDSCAPES

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Between c. 8500-7000 cal BP Late Mesolithic communities occupied the Sado valley embankments, upstream Alcácer do Sal. Their diet included high percentages of marine resources, judging by the amount and volume of shell waste accumulated in several locations (known as shell-midden sites). The consumption of marine foods is also confirmed by isotopic analyses of bone collagen ($\delta\delta^{13}\text{C}$) from individuals buried in these sites. Despite the strong functional relations between people and the Sado estuary, the landscape coeval of these communities is still largely unknown.

During the Mesolithic the mean sea level (msl) was rising in response to global warming, allowing for the flooding of the pre-incised Sado valley by marine water. Sea-level rise curves proposed for the Portuguese coast suggest that c. 8000 cal BP the msl stood about 10m below its present location.

Consequently, questions on the Sado landscape during the Mesolithic arise: what was the maximum extension of the marine influence in the area occupied by these communities? Did they colonize the margin of an estuarine environment where marine resources were available?

Sediments accumulated in the Sado basin during the Holocene enclose some of the answers. Therefore, since 2013, sediment cores have been collected from the valley infill close to the area where shell-middens are located to reconstruct the Mesolithic environmental conditions and landscapes. A sediment core collected near Arapouco, the most downstream shell-midden, records part of the Late Holocene environmental history of the Sado river. Preliminary results suggest remarkable marine influence between c. 3600-3350 cal BP. These results reveal that during this time window, when msl was similar to the present, marine water intruded upstream the present-day Sado estuary. Further analyses are crucial to establish marine maximum extension in the area and the influence of marine waters in the daily lives of Mesolithic groups.

ENVIRONMENTAL AND CLIMATE CHANGES DURING LITTLE ICE AGE IN CENTRAL PORTUGAL

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A core collected in Paúl (swamp) do Boquilobo allow us to reconstruct the environmental changes that occurred in Central Portugal during the Little Ice Age (LIA) – XV-XX century AD. The Paúl do Boquilobo is a Natural Reserve, located in the confluence of Almonda River with Tagus River in Central Portugal. The water for this important humid area is supplied by the seasonal flooding of the mentioned rivers, so its extension change during the year. Only the lowlands are permanently flooded in the summer. Nowadays Paul do Boquilobo is a protected area, surrounded by cultivation areas, particularly corn production. Palynological analyses (pollens and non-pollen palynomorphs) were performed, in order to assess the Holocene palaeoenvironmental evolution of this region. In this work we present the results of the upper part of the sequence, corresponding to the LIA (based on an AMS dating).

The results indicate that forest recuperation began at approximately 1800 AD. Non-pollen palynomorph suggest local alterations, possible linked with the historical evolution of the swamp itself. It seems that there was a change in human activity around 1650 AD, when *Plantago* sp. disappear from the record, suggesting a reduction of grazing activity around the marsh. This may be related to the Iberian war and global instability in the colonies trade, following the resuming of Portuguese independence in 1640. Colder and moister conditions prevailed during the LIA, at least until 1800 AD. During this period the agricultural production changed, although this not necessarily relates to climatic changes.

TEN MILLENNIA OF PLANT AND ANIMAL EXPLOITATION IN THE SABOR VALLEY (NORTHEAST PORTUGAL): LONG-TERM HUMAN AND ENVIRONMENTAL DYNAMICS

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A great number of archaeological interventions were carried out in the valley of the river Sabor in northeast Portugal due to the construction of two dams. During such interventions, abundant archaeobotanical and zooarchaeological remains were retrieved from numerous sites covering almost all the Holocene, from the 9th millennium BC to the 18th century AD.

The studies that have been carried out in the last four years led to the accumulation of a large amount of data regarding the consumption of animal and plant resources by human communities over a large period of time. Such long-term paleoecological record is of the utmost value to assess changes in landscape and their connection with the social, economic and technological evolution of human communities that lived in the valley for over ten millennia.

Human pressure over the biological resources seems to be obvious since prehistoric times, particularly since the 2nd millennium BC, increasing in the following periods. Throughout the Holocene, human actions led to the retraction of some plant and animal populations and expansion of others, which lead us to suggest paleoecological data should be taken into account when considering conservation policies.

SUSTAINABLE MANAGEMENT OF SITES WITH VALUABLE NATURAL AND CULTURAL LANDSCAPE

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Greece has a great landscape diversity created by natural and cultural factors. Important biotopes coexist with human activities since thousands of years. The land is mountainous, the coastline reaches 18,000 km, there are thousands of islands. Sea coasts, rocky islands, wetlands, forests, alpine zones, small rivers, lakes, ravines, springs, caves etc. form aesthetically important sites, where natural and cultural features are often interconnected.

Landscape protection is fragmented, through different laws concerning archaeological and historical sites, traditional settlements, biotopes and natural monuments. Nevertheless, sustainable management is an integrated task, involving several steps: reliable registration and evaluation of the sites, early warning of threats, appropriate protection measures and regulation of the local society activities.

Starting in the '60s and following Greek laws concerning archaeological heritage, a number of Sites of Outstanding Natural Beauty (SONB) have been designated. They mainly included cultural landscapes. Later on, this list was completed, including 449 geomorphological landscapes, important biotopes as well as cultural sites, with a total area of 6,270 km². An additional list contains 52 sites with natural landscape characteristics. Among these 501 sites (449 plus 52), about 40% have biodiversity and about 37% cultural features (archaeological and historical monuments, traditional architecture). More than 15% of them have both archaeological and ecological values (www.itia.ntua.gr/filotis).

Natural and cultural landscape sites are highly threatened environmental values. Most modern human activities are bound to negatively influence landscape quality, e.g. the scenery, biodiversity, soil, water, acoustic environment, agricultural activity or cultural environment. The appropriate protection measures should be economically feasible, appropriate for impact mitigation, aesthetically acceptable, easily maintained, without serious side effects. Degradation often relates to popular uncontrolled activities, like vulgar constructions, wild fires, uncontrolled grazing or tourist activities. Production activities in valuable landscapes should not be excluded, except in places with high archaeological interest, exceptional scenery or vulnerable animal species. Measures to protect specific values (aesthetics,

breeding birds, rare flora etc.) should be selected according to real environmental needs. Well-organized large scale production activities, including wind parks, tourist facilities etc. should be allowed if appropriate technology is applied.

THE NATURAL ENVIRONMENT OF THE AEGEAN ISLANDS IN THE BRONZE AGE (2ND MILLENNIUM BC)

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The Mediterranean may perhaps be considered the place that has been most intensively and at length affected by the activity of man. The succession of different civilizations over a period of 10,000-12,000 years has entirely modified the landscapes, disrupted or even destroyed the native biocenoses and introduced new animals and plants, to the extent that practically no ecosystem has been left intact. Since prehistory, the human settlers brought about a radical turnover between ancient and modern faunas, introducing a variety of allochthonous continental species. In particular, the archaeozoological and iconographic data available for the Aegean islands permit the imaginary reconstruction of a natural environment that subsequently disappeared as a result of the dramatic eruption of the volcano of Santorini around the middle of the 2nd millennium BC (c. 1630 BC).

Session 4.

