



## What Future without Nature? How Natural History Could Help

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### Introduction

For several decades, Earth has been facing one of the greatest changes of climate, environments, and life since the Paleozoic. These changes are much more rapid than any other changes, which happened in geological times. They are such that today they induce consequences on our own life. The two central questions are therefore: What kind of relationship do human beings have with the rest of the planet? How can they inhabit the Earth in a more sustainable way?

These questions are central for natural history museums such that they can no longer limit themselves to conventional presentations of nature and its evolution across time in nice galleries. A great natural history museum in the 21st century needs to be committed in the debates; it needs to shed the light of science on complex topics at the intersection of natural history and social sciences. Natural history knowledge and concepts are of great help to address these topics.

### Where museums stand

To contribute to solving environmental questions in their social framework, the Muséum national d'Histoire naturelle in France seeks to strengthen its place and role in the society by being involved in different ways in the public debates. Great temporary exhibitions such as «Us and the others: prejudices and racism» (2017) and «The human rights season» (2018) are of course necessary, but they do not stay long enough and must be complemented by other actions. This is why the Muséum has decided to publish manifestos. Once a year, manifestos are issued to offer scientific facts in a short, efficient format, about a hot topic at the science-society interface. They are not made to dictate anyone's opinion or metaphysical option, but to nurture citizens who would like to take science into account when constructing their own opinion. Their legitimacy comes from the fact that the knowledge about the real world (humans included) that museums produce and share is scientifically based and can be regarded as a public good. Today, museums in general, and the French Muséum in particular, are facing big challenges that the manifestos could help to tackle.

### Facing challenges

The first of them is the environmental challenge. Little by little, protected areas are cut back or downgraded (Golden-Kroner et al., 2019), while the protection of endangered species remains a pure wish or is limited to the commitment of courageous advocates (Abbadie et al., 2017). All recent indicators show that, even more so than climate change, the loss of natural diversity, that is the final extinction of living populations or species (Tilman et al., 2017; Li et al., 2016), the vanishing of entire ecosystems and remarkable natural spaces, is accelerating at a worrisome pace, to the point that the term Anthropocene has been coined to describe this time in history. The trend even touches the human species (with loss of cultural diversity) and is linked primarily to changes we have made to the environment for our survival. It still may be possible to slow the process, but this implies major efforts in education and training. In addition, reversing the trend would require an enabling social context. The questions that are arising today will be asked all the more acutely: What should we protect? Must we protect at all costs? What does it mean to protect species and natural areas when human demand for space and resources is growing? Why should we protect: for selfish economic or survival purposes, for the beauty of nature, for ethical reasons? As pointed out by the International Union for Conservation of Nature (IUCN), the protection of the environment is a prerequisite for economic prosperity and peace. The world must propel energetic and ecological transitions to avoid environmentally and socially risky disequilibria.

Another challenge is the cultural one. At a time in which the American President has decided to withdraw the United States from the Paris Climate Agreement and when sciences are obstinately challenged by obscurantism of every kind, there is no denying it: We have entered a "post-truth" era, with ramifications extending to numerous countries and to the most diverse social categories. This waning of scientific discourse in the public opinion coincides with the emergence of global scepticism. Modern tools used by social networks and media, web-based navigation and publication, and common confusion between the claim for equality in freedom of opinion and equality in legitimacy amplify this (Bronner, 2013; Drummond & Fischhoff, 2017). To halt the spread of relativist approaches and to curtail the sometimes tempting albeit unjustified suspicion of

science, natural history provides an invaluable framework (Abbadie et al., 2017). We need to get back to more rationality, and to escape a system in which all claims are regarded as equivalent. They are not. If you need bowel surgery, you will not consider the opinion of your surgeon as equivalent to that of your plumber, even if in both cases it is a matter of tubes. We must behave the same way regarding mineralogy, botany, ecology, and all other natural sciences: People have legitimate feelings and opinions toward Nature – and they are free to express them – however, their legitimacy about facts cannot be regarded as equal to facts emerging from these sciences.

Museums need to work toward making the sciences, and natural history in particular, a part of general culture (albeit this has long been the case in many European countries, especially in the North). It is urgent to expand the relatively narrow scope of knowledge and human activities that are considered “cultural”, namely the creative arts, painting, music, theatre, cinema and literature. Indeed, citizens would be reluctant to change their way of life on the sole base of technical claims given by “specialists”. Pedagogy and shared knowledge are crucial to convince people to preserve the future of Earth in a democratic context, and museums are central in this approach.

A third challenge is ethical. Humanity and societies cannot face the environmental challenge without philosophical considerations revisiting the notions of limits, private property, public goods sharing, economism, consumerism and all forces that lead humans to destroy their environment. What could be the ethical framework in which a museum promotes the protection of biodiversity, geodiversity and human diversity? Should we protect biodiversity for short-term ecosystem services? Should we protect biodiversity here and now? Should we protect biodiversity for itself, that is, preserving its evolutionary potential (Sarrazin & Lecomte, 2016; Chan et al., 2016)?

