

Scientists moving between narratives towards an ecological vision

The “Cammino of Feudozzo” (CaFe) experience

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Abstract. *Starting from reflections on crises in science and society (Benessia and Funtowicz, 2013; Guimaraes Pereira and Funtowicz, 2015; Benessia et al., 2016) and on the role and responsibility of researchers in a context where calls for a greater public engagement in the process of knowledge building have increased (Owen et al., 2012 Davies, 2014), this editorial describes the experience, called “Cammino of Feudozzo” (CaFe), conceived and carried out within the framework of the Italian Long-Term Ecological Research network*



(LTER-Italy). CaFe is strictly connected with the informal and itinerant science communication initiative called "Cammini LTER", a series of trails (Cammini in Italian) followed since 2015 by LTER researchers, of which it maintains the name and the main vision. In particular, the researchers aimed at critically reflecting on whether and how different ways of understanding and describing the natural environment can have a constructive effect on their work and facilitate and reinforce their dialogue with society. We present the theoretical background and themes discussed during CaFe, with the aim of fostering debate among researchers from different disciplines and exploring other forms of description, knowledge, and interpretation of the natural world (e.g., artistic-aesthetic, philosophical, mythical). In this way, we introduce the special issue of *Visions for Sustainability* "Scientists moving between different narratives towards an ecological vision", which is dedicated to the perspectives proposed by the participants in the CaFe experience.

1. Introduction

In recent decades, it has become increasingly clear that environmental and ecological crises and those affecting society, culture, ethics, policy, and economy are closely related (Lubchenko, 1998; Millennium Ecosystem Assessment, 2005; Benessia et al., 2016). In 2010, the Policy Statement adopted by the 3rd World Congress of United Cities and Local Government (UCLG, 2010) updated the Agenda 21 for Sustainable Development (United Nations, 1992), by adding the *cultural* dimension to the three main pillars (economic growth, social inclusion and environmental balance) already defined by the United Nations (UN), in order to adequately reflect the complexity of current society and its economic, climatic and ecological crises (EEA, 2021a). Culture is considered as what "ultimately shapes what we mean by development and determine how people act in the world". The UN Agenda 2030 for Sustainable Development attempts to further integrate in a balanced manner all the various dimensions within 17 [Sustainable Development Goals](#) (SDG), designed to help face the interconnected and systemic crises of society and the environment (EEA, 2021b). The way human societies interact with their environment has consequences not only on ecosystems, but also on socio-cultural systems themselves and on human wellbeing, as well

as that of all other living species. For the purposes of this editorial, we leave aside detailed consideration of the dangers and paradoxes inherent in maintaining an apparently indissoluble link (at least for policy makers!) between sustainability and development and the consequent emphasis on economic growth. Suffice to say that all the crises we face are symptoms of the same problem: our prevalent model of production and consumption, apparently driven by the unique goal of creating a growing economy, independent of nature, which is destabilizing all the ecosystems that sustain life (EEA, 2021 a; EEA, 2021 b; Giampietro, 2021), as demonstrated, for example, by the sixth mass extinction of species and by increasing climate change (IPBES, 2019; IPCC, 2021).

In this context, calls have risen for a cultural shift, open to multi-, inter-, and transdisciplinary¹ approaches to research, and for a greater public engagement by scientists. Researchers are encouraged to go beyond mere knowledge production or the communication of scientific results and to engage in dialogue with a heterogeneity of audiences (Irwin, 2008; Owen et al., 2012; Davies, 2014). The European “Science and/in/with and for society” (SWAFS) Program and the Responsible Research and Innovation (RRI), challenge scientists’ *modus operandi*, asking researchers to do “science with and for society” and to develop a critical “reflexive, anticipatory, responsive and inclusive attitude” considering the potential societal impacts of technoscientific innovation (Owen 2011). Although the new “epistemology of the European identity”, defining the relationship between science, society, and policy (Tallacchini, 2012), requires a full integration of all social actors in the co-construction of knowledge for society, researchers still often consider their public engagement as “peripheral activities” (Glerup, Davies and Horst, 2017), without direct value for them (Meijer et al., 2016). Most researchers often feel “under pressure”, considering themselves scarcely trained or motivated to engage in dialogue outside their disciplinary scientific community (L’Astorina and Di Fiore, 2017; 2018).

However, efforts to respond to transformations taking place in science, society, environment, and culture and to the new roles attributed to all actors are increasing, and scientists are starting to reflect on their research and communication practices, opening up to different visions and narratives (Wittmayer et al., 2019).

¹ “Transdisciplinarity goes a step further. It lays claim not to the cultivation of the various disciplines (multidisciplinarity) but to an opening up to ‘something’ (ineffable and indefinable) that intersects and surpasses each specific discipline” (Panikkar, 2018)

In what follows, we aim to present and discuss a recent experience, called “Cammino of Feudozzo” (CaFe), conceived and carried out within the frame of the Italian Long-Term Ecological Research network (LTER-Italy) (Box 1), with the purpose of fostering debate between researchers from different disciplines and to explore other forms of narration, description, knowledge and interpretation of the natural world (e.g. artistic-aesthetic, philosophical, mythical).