Chair: Margarita Eva Rodríguez García

AN ECLECTIC POOL OF IDEAS: SYNCRETISM AND SHARED PRODUCTION OF KNOWLEDGE IN 18TH CENTURY PORTUGUESE INDIA: MEDICINE, PHARMACY AND NATURAL SCIENCES

Fabiano Bracht

MATERIA MEDICA AND PHARMACEUTICAL TEACHING

Olga Silva and Rita Serrano

RENAISSANCE CHRISTIAN ART AT NATIONAL MUSEUM OF ANCIENT ART (LISBON) - A BOTANICAL PERSPECTIVE

Luís Mendonça de Carvalho and Francisca Maria Fernandes

AN ECLECTIC POOL OF IDEAS: SYNCRETISM AND SHARED PRODUCTION OF KNOWLEDGE IN 18TH CENTURY PORTUGUESE INDIA: MEDICINE, PHARMACY AND NATURAL SCIENCES

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The Portuguese Overseas Empire, connecting, from the 16th century on, four continents: Europe, Africa, America and Asia is a privileged ground for the analysis of the production of knowledge in the Early Modern Age and its connection with questions related with both concepts of transference of knowledge and hybridization processes. Facing this background, this paper is centred on the analysis of the production of medical texts in Goa, during the 18th century. My main intention is to focus on the diverse aspects involving the production of medical and natural philosophical texts in the Eastern Portuguese Empire, some of them related with the circulation of knowledge and the hypothetically transformative nature this process. The Portuguese colonial presence had successfully being established in South Asia, at least based on the following factors. The Portuguese language, the self-organized (and also multinational and multicultural) trade networks, religion – by an intense evangelization process –, and both State and Church bureaucratic and administrative structures. This lead to the development of a syncretic process of construction of knowledge in which the local peoples participated as both brokers

and producers, connecting the Asian knowledge with the European structures and institutions. Therefore, from the starting point that circulation, as a concept, implies on transformative properties, this paper aims to understand how these factors could have influenced the nature of the produced knowledge. Therefore, the question to be answered is: What kind of knowledge was emerging from this syncretic process during the eighteenth century?

MATERIA MEDICA AND PHARMACEUTICAL TEACHING

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The first record (cuneiform writing) related with the herbal medicine use seems to be made by a Sumerian physician just before 2000 BC. On it, more than a dozen medicines were referred, including ointments, solutions for external use and suspensions for oral use obtained from *Materia Medica* mainly vegetal (senna, myrtle-common, asafoetida, thyme, willow, pear tree, spruce, fig tree and date palm).

From then until the nineteenth century, plants constituted mainly the *materia medica* used to treat the different pathologies, and their inclusion on the medical and pharmaceutical teaching was mandatory. Currently, medicinal plants knowledge still mandatory for the pharmacists once since it is estimated at more than 28% its direct or indirect use as modern medicines in the countries with the highest human development index, while that they are used as a basis for the primary health care of more than 80% of the inhabitants of developing countries.

In this communication we learn about the medicinal plants used in Portugal last 20th century and we present the collection of *materia medica* used for educational purposes at Faculty of Pharmacy of the Universidade de Lisboa (FFULisboa) at this time. The representative elements of this collection (constituted by a total number of 266 elements), its therapeutic indications and pertinence of its use until now will be presented and discussed. The work inherent in completing the information on this collection has so far been carried out by students of the master's degree in pharmaceutical sciences of FFULisboa, within the scope of curricular units of project and a monograph of end of course, integrated in a project begun in 2012 and coordinated by one of the authors of this communication.

RENAISSANCE CHRISTIAN ART AT NATIONAL MUSEUM OF ANCIENT ART (LISBON) - A BOTANICAL PERSPECTIVE

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Plants are living beings that characterize ecosystems, and since early in the history of art they have been used in material and immaterial culture (symbols). We will present the results of a study made with the Renaissance Christian Art in public display at the National Museum of Ancient Art (Museu Nacional de Arte Antiga), Lisbon, in which we identified 30 plant uses (symbolic and material culture), such as the pomegranate, frankincense, palms, lilies, roses, carnations, oak, linen, apple, myrrh, plantago, poppies, strawberries, columbine, daisies, etc., in paintings and sculptures. We will present explanations for the uses of specific species, based on codes of symbols created in the late Middle Age and Renaissance.

The material culture will also be presented, with examples of different woods, resins, oils and pigments, used in Renaissance art.

Session 5.

Chair: Marco Massetti

AMENAZAS NATURALES Y DESASTRES EN ESPAÑA DURANTE EL SIGLO XVIII. NOTAS PARA SU ESTUDIO EN PERSPECTIVA HISTÓRICA

Armando Alberola Romá

ISLANDS AND NATURAL HISTORY: AN ISLANDER INSULAR CONTRIBUTION TO THE KNOWLEDGE OF GEODYNAMICS IN THE EARLY-MODERN PERIOD

José Damião Rodrigues

THE PRESERVATION OF PAU-BRASIL IN THE LATE XVIII CENTURY PERNAMBUCO, IN AN ECONOMIC PERSPECTIVE

Edgar Teles

AMENAZAS NATURALES Y DESASTRES EN ESPAÑA DURANTE EL SIGLO XVIII. NOTAS PARA SU ESTUDIO EN PERSPECTIVA HISTÓRICA

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Nowadays, is becoming increasingly evident the need to be prepared to deal with atmospheric or natural events with catastrophic consequences that repeatedly affect a multitude of territories considered as «at risk». Public authorities are obliged to provide maximum information on these threats, to plan appropriate preventive measures and, in the event of a disaster, to have adequate means to reduce their effects. In this context, the analysis of atmospheric behavior and nature in past centuries provides abundant information that can be used to «recognize» and deal with current problems. This contribution offers a view of the extreme events of climatic and natural origin that affected Spain during the 18th century, with special attention to droughts, intense rainfall, floods, earthquakes, crises, famine and diseases.

ISLANDS AND NATURAL HISTORY: AN ISLANDER INSULAR CONTRIBUTION TO THE KNOWLEDGE OF GEODYNAMICS IN THE EARLY-MODERN PERIOD

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In recent years, the role of the islands in the genesis of modern science seems to have gained some highlight: such is the scientific “function” of the islands and the “image” of the island-laboratory¹. Within this context, the Azores have a special place. The Azorean archipelago was and is the stage of several seismic and volcanic events, causing much fear and amazement among the population. These events were also the object of descriptions of great importance towards the study of natural history and, particularly, of geology and volcanology.

By the end of the sixteenth-century, father Gaspar Frutuoso (Ponta Delgada, 1522-Ribeira Grande, 1591), a bachelor and Doctor by the University of Salamanca, in his *Saudades da Terra*, a work written in the 1580s, put the islands of Macaronesia in their Atlantic and historical contexts, but proved also to be a natural philosopher *avant la letter*. He described in detail the

geography and geology of the islands, explaining what he had observed and even trying to classify the rocks. Some of his descriptions are very lively and detailed thus giving important ground for today's geologists and volcanologists. The aim of this paper is to present some aspects of Gaspar Frutuoso's work connected with geology and volcanology and to compare it with other texts showing its contribution to the knowledge of the islands' natural history in the early-modern period.

¹ Cf. Anne Meistersheim, *Figures de l'île*, Ajaccio, DCL éditions, 2001.

THE PRESERVATION OF PAU-BRASIL IN THE LATE XVIII CENTURY PERNAMBUCO, IN AN ECONOMIC PERSPECTIVE

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The subject can be fitted in the point Natural and Cultural heritage. In these point, not only in statistic matter, but in connection with the history of economic ideas that gives the cultural dimension. About the subject in the end of the XVIII century (1796 – 1798), there's a shortage of Pau-Brasil timber in Pernambuco, that takes an effort both of searching for new forests like also a strong effort of preservation measures in that period. The trade of Pau-Brasil, in this period, could go to up to (778, 71%) in the European markets of that period. In this case, my argumentation it's – in this historical context – how an economical interest paradox triggers an interest about environmental protection to save an important accent. These implies to begin to identify the species of Pau-Brasil that where in use on the same region. To, in a second stage integrate the same in the economic importance in Portuguese trade economy. And in – a third topic – understand the correlation between economy and environment in the search of new forests and preservation of the already known. In these part remembering that early modern economies where natural and very dependent of the environment. That urges them to insure that they had a continuity on the access, and existence of the same resources. These enters in Richard Groove theories about environmental history in connecting them with economy. And also Wades theories, that crosses ecology with other sciences.