### **Breaking limits**

We will be unable to tackle the environmental challenge without breaking several limits that are consubstantial of what we are: our life span, our size, our ability to move... Natural history makes it possible to break through limits of time, space, and size, to trace back and understand the history of Earth and of life, to inventory biodiversity across the planet from the highest mountains to the depths of the seas, to take into account the smallest forms of life, to analyze the complexity of the ecosystems, to understand how the living world evolves, and to identify the place of humankind on the planet. This list means that we collectively need to be able to deal with scales that are far beyond those of our current lives. Regarding time, we need to see ahead and foresee long-term trends in our relationship with the physical and living environments. To comprehend fields as different as the epidemiology of infectious diseases, the acclimation of organisms to new conditions, the adaptation of populations to climate change, the impact of genetically modified organisms on wild biodiversity, or the course of evolution, notions of temporality must be brought into the equation. Yet understanding how different timescales are nested within one another is often difficult for the public and for many decision-makers, and even for researchers from other fields. In this sense, natural history can shed light on the historical dimension and complexity of the processes shaping life on Earth.

### **Rooting humans in nature**

To efficiently face both environmental and ethical challenges together, natural history’s capital role – and no doubt the most difficult to achieve – is to contribute to raising awareness about humankind’s place in nature. The time of a human/nature dualism is over. Natural history roots humans in the natural world and prompts us to think about where we stand within it, rather than against it. That is why the most conservative special interest groups are opposed to it. Natural history explains the biological world through its evolution. The human species is also explained by its natural origins, as a species among others: It comes from another species, it is only 300,000 years old, and surely will disappear.

Humans are, more than ever, implicated in natural dynamics, including those that are underway and that contribute to transforming the planet, up to trying to change the evolution of life, including their own evolution, thereby creating the very conditions that confront them with certain options. It is therefore important to make sure these options find their legitimacy from scenarios in the past, from the current state of the real world and from rational forecasting. Yet this is not just a matter of natural history: This foundation must be established simultaneously with economic and social approaches.

### **Society and science**

As a discipline based on observation, natural history imparts respect for facts and the rejection of dogmatism (Lecointre, 2018). It is a school of realism and of humility. It impels the “naturalist” to build on validated knowledge that is destined to become a common good. Founded on rationality, it should contribute to restoring the public’s trust in scientific messages, a trust that is indispensable for any democracy that would look ahead to the long-term horizon, and that is especially crucial when it comes to environmental issues. Natural history

thereby contributes to cultivating ethical principles that provide guidelines for human conduct at individual and collective levels.

Natural history's reconquest of the cultural sphere obviously requires lasting support from our institutions, but it is also a matter of mobilizing amateur naturalists, NGOs, citizen science programs, the school system and innovative measures for dissemination. This trend, already underway thanks to the media, remains timid. The dissemination of natural history now requires increasing the usage of modern communications tools and social networks, but also a solid scientific guarantee. Initiatives should aim to reach broad publics through talks and conferences outside of institutions they never attend. Most importantly, we would like to see this scientific culture make it through the doors of the institutions that shape our elite political or business leaders.

More generally, natural history has to provide a critical view on various positions, which are not compatible with science: either in the way they are constructed (e.g. naive reductionism), or because they are based on misconceptions or fakes (e.g. creationism, racism), or because they rely on incompatible philosophical grounds (e.g. essentialism, anthropocentrism), or because they are not compatible with an ethic for the planet (e.g. consumerism, ignorance of limits).

### **An ethic for the planet**

Natural history has the tools and landmarks to promote an ethic for the planet that is oriented toward its long-term preservation (Sarrazin & Lecomte, 2016). In other words, if we have good reasons to preserve a given species or a given environment, natural history has the power to indicate how to preserve its evolutionary potential beyond human needs. To go further, natural history could contribute to elaborate an ethic for the planet that is fully oriented toward preservation of a long-term evolutionary potential of the interrelationships between abiotic constraints, biodiversity and human societies (Sarrazin & Lecomte, 2016; Chan et al., 2016).

Above all, the reasonable and ethically responsible management of quantitative limits attributed to our own species remains the key to a desirable future. It is at this cost that we might eventually be able to restore, over the course of the century, a new, sustainable interaction in which humans, while retaining the benefits of their own production and no doubt increasing them, will be able to reposition themselves as part of nature in a less conquering manner. New pages could then be added to natural history, which could become a "natural civil code", a non-aggression or at least a compromise pact in a way similar to those resulting from evolutionary stabilizing processes in the numerous species of any ecosystem.

### **To conclude**

Understanding the world and its history to better anticipate its future and discerning what "piece of cake" humans can keep for themselves without seriously undermining their own recourse to the various resources derived from the non-human world, such is the essential role of natural history today. Yet this approach does not imply an isolated, unequivocal vision. It involves ongoing interactions with other forms of human activity that participate in the growth of knowledge and our capacity to forecast the long term: natural history and museums contribute to our grasp of complexity. In this, Europe's historic role in structuring natural history should extend its pursuit of universality. At several points in the past, natural history has played a major role, contributing to build up the way societies installed themselves in the world around them and evolved. Now, in the early 21st century, it is important to be able to handle scales of time and space that surpass those of our daily lives and to consider how natural history can help the public in an unstable world that is at times shaken by demands laced with sectarianism and intolerance. This will be done with a wide and long-term view allowing for an ethic for the planet based on the preservation of the evolutionary potential of the relationships between the physical-mineral world, biodiversity, and human societies in their diversity.

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#### **END NOTES**

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