Session 6.

Chair: Armando Alberola Romá

THE ECOLOGY OF THE ANTHROPOCENE: MONITORING THE IMPACTS ON ECOSYSTEMS

Cristina Branquinho

THE PRIMACY OF GOODNESS: TRANSFERS AND NATURALIZATION OF SPECIES THE WILL TO DO WELL IN THE NINETEENTH CENTURY

Cristina Joanaz de Melo

FACE THE UNKNOWN IN THE AZOREAN GARDEN OF THE HESPERIDES. THE BROWN SOFT-SCALE, COCCUS HESPERIDUM

Ana Isabel Queiroz

THE ECOLOGY OF THE ANTHROPOCENE: MONITORING THE IMPACTS ON ECOSYSTEMS

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Human activities have directly or indirectly affected the planet. Some authors have renamed this geological age as the Anthropocene, showing that the impact of man on Earth today is greater than that of natural fluctuations. Only a thorough scientifically understanding, based on quantitative analysis, of how external pressures affect ecosystems, their resistance and resilience, will allow us to design the most effective mitigation and adaptation strategies for coping with human influence. The ecosystem approach is fundamental in managing the earth's resources because it addresses interactions with biotic systems, of which human beings are an integral part, and with the physical systems on which it depends. This applies to the scale of the Earth, to a continent, or to an agricultural field.

Ecological indicators of atmospheric changes can be used as surrogates to describe the effects of atmospheric changes cause by human activities on ecosystem structure and functioning. Lichens have been widely used for more than 100 years to study the effects of atmospheric changes in ecosystems. Its biological diversity can be exploited as an ecological indicator because different lichen species differ in their tolerance of atmospheric changes: some species are extremely sensitive and will disappear whereas others persist. In the period beginning with the Industrial Revolution until the 1980s, the loss of lichen diversity in urban and industrial areas could be ascribed to sulphur dioxide pollution. Since then, nitrogen pollution has been the most significant factor in the loss of lichen diversity. We expect that if current efforts to reduce nitrogen emissions are successful, climate change will emerge as the most important driver of lichen diversity over time. An overview of the results of ecological indicators used to monitor the effects of the Anthropocene on ecosystems will be presented.

THE PRIMACY OF GOODNESS: TRANSFERS AND NATURALIZATION OF SPECIES THE WILL TO DO WELL IN THE NINETEENTH CENTURY

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The idea of species transfer across continents and seas is often associated with imperial domination. The exotic in the garden revealed also a far broader project: a profound and inner will of doing well for the improvement of the human living conditions.

Considering differences of perspective towards transoceanic and transcontinental transfers of natural elements, this communication proposes to explore *the primacy of goodness* in the backstage of tree species transfers across the world in the 19th century, within Portugal and Portuguese Empire.

One of the most controversial examples of perception change in the last two centuries, towards a tree species was the one about *Eucalyptus globus*. In the 19th century it was discussed, in scientific essays as one potential substitute for quinine, a substance crucial to prevent malaria, independently of the forthcoming overexploitation for other purposes. In the 1800s, the guiding line for its plantation in Portugal, as across the Mediterranean, was the primacy of goodness, under the will to prevent or even eradicate epidemics.

Yet, if eucalyptus became *tree no grata* in the 20th century, for instance Magnolias, brought to Europe in the 18th century from the Americas, did not provoke environmental reaction against it. Would that outcome result from being considered a decorative species or the scale of plantation was not considered enough to harm ecosystems?

Considering these differences, four elements will be analyzed in order to understand environmental impacts resulting from species introduction:

- Reasons for their introduction

- Scale of plantation
- Uses: landscaping:
- Impact: exploitation.

FACE THE UNKNOWN IN THE AZOREAN GARDEN OF THE HESPERIDES: THE BROWN SOFT-SCALE, COCCUS HESPERIDUM

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At the end of the first half of the 19th century, the global circulation of live plants brought the brown soft-scale *Coccus hesperidum* to the Azores' islands (Portugal). The Azorean elites were committed to maintaining and expanding the lucrative business of the orange, and were aware that science could be extremely useful. But knowledge of plant pathology was very limited. Most of the agents responsible for diseases had not yet been identified. This paper (1) analyses the doubts raised in relation to this pest's identification, origin and character during the pest invasion process; (2) equates the repercussions that the existing knowledge had on the expansion and mitigation of adverse effects; (3) highlights the origin and sources of knowledge from outside, which was a direct consequence of the invasion process in other geographies.

A debate about the identification of the pest still persisted when legal measures were taken to mitigate damages. The hypothesis that nowadays appears consensual – that there was an introduction from the outside using imported commodities as a vector – raised doubts at the time, whereas the hypothesis of a spontaneous origin had many supporters then. For many years it was also considered that the previous weakness of trees potentiated the spread of the pest and the outbreak was a consequence of wrong cultural practices in orchards. In all of these questions, the Azorean society assimilated the scientific ideas of the time, sharing the existing controversies and rehearsing the control methods suggested by European and Americans naturalists. Documentary sources, newspapers and other publications of the time were analyzed.

FLUL, 17 March, Room 5.2.

Conference - ANTHROPOCENE: THE HISTORY OF THE FIRST SELF-ENDANGERED SPECIES

Telmo Pievani

ANTHROPOCENE: THE HISTORY OF THE FIRST SELF-ENDANGERED SPECIES

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Mass-extinctions are a major pattern in macro-evolution. Because of their frequency, quickness and global effects, they shaped the global biodiversity several times during the geological ages. Mass-extinctions are probably due to a set of different possible causes: basaltic super-eruptions, impacts of asteroids, global climate changes, continent drifts, and so on. An analogy has been proposed. If we compare the rates and amounts of extinction during those singular evolutionary events with the range of species losses over the past few centuries and millennia in human times, we see a similar trend. Then,

according to a group of authoritative evolutionists like Edward O. Wilson and Niles Eldredge, we have evidence that humans are now causing the so called “Sixth Mass Extinction”. “Anthropocene” also means that *Homo sapiens* has become a dominant evolutionary force. Through a mix of different significantly impacting activities (i.e. fragmentation of habitats, overpopulation, chemical pollution, invasive species, over-exploitation of resources in hunting and fishing), we have produced the conditions for a serious extinction crisis.

According to *Nature* (2011), the sixth mass extinction is under way. According to *Science* (2014), we have to introduce a new term: *defaunation*. We discuss a recent model for mass extinctions (the “Perfect Storm Model”), based on the idea that these macro-evolutionary patterns could be produced by a mix of three main simultaneous causes and conditions, that are all three present in the anthropic sixth mass extinction event. Then, considering the ecosystem effects of the loss of biodiversity for human life and health, we propose to consider *Homo sapiens* as the first self-endangered species on Earth.

SESSION 7

Chair: Elena Canadelli

BEHIND THE CONTROVERSIES: DEBATES ON THE BEST WAY TO STUDY NATURE IN EIGHTEENTH CENTURY SPAIN

Margarita Eva Rodríguez García

CLIMATE EXTREME IN THE LAST QUARTER OF 18TH CENTURY: SPAIN AND MEXICO. NOTES FOR A COMPARATIVE STUDY

Armando Alberola Romá and Luis A. Arrijo Díaz-Viruel

BOTANICAL EXPLORATIONS OF COFFEE AND RUBBER IN ANGOLA, CA. 1850 – CA. 1930

Jelmer Vos

HIGHER COCOA PRICES, LOWER OUTPUTS – CONTRADICTIONS OF POLITICAL ECONOMY AND ECOLOGY IN SÃO TOMÉ AND PRÍNCIPE (1910-1920)

Maciel Santos

THE MID-ATLANTIC ISLANDS: A THEATRE OF EARLY MODERN ECOCIDE?

Stefan Halikowski Smith

BEHIND THE CONTROVERSIES: DEBATES ON THE BEST WAY TO STUDY NATURE IN EIGHTEENTH CENTURY SPAIN

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The arrival of exotic specimens and the experience of travellers and settlers in European overseas territories, including the exchange of knowledge with local populations, generated important debates in eighteenth century European scientific circles about the natural world and the best ways to study its diversity.

This paper will look at eighteenth century Spanish discussions on the advantages of artificial and natural methods in the study of plants and scientific debates between travel botanists and those who studied plants from the safety of university posts and botanical gardens at home (*botanistes de cabinet*).

My contribution will focus in a work entitled “*Colección de papeles sobre controversias botánicas*” (1796), which presented the discussions between the renowned naturalist, Antonio Cavanilles (1745-1804), Hipólito Ruiz López (1754-1816), the Spanish head botanist of the expedition that explored Peru and Chile for ten years (1778–1788), and Casimiro Gómez Ortega (1741-1818), first professor of the Royal Botanical Garden of Madrid. Since these discussions focused on what was the best way to study and describe plant species collected by the Spanish scientific expeditions, the aim will be to analyse the academic and theoretical impact of the “American” experience and American flora in the Iberian world, but also to

understand what political, economical and religious interests were behind those discussions and what different readings of the scientific Enlightenment stemmed from them.

CLIMATE EXTREME IN THE LAST QUARTER OF 18TH CENTURY: SPAIN AND MEXICO. NOTES FOR A COMPARATIVE STUDY

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In the last quarter of 18th century, a climate shake was experienced in the Western Mediterranean Sea, it was called *Maldá Anomaly*. Its main characteristic was the formation of natural events like droughts, intensive rains, extreme heat, and locust plagues that caused great disasters in the rural life. Likewise, *Maldá Anomaly* caused that winter temperatures fell sharply, and springs and summers were wet and short, and the agriculture suffered a great crisis. On the other side of Atlantic Sea, the same climate shake occurred in Mexico in 1760-1810. The natural events observed where drought and extreme cold, that triggered the most several agricultural crises in the mexican history. This paper proposes a comparative study of the Little Ice Age (PEH) on both sides of the Atlantic in close temporal sequences.

BOTANICAL EXPLORATIONS OF COFFEE AND RUBBER IN ANGOLA, CA. 1850 – CA. 1930

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This paper examines attempts by European merchants and botanists to explore and define the origins and nature of two important export commodities of Angola in the early colonial period: coffee and rubber. After the suppression of the transatlantic slave trade in Angola, in the 1860s, first coffee and then rubber became the backbone of the country's newly developing export economy. The first of these colonial products originated from the forested mountain slopes in the northern Dembos and Kongo regions; the second was tapped by Africans in savanna grasslands east of the Kwango River. Despite the presence of some European coffee planters in Cazengo, coffee and rubber were natural resources exploited by Africans who often lived beyond the reach of the Portuguese colonial government. For a long time, therefore, European traders and botanists remained clueless about the origins as well as the exact nature of these commercially highly valued products.

The first effort to scientifically classify Angolan coffee was undertaken in the 1850s by the Austrian botanist Friedrich Welwitsch, who thought it was a variety of *Coffea arabica*. After it was established that coffee plants were native to Angola, several botanists – many of whom never left Europe – proposed the existence of different species in the region, until in the twentieth century it was determined that they all in fact pertained to same *robusta* species, or *Coffea canephora*. The case of rubber is analyzed using correspondence from the early 1900s between the Liverpool merchant John Holt and the Royal Botanical Gardens in Kew about rubber samples coming from Angola, which highlight the extent and limitations of European scientific knowledge about commercially viable natural products in Africa. Indeed, these contemporary studies of coffee and rubber in Angola show how European traders managed to tap into African systems of production, or resource exploitation, which they understood only poorly.

HIGHER COCOA PRICES, LOWER OUTPUTS – CONTRADICTIONS OF POLITICAL ECONOMY AND ECOLOGY IN SÃO TOMÉ AND PRINCIPE (1910-1920)

Maciel Santos

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“Forests... do not produce rains” (Armando Seabra, 1919)

“it was the thoughtless destruction of those forests that induced the decrease of rain and humidity” (Armando Cortesão, 1921)

In 1910, the Portuguese islands of São Tomé and Príncipe exported over 36.6 thousand tons of cocoa and became the world largest exporter of that year. Ten years later, São Tomé cocoa exports through Lisbon reached about 16.8 tons, that is 46% of the 1910 output.

In spite of the growing world demand and of the inflationary years of the 1920's, which allowed for unusually high rates of profit, cocoa corporations had serious cause for alarm. At medium and long term, they still were to face an insufficient labour market; at short term there was the danger of a sudden output fall occurring at worst possible moment. Was it conceivable that the model plantations could be devastated by an upsurge of parasitic diseases?

The powerful cocoa lobbies immediately lead the Portuguese Government to finally take the agronomical issues of the islands more seriously: several expert missions were sent into the ground. After all, the cocoa diseases were not out of control. Yet, it was not certain what to expect afterwards: was the output fall a cyclical and reversible trend or was it the inevitable and permanent decline arising out of intensive agriculture? And this meant a very practical and immediate issue to settle: what was the real effect of the deforestation (a vital issue to increase the plantation area of such small islands) on the archipelago climate?

Almost nowhere were agronomical and meteorological studies carried out under such a heavy commercial and even political pressure than in the São Tomé debates of these years. Though the falling cocoa importance of islands has been the object of much discussion, it may be interesting to compare cases like this one, in which vested and direct interests are now better identified, with today's debates on climate change.

THE MID-ATLANTIC ISLANDS: A THEATRE OF EARLY MODERN ECOCIDE?

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The Iberian rediscovery of the mid-Atlantic islands in the late Middle Ages was accompanied by all kinds of utopian projections. However, within a hundred years, both human and animal populations were made extinct, and the rich forest cover was rapidly depleted for cash-cropping industries, primarily sugar. Historians view the migration of the international sugar industry from the mid-Atlantic islands to Brazil as an example of expanding economies of scale, but contemporary accounts indicate what now might be called widespread ecocide as a major contributing factor. This paper looks at the environmental ramifications of the sugar industry as well as other cultures, and assesses whether it is indeed appropriate to speak of ecocide in the context of the mid-Atlantic islands in the early modern period.

SESSION 8

Chair: Telmo Pievani

ANTHROPOLANDS: ENTANGLED TERRITORIES BETWEEN THE ANTHROPOCENE AND THE HISTORY OF SCIENCE, TECHNOLOGY AND MEDICINE

Maria Paula Diogo and Ana Simões

TRANSLATE DEMOCRATIC INTO DICTATORIAL PERCEPTIONS OF NATURE – THE INFLUENCE OF TVA IN PORTUGUESE PLANS FOR THE USE OF KUNENE AND ZAMBEZI RIVERS IN ANGOLA AND MOZAMBIQUE

Ana Paula Silva

ENVIRONMENTAL CONFLICTS AND THE BUILDING OF MEN-NATURE REPRESENTATIONS OF THE PORTUGUESE EUROPEAN IDENTITY

Paulo E. Guimarães

ANTHROPOLANDS: ENTANGLED TERRITORIES BETWEEN THE ANTHROPOCENE AND THE HISTORY OF SCIENCE, TECHNOLOGY AND MEDICINE

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Based on the work in progress within the research project *Engineering the Anthropocene: Colonial Science, Technology and Medicine and the changing of the African landscape* (PTDC/IVC-HFC/6789/2014), for short *Anthropolands*, we propose to discuss *if* and *how* is it possible to use the concept of Anthropocene as an historical and analytical category that allow for new avenues in exploring the role of colonial science, technology and medicine in the re-making of the African landscape.

We argue that the exploitation of colonial resources in the 19th and 20th centuries is critical to understand and discuss, from an historical perspective, the concept of Anthropocene. We propose to analyse this process through the lens of the history of science, technology and medicine by following the changes in the natural and human landscapes imposed by the so-called “technologies of the land” and “technologies of the state” (Hecht, 2001).

We aim at discussing how European colonial science, technology and medicine anchored a new global epistemology based on the Baconian idea of progress and growth that profoundly changed the very concept of ecology, both in colonial and post-colonial periods. This use of science and technology as a *dispositif*, i.e. a heterogeneous ensemble of mechanisms that enforce power over nature, framed by economic and political objectives, is, in our perspective, at the core of the current debates on the Anthropocene.

TRANSLATE DEMOCRATIC INTO DICTATORIAL PERCEPTIONS OF NATURE – THE INFLUENCE OF TVA IN PORTUGUESE PLANS FOR THE USE OF KUNENE AND ZAMBEZI RIVERS IN ANGOLA AND MOZAMBIQUE

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TVA, the Tennessee Valley Authority, was created on May 18, 1933 to provide navigation, flood control, electricity generation, fertilizer manufacturing, and economic development to the Tennessee Valley. TVA was envisioned not only as a provider, but also as a regional economic development agency that would use federal experts and electricity to rapidly modernize the region's economy and society. TVA conceptions of nature, engineering processes and goals were arguably adopted by many national and international authorities around the world throughout the 20th century. Not surprisingly, they also had an

influence in the Portuguese plans for the use of Kunene and Zambezi rivers in Angola and Mozambique. The question envisaged to be answered in this talk is: how did the Portuguese generally adopted those conceptions, processes and goals to be applied in colonial settings, and particularly how did the Portuguese translate TVA democratic principles into dictatorial ones?

ENVIRONMENTAL CONFLICTS AND THE BUILDING OF MEN-NATURE REPRESENTATIONS OF THE PORTUGUESE EUROPEAN IDENTITY

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Throughout the nineteenth century there were built strong images of the Portugal based on the telluric relation of their men, defining their agrarian and mercantile vocation. Portugal, the country of cork, wine, olive oil, sardines, land of seamen, fishermen and peasants, populated with hamlet-crib, small villages that sometimes saw the railway passing by, made of mountains and plains transformed by harsh work, one bucolic country, away from the gray and bumpy landscape that marked the industrial regions of Europe.

This paper shows how environmental conflicts provides a privileged perspective not only about competitive visions on the appropriation and use of natural resources, and about irreversible processes of transformation of the environment, but also contribute to questioning contemporary representations and nationalist identity constructions of one country. Based on recent contributions, this study identified a diverse set of conflicts resulting from the expansion of extraction from the second half of the 19th century in Portugal, with special emphasis on the mining industry. The environmental dimension, of a conflictual, anti-industrialist nature, is explored to approach the genesis of nationalist traditionalism by some elite groups from the late 19th century.

SESSION 9

Chair: Paulo Guimarães

ASSESSMENT TO NEGOTIATE CULTURAL ECOSYSTEM SERVICES OF PLACES

Christine Rottenbacher

HISTORICAL DISCOURSES AND POLICIES IN THE AMAZONIAN REGION IN BRAZIL: 50 YEARS OF AMBIGUITY BETWEEN DISCOURSE AND PRAXIS

Francisco Junqueira Dausacker Bidone

PROTECTION OF CULTURAL HERITAGE THROUGH NATURE PROTECTION – RECOGNISED PRACTISE OR REVOLUTIONARY CONCEPT?

Peter Strasser

ASSESSMENT TO NEGOTIATE CULTURAL ECOSYSTEM SERVICES OF PLACES

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As a landscape architect I developed an assessment method (Moved Planning Process MPP) to negotiate the use and maintenance of places that build our cultural landscapes. Therein I work with the attachment to place humans experience and express within a public participation process. We start with sensing and reflecting qualities of places and with an exchange about meaning of places. Cultural ecosystem services can be identified together and the ongoing negotiation about the use and maintenance of land is supported by the dynamic of shared experienced place relationships.

Cultural ecosystem services can range from recreation, experiencing relaxation, and even spiritual qualities, to everyday work activities in the landscape. This includes the construction of meanings of place and of the effect that humans agree to a shared identity of place. Concepts like territory concepts (Janz), perception and action concepts (Maturana, Varela, Kepner, Goldstein, Damasio) as well as phenomenological insights (Merleau-Ponty, Casey) need to be integrated into the assessment method. Places get meanings, which are defined by relationships. These relationships are expressed within the special social context, and influenced by personal and shared experiences and knowledge (“here and now” within the assessment). The naming of the qualities of place takes a big part - related to the visible particulars of local topographies, the biographical associations, and the socially given systems. In repeated contacts with places the relationships of the humans within the social-natural context can be strengthened. I would like to show how these relationships can grow to a shared reality, a construction of the past as “what happened here?”, and lead to a reflection of maintaining habits. As social identities are situated in place and landscape, this can contribute to negotiating the use and maintenance for the future.

HISTORICAL DISCOURSES AND POLICIES IN THE AMAZONIAN REGION IN BRAZIL: 50 YEARS OF AMBIGUITY BETWEEN DISCOURSE AND PRAXIS

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This paper explores a historic contextualization upon development policies in the Amazonian region of Brazil. From the 1960's to the present day, epistemological evolution and of political thinking have sustained different proposals for framing both the region's problematics and their consequent proposals for solution. The latter, brought forth mostly through induced state planning. This way, the Amazonian territory has been subject to a variety of spatial interventions who have made their work upon the complexity of its land and people. Hence, the region has still not been led towards a pattern of “sustainable sound development”.

Based on a post-normal science approach, we have analyzed and coded the most relevant Brazilian development plans, programs, projects and policies directed for the region since the late 1960's. From the military government's development plans such as the 1970's *Plano Nacional de Desenvolvimento (I, II and III)* or the 1981's conception of the *Política Nacional de Meio Ambiente*, to the recent *Plano Amazônia Sustentável - 2008*. By doing so, we have pointed out the most relevant aspects in discourses present within these Brazilian state documents. In addition, we cross-checked their narratives with: (i) the historical context referenced with each document; (ii) the contemporaneous epistemologies in economy and social/political thinking as well as (iii) the social and environmental indicators.

We have attempted to build a coherent relation between economic/development thinking and the instruments chosen for policy implementation. As well as a brief view of their reflections on land use and social welfare. Results help us shed some light on the who's and how's behind policy. Therefore, providing a further comprehension upon the complexities that involve policy making for the region. This might be useful for the future conception of alternative paradigms in policy designed for the Amazon.

PROTECTION OF CULTURAL HERITAGE THROUGH NATURE PROTECTION – RECOGNISED PRACTISE OR REVOLUTIONARY CONCEPT?

Peter Strasser

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The World Heritage Convention (“Convention concerning the Protection of the World Cultural and Natural Heritage”, 1972) on the one hand stipulates the promotion of a holistic view on culture and nature, on the other hand the Convention sets clear differences between cultural- and natural heritage: definitions and management concepts including evaluation- and monitoring procedures follow different approaches. Differences in protection concepts, zoning and size of protected areas (which are inscribed in the World Heritage List) and in the institutions involved (ICOMOS for cultural sites, IUCN for natural property) do not allow to mix or even to merge culture and nature.

Recently in the “world of World Heritage” demands were raised that even in the field of heritage management nature and culture should not be considered any more as antagonists or even as “enemies”; no, through an overall management nature and culture should interact, form an entity and contribute more efficiently to “a better world”.

This holistic approach was considerable influenced by the development of the category of “cultural landscape” which since 1992 forms part of the World Cultural Heritage typology. The inclusion of cultural landscapes in the World Heritage List showed clear evidence that the protection of cultural landscapes through implementation of cultural heritage protection instruments merely do not show appropriate results; a wider approach encompassing culture and nature is necessary.

My contribution deals with the question if and how instruments for the protection of nature can assist to the protection of cultural heritage. More specific, can large protected areas like national parks and biosphere reserves contribute efficiently to the protection of cultural heritage located within these areas? Are these nature-protection-instruments already implemented for cultural heritage or is there further need to investigate in the more holistic approach linking nature and culture?

SESSION 10

Chair: Ana Cristina Roque

TAKING ADVANTAGE OF ENVIRONMENT: HORTICULTURAL PRACTICES IN ALGARVE UNTIL THE NINETEENTH-CENTURY

Ana Duarte Rodrigues

THE BRAZILIAN NATURE AND THE LOCAL PRODUCTION OF KNOWLEDGE IN THE SECOND HALF OF THE EIGHTEENTH CENTURY

Gisele Cristina da Conceição

HISTORY AND NATURE IN THE COLONIAL AMAZON: ANIMALS AND PLANTS IN THE CONQUEST OF THE NEW WORLD

Wesley Oliveira Kettle

SILENT PASSENGERS – ON THE LONG DISTANCE TRANSPORTATION OF PLANTS ACROSS OCEANS IN THE ERA OF NAVIGATIONS

Manuel Miranda Fernandes

TAKING ADVANTAGE OF ENVIRONMENT: HORTICULTURAL PRACTICES IN ALGARVE UNTIL THE NINETEENTH-CENTURY

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The lack of sustainability of Algarvean landscape is a reality in present times. Therefore, it seems very urgent to take into consideration lessons from the past. I argue that traditional horticultural practices in the Algarve can provide insights for different ethics, resilience, techniques and methods as they were well adapted to the environment. Nevertheless, traditional horticultural practices did not get much attention from the history of science and technology. Furthermore, documents with such detailed information on the horticultural practices undertaken in Algarve between the sixteenth to the nineteenth-century, were also unknown. By drawing mainly on nineteenth-century unpublished documents, this paper attempts to reconstruct both the methods and theoretical underpinnings of these practices. It examines how Algarvean farmers used fish waste to manure and had the costume of feeding the cattle with sardines when scarce pastures. Perfectly adapted to the environment, when scarce pastures in coastal areas, they used sea plants and algae mixed with fish manure to fertilize vineyards. In the poor lands of Barrocal when it was necessary to muck the vineyards, they planted manures of rye seed or lupine and buried the harvest at the time of digging at large. I argue that adaptability of horticultural practices in Algarve, was primarily a response to the multiplicity of objectives that a farmer had to meet. It therefore reflected the wise approach to the stewardship of land and the region's resources, in which natural manures could not easily be replaced by chemical products – already available in the nineteenth century. In conclusion, this case-study shows the benefits of taking advantage of the environment instead of fighting against it.

THE BRAZILIAN NATURE AND THE LOCAL PRODUCTION OF KNOWLEDGE IN THE SECOND HALF OF THE EIGHTEENTH CENTURY

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During the second half of the eighteenth century, within the complex of agents that produced works about Brazilian nature, the military can be placed with those who, quantitatively, produced a significant volume of work. Perhaps because they were related with a social extract that kept them connected with political and strategic issues, and enabled contact with the State incentive policies, or because they were trained in specific elements such as drawing techniques and Natural History, which enabled them to develop works of investigation of the colonial natural potentialities.

In this panorama, in which a wide range of agents, linked or not to the Crown, were inserted in the context of ascertaining the natural potentialities and the construction of philosophical-natural knowledge about Brazil, those military configured as examples concerning the production of natural-philosophical works.

In this paper, my focus is to analyze the works of Domingos Alves Branco Muniz Barreto about medicinal plants from Bahia, which represents the production of natural philosophical knowledge about Brazil. Thereunto, I start with some questions: What would be a useful knowledge or work in Domingos Alves Branco Muniz Barreto's conception? How the work should be produced? For who? For what purpose? These were probably questions asked by Muniz Barreto himself when he began his research. Throughout his work, he sought to answer them, providing his readers more than just knowledge about medicinal plants. The process he used to fulfill this object will be precisely my focus on this paper.

HISTORY AND NATURE IN THE COLONIAL AMAZON: ANIMALS AND PLANTS IN THE CONQUEST OF THE NEW WORLD

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The primary object of this work is the study of the reports prepared by scientists, colonial administrators and missionaries that travelled through the Amazon Valley during the second half of the eighteenth century as part of the demarcation of boundaries. From the perspective of environmental history, this work analyzes these visions of Nature as an extension of the actual experiences of these reporters in the Amazon Valley. Thus, the descriptions in the reports are the result of the interaction of the authors themselves with the natural world of the Amazon, showing that this knowledge was not solely produced through the determination of the Portuguese government. The work also aims to present Nature in the Amazon Valley as an element capable of generating alterations in the process of the Portuguese occupation of the Valley, modifying the plans of the Crown agents, refusing to regard it as a static and passive scenario under human interference. In this manner, the study shows that life as lived in the Valley was a determinative factor in the elaboration of reports about Nature during the demarcations. I will present how plants and animals were part of the project of Portuguese occupation in America, without neglecting how the different characters involved related to the natural world, such as indigenous and African blacks.

SILENT PASSENGERS – ON THE LONG DISTANCE TRANSPORTATION OF PLANTS ACROSS OCEANS IN THE ERA OF NAVIGATIONS

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Long before the well-known mutiny aboard the HMS «Bounty», in the late 18th century, motivated by the transference of breadfruit from Tahiti to the Caribbean for slave nourishment, the transoceanic transportation of plants was already a regular practice. At least since the end of the 15th century, plants native to the New World were being transferred to other continents (and vice versa) along the expanding network of Portuguese and Spanish sailing routes, followed by Dutch, French and English navigations. Beginning as a sort of side-effect of the spices trade, this influx was fuelled by curiosity and by the ornamental, medicinal or food potential of exquisite plants, besides other trade possibilities. Introduction into new geographic regions, if successful, promoted changes in cultural practices and contributed to the transformation of landscapes in the long term.

The logistics of this process is of course a key factor to its achievement. The way these silent passengers – such as seeds, rhizomes, tubers, bulbs and saplings – had to be packaged aboard and kept alive during long maritime journeys was a problem to be solved by a trial and error approach. Shipped together with plant loads, handwritten *Instructions* were important to help the plants arriving in suitable conditions, but from the mid-17th century onwards comprehensive printed instructions also appeared, namely those of Boyle, Duhamel du Monceau, James Petiver, John Ellis, John C. Lettsom or João de Loureiro.

The aim of this presentation is to critically review some prominent examples of transoceanic plant transfer, highlighting the practical organization and other conditions required for its success. A reference is made to a Natural History experiment held in 2015 aboard the NTM «Creoula», involving the exchange of selected plants between the Botanical Gardens of Porto and Funchal, during the 10th campaign of the Itinerant University of the Sea.

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CONFERENCE - MONSTERS? WHAT MONSTERS? -- NATURAL HISTORY IS NORMAL HISTORY"

Henrique Leitão

MONSTERS? WHAT MONSTERS? – NATURAL HISTORY IS NORMAL HISTORY

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An abundant mass of historical studies insists on the fact that the medieval and early modern european imagination was fascinated with monsters and the monstrous in nature. Indeed, monsters and the abnormal figure prominently in many narratives and in many books describing natural phenomena in this period. Historians have payed close attention to this fact and attempted interpretations of the role played by the extraordinary and the monstrous in early modern discourse about nature. Yet, when one reads the first reports of Europeans reaching new lands in the Americas, India or Asia, in the fifteenth and sixteenth centuries, one is immediately struck by the fact that monsters seem to be nearly absent. When they do appear their role is nearly always quite marginal and never the axis of the narrative flow. In marked contrast with literature that circulated in Europe, the first europeans that actually went to and saw the new places appear to be surprisingly uninterested in monsters, real or imagined. In fact, travelers attempting a description of the new lands seem to have faced quite the opposite problem: how to describe “normalcy” in the newly observed nature? How to convey the coherence and the stability of new natural scenarios, where animals and plants, although sometimes exotic and quite different from the ones in Europe, were, in a deep sense, very “normal”?

PROJECT PRESENTATION

(POSTER SESSION)

FLUL, 16 March, Room 5.2.

LISBON STORIES – A MULTIDISCIPLINARY PROJECT TO REBUILT THE HISTORY OF THE NORTHERN TAGUS MARGIN OVER TIME BASED ON SEDIMENTOLOGICAL ANALYSES RECOVERED IN ARCHAEOLOGICAL RIVERINE SITES

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Since the Iron Age the Lisbon city center has been continuously occupied leaving behind remnants of the developed activities. Particularly in the riverine Tagus margin several archaeological findings show evidence of a strong relationship between people and the river and of high fluvial and maritime activities. Over time several landfilling episodes occurred in order to conquer utility area to the river and the leftovers of the margin usage were covered and remained at their burial place.

A major reorganization of Lisbon is happening nowadays and the northern Tagus margin is being the target of several major constructions. Subterranean parking lots are projected in the new buildings and new archaeological sites are being found. These archaeological sites reinforce the strong relation of the Lisbon population with the river/sea and of ancient exchanges with foreign societies. Lawfully the archaeological findings are registered, excavated and studied, but until a few years ago, the surrounding sediments – which wrap up, preserve and share the history of the vestiges – were neglected. The sediment encloses the information about the environmental evolution of the northern Tagus margin and also the relation of the people with the river over time.

Lisbon stories is a project who aims to fill this lack. Since 2011 sediment samples are being collected in several archaeological sites found during salvage excavations in the riverine area. Until now 13 construction sites (between Belém and Jardim do Tabaco) with archaeological findings were sampled in collaboration with diverse archaeological entities and with the Lisbon Municipality.

From the collected samples, data from EDP1 core recovered near Cais do Sodré was already published. Within the sediments from this area imprints of high-energy events from the 18th century were found. This is a *fragment* of the history of Lisbon that contributes to the environmental reconstruction of the Tagus margin.

FROM TRAVELERS, NATURE AND WATER IN SOUTHERN AFRICA - APPRAISAL OF THE CONTRIBUTION OF THE 16TH CENTURY PORTUGUESE RECORDS

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This poster-presentation addresses the discussion on the relevance of collecting historical information about water resources and water availability in Southern Africa in the 16th century, as well as on the ways

to approach and use this information to contribute for a better understanding and framing of the water problem in this region. It is intended to make known the main topics to be developed within the scope of a project on the identification, inventory, organization and study of the Portuguese historical documentary sources on water resources in Southern Africa.

Portuguese records, will be used to draw attention to the potential of the information they provide for a possible mapping of regional water reserves and, consequently, its role as a relevant source for both a research focused on the knowledge of the regional water resources and on the environmental history of the African continent, as well as for an investigation focused primarily on the history of water.

BEAUTIFUL PETS, MENAGERIES AND EXTINCTION: THE CASE OF THE GOLDEN LION TAMARIN (*LEONTOPITHECUS ROSALIA*) FROM THE 16TH CENTURY UNTIL NOW

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In the last decades of the 20th century the international scientific community was highly concerned about the rapid decline of the Golden Lion Tamarin, a small non-human primate endemic of the State of Rio de Janeiro (BR). This primate, known everywhere for his beauty and considered a symbolic animal of the Brazilian Atlantic Forest, was at the brink of the extinction, having at that time few hundreds of estimated individuals left in an extremely restricted and degraded habitat. The primatological communities and in particular the Brazilian one represented by Dr. Ademar Coimbra-Filho, began a project of captive breeding and reintroduction which, involved the international scientific communities and many important institutions (e.g. The Smithsonian Institution). Today after many decades of conservation initiatives the situation seems to be improving, but this species is still listed as Endangered (cf. IUCN Red List, 2016). The major threats, include habitat loss and limited possibilities for growth in the few fragmented and degraded forests along with a capture for pets and trade. Actually this last practice began some centuries ago when the Golden Lion Tamarin was described for the first time as “a beautiful yellow cat” by the Italian navigator Antonio Pigafetta landed on Rio de Janeiro shore in 1519. This paper aims to describe the case and fate of one of the most beautiful and sought after New World primates. From the 16th century *L. rosalia* began to be traded and taken in great quantity from the wild by European navigators and merchants who sold it as precious pet in Renaissance Europe (see Papavero and Teixeira, 2009; Veracini, 2011; 2017). The popularity of this small primate continued to grow in the successive centuries, as testifies by iconographic and historical sources, although it was well known that: “this animal is so much affected by the ungenial climate of Europe” (William Swainson, 1838). Many specimens also enriched the collections of natural history museums all over the world, and in the last century, *L. rosalia* was exhibited in most of the zoological parks and traded in great quantity as pets. The case of the Golden Lion Tamarin similar to other primates of the Atlantic Forest which have a small geographical range, shows how the contemporary issues coupled with historical issues can be very important in damaging primate populations.

CONNECTED MARGINS AND DISCONNECTED KNOWLEDGE: EXOTIC MARINE MAMMALS IN THE MAKING OF EARLY MODERN EUROPEAN NATURAL HISTORY

Cristina Brito



Most of the early modern accounts about exotic fauna, for the Portuguese Atlantic, did not enter the European natural history treaties and encyclopaedia. Several 15th and 16th centuries Overseas' new observations from the natural world are not included – and this is particularly true for exotic marine animals. While some African and Brazilian terrestrial animals and birds are comprised in the works of several European authors, the only two marine mammals that are mentioned (and sometimes repeated) are Gândavo's sea monster – the Tupi *igpupiára* – and the manatee – the Tupi *igoarágoa* or the Kikongo *ngulu-maza*. Authors such as Belon, Rondelet, Paré, Gesner, Aldrovandi did not include Portuguese early modern sources, quotations or authors' references in their works, when referring to marine mammals. For instance, Anchieta, Léry, Cardim, Gândavo or Lisboa, are not mentioned. With a couple of noticeable exceptions, European naturalists relied essentially on Classical authors to describe marine species and in some cases made use of contemporary examples from European occurrences, or some new information gathered through their networks of collectors and naturalists, to add some originality. On the contrary, authors travelling the Atlantic relied on empirical information gathered by themselves or obtained through circles of contact regarding information from the overseas. Mermaids, manatees, and hybrid representations of these marine beings offer a case for debating the production and circulation of information for a history of exotic natural history, patterns of knowledge evolution and key actors. I intend to discuss, based on written and visual sources, the construction and transfer of the well-established knowledge about mermaids as real elements of the old and new natural marine world in comparison to the slow development of natural knowledge related to manatees in Europe. This will allow to establish a long-term chronology of marine knowledge production and circulation and to compare it with the persistence and relevance of monsters from the sea, during early modern Europe and Atlantic.

FROM FIELD WORK TO BOOKS. THE CIRCULATION OF THE NOVELTIES COLLECTED BY THE PORTUGUESE IMPERIAL AGENTS IN EARLY MODERN BOTANICAL TREATISES

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Since Antiquity, Eastern spices and drugs have been prized for their pleasant smell and therapeutic properties. To increase the value of these products, medieval merchants created myths about the qualities and origins of these preciosities.

During the sixteenth century, the Portuguese imperial agents conducted an extensive information-gathering about the Asian natural resources. The exchange of letters and reports between Portuguese governors, royal officers, missionaries, pharmacists, physicians and travelers allowed the accumulation of renewed information about the Asian nature. Keen observers of the natural world, wise witnesses of local knowledge, these men identified the regions of origin of the most valuable spices and drugs, their habitats, culture and local uses.

In this essay, I will focus my attention on some Portuguese reports. I will shortly discuss the impact of their innovative approach to Asian nature in the construction of a new botanical knowledge in Early Modern Europe.

THE CLIMATE CHANGE IMPACT ON ARCHEOLOGICAL AND CULTURAL HERITAGE

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Climate change is a reality. The changes that humans have made to the planet in the last 100 years have had a huge impact on many ecological systems. One of the major impact can be observed in the rising of sea level. The rise of the level of seas can have dramatic effects on coastal archaeological and cultural heritage. Fluctuations and shifts in temperature, rainfalls, mean global sea level raising will have adverse impacts on the natural and built landscapes on the coastal lines.

Currently, the Portuguese coastal zone is strongly affected by erosion in association with an important sedimentary deficiency, which was initiated around the beginning of the 20th century, and became strongly enhanced after the 1930s-1940s. These factors will have dramatic effects on the stability of the historic structures. The aim of this work is to study all the archeological and cultural heritages in Portugal, including the quantification of the shoreline evolution of the coastal stretch and the evaluation preservation/conservation options for the ancient settlements, in order to create an up-to-date electronic catalogue to enable remote access to them through the web. Here, some preliminary results of a first census are presented.

The main cultural and archaeological sites are located at the coastal stretch of Boca do Rio, western Algarve (e.g. the Boca do Rio beach has a collection of Roman ruins), at the Mondego river, Coimbra (e.g. Convento de Santa Clara-a-velha), at the Sado river, northwest of Tróia peninsula, Grândola (e.g. Roman ruins, classified as national heritage) and at the of sea shore, in Matosinhos (e.g. the Angeiras beach of Roman ruins).

SOME OBSERVATIONS REGARDING THE ALGERIAN OASIAN COMMUNITIES AS AN ECOSYSTEMIC MATRIX AND MODEL (19TH-20TH CENTURIES)

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In this paper, centered on the Algerian oasian communities as an ecosystemic matrix and model observed in a globalized world, the new paradigm of water cultures will be analyzed on a multidisciplinary perspective.

We shall identify the role of the research on the social management of the water (or the relation between water and society) through specific languages focused on oasian environments, as a singular construction that has been read, researched and observed through several matrices that cross the (now called) traditional knowledge, the eco-history and the post-colonial studies.

Regarding their historical process, the different constellations of Algerian oases were built as communities that framed political domains and powers that subjected or even asphyxiated them (following a Saint-Simonian vision of progress), namely, its environmental value, in a geo-historical context of arid and semi-arid environments.

Scientific communities, along with observatories (notably in the Maghreb) have developed a reference framework for material and immaterial cultures of water, soil and food, inscribed on an oasian matrix, understood not as an immutable model, corresponding to an ideal ecosystem, but structured through the convergence of the studies of eco-history and ethno-technology, among others, signaling the

microcosmic production systems and the sustainability of the oasian institutions, in a temporal register of sustainability.

WATER IN AMERINDIAN CIVILIZATIONS: MYTHS, RITUALS AND SCIENCE

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The modern Man has replaced the old beliefs and traditional knowledge, by faith in science and technology, and in the minds of people a new belief took place: the idea of progress as a continuous increase, development and welfare.

The deep knowledge and respect that the Amerindian cultures had about nature and in particular about water, which is expressed: in the integrated management of the resource, in the development of appropriate technologies and in the existence of forms of social organization, allowed the emergence of societies well adapted to diverse ecological contexts.

From this ancestral knowledge we can infer the causes of the current environmental disaster of the contemporary societies and the loss of common goods essential for life, a consequence of the hegemony and cult of "modern" technology as a unique solution for water management. In particular, the fragmentation of the sociocultural matrix of water, which undermines the holistic vision, privileging the privatization of a common good in a scenario of globalization by submitting the cultural to the economic dimension.

Amerindian people believe everything constitutes a unit formed by the stars, the sun, the moon, the humans, the trees, the animals, the mountains, the rivers, the rocks, ... All these elements are in a constant and permanent relationship. Consequently to maintain harmony in man's relationship with nature, a constant dialogue is needed between all elements of nature and man. The foundation of this dialogue was reciprocity. If I want the nature to behave with me. I must be good with nature. If I miss this duty, nature will rebel against me and therefore all kinds of disasters and misfortunes occur. This thought summarizes the worldview of the Amerindian cultures.

NOW AND THEN, MANAGEMENT RESULTS FROM EXPLOITATION: THE CASE OF EARLY MODERN WHALING IN BRAZIL

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Marine animals and their products abound in the historical sources of the Portuguese Expansion, from marine shells to hippopotamus of the African coast, to the ox-fish of the Amazon or the whale throughout the Sea Ocean. From currency trading to butter and oil, those animals were soon seen as valuable resources to the Portuguese crown, not only in the establishment of the empire overseas as also within Atlantic trading dynamics. Some of them were part of the exotic world, used by natives and completely unknown to European eyes, as for instances the manatee, others were not new *per se* but their abundance was, as the whale. In the case of whaling in Brazilian waters - today known as breeding areas for some species -, the commercial exploitation started at least in the beginning of the 17th century in numbers of captured animals that have not yet been determined. The activity was a royal monopoly from 1614 to 1801, and old practices of an indiscriminate hunt, as the killing of calves and females, are

pointed as one of the major reasons for the decline of the activity success and profit. Some economic reports and memories, focused on the economic value of the whales, offer interesting insights to rebuild a trajectory of change towards whales use. Having as a starting point that the relation between whales and humans is marked by ambiguous perceptions since immemorial to present times, the study of whaling and the economic, cultural and scientific values of this animal can largely contribute to understand how marine environments and animals were interpreted and handled over time. Ultimately can also foment the discussion on how ecosystems, populations and species are being perceived nowadays and what are the impacts of the human dominance over nature.