BOX 1 - The LTER Networks

The Italian Long Term Ecological Research Network (LTER-Italy) is one of the 26 national networks of the [European LTER Network](#) (LTER-Europe), which comprises more than 400 research sites. It is also part of the [International LTER Network](#) (ILTER), distributed in 39 countries over five continents. The principal aim of LTER is understanding, analysing and monitoring changes in ecosystem patterns and processes over extended periods of time, typically decades. At LTER sites, approaches and interpretations of on-going ecological processes are developed (Mirtl et al., 2018; Mollenhauer et al., 2018), also with the aim of creating a legacy of well-designed and documented knowledge for future generations.

LTER-Italy network was established in 2006 and currently consists of 79 research sites, organized in 25 parent sites (i.e., made by multiple research sites), managed and coordinated by public research institutions, universities, and environmental agencies. The sites represent the main ecosystem typologies of Italy: they include terrestrial, freshwater, transitional and coastal marine environments, giving the network a marked interdisciplinary brand.

CaFe is strictly connected with the informal and itinerant science communication initiative called "Cammini LTER" (D'Alelio, 2016; Bergami et al., 2018; L'Astorina et al., 2018a; Pugnetti et al., 2019), a series of trails (“Cammini” in Italian) carried out since 2015 by LTER researchers, of which it maintains the name and the main vision (Box 2). In particular, LTER researchers in CaFe aimed at critically reflecting on whether and how different ways of understanding and describing the natural environment can have a constructive effect on their work and facilitate and reinforce their dialogue with society.

BOX 2 - The Cammini initiative

LTER-Italy researchers planned and realized, from 2015 to 2019, the informal science-communication initiative called Cammini (Trails in Italian) LTER (D'Alelio et al., 2016; Bergami et al., 2018; L'Astorina et al., 2018a; Pugnetti et al., 2019). The initial motivation of Cammini LTER was the necessity of raising awareness on ecological issues, making the public more familiar with the different LTER ecosystems and with the LTER vision and aims, and to share the passion that binds the researchers to the objects of their studies. During Cammini, researchers walked, cycled and kayaked along itineraries, which connected two or more LTER sites, creating a physical and visible movement of researchers towards and with citizens, sharing informal events and communication activities, in close relationship and cooperation with the territories crossed, which were quite heterogeneous in size (from big towns to small villages) and audiences (from school children to elderly people, from lay people to territorial managers, such as foresters, ecological and alpine guards, local environmental associations). Thirteen trails were realized in five years and the initiatives realized during the trails covered most of the communication typologies mentioned in the literature (Bergami et al., 2018; L'Astorina et al., 2018b; Pugnetti et al., 2019). Cammini are inspired by an ancient tradition that perceives walking as a privileged way not only to observe the landscape but to access themselves, others and nature from a different perspective (Solnit, 2000), overcoming barriers that we are often unaware of, and reinforcing the connection with the natural environment (Maturana and Varela, 1998; Varela et al., 1991).

In the Cammini, traditional (e.g., press releases, public conferences, tweets and post on the social networks, reports on blogs) and experimental (e.g., sharing of the LTER activities at the sites, with samplings of the different ecosystems' components and microscopy sessions of plankton and benthos) activities were carried out, aiming at highlighting the relevance of LTER in the territories crossed and the role of the institutions involved. Besides more traditional communication initiatives, more participative and inclusive ones were designed and performed, such as citizen science (Criscuolo et al., 2018a, 2018b), Bioblitz (Petriccione, 2018) and the Sea Futuring Tours (L'Astorina et al., 2018c; L'Astorina et al., 2021). In these contexts, communicating ecology becomes an opportunity to build strong relationships with local actors, sharing different perspectives and ideas of the future on the territory or environment, inspired by the post-normal science approach (Funtowicz and Ravetz 1993).

2. Questioning the role of researchers in the society

Despite several attempts to shift from a Public Understanding of Science (PUS) attitude, based on the idea of filling the “deficit” of knowledge in the public as both the problem and the solution to societal conflicts on controversial issues (Nisbet and Scheufele, 2009), towards a wider Public Engagement with Science and Technology (PEST), the dialogue between scientists and the public is still rare, weak, and frequently distrusted by scientists (Bucchi, 2008; L'Astorina, 2021). The researchers' modus operandi is mainly focused on improving public consensus about scientific research and science reliability, rather than on the dialogue and co-construction of knowledge with society (Avveduto et al., 2012). The development of digital technologies, with the diffusion of the interactive web and of social media represented a major factor of challenge for scientists, as well as offering opportunities to explore mutual exchanges.

To explore the motivations and visions that drive Italian researchers in activities addressed to a wide audience, a series of surveys on public communication and engagement of the scientific network of the National Research Council (CNR) of Italy has been conducted, starting from 2008 (L'Astorina, 2011; Valente et al., 2011, L'Astorina et al., 2013). The results have shown a heterogeneous picture of attitudes, ranging from perceptions of duty to necessity, from usefulness to pleasure in engaging with the public. In some responses to the surveys - especially from researchers involved in ecological and environmental studies - a peculiar interest in a local dimension of communication emerged. In this context, where scientists personally interact with small groups of participants in informal settings (e.g. museums, natural environments), the relationship becomes most direct and is perceived as most meaningful. In local initiatives, participants do not only share the results of research but also emotions, such as the passion that motivates them in their work and binds them to the territory they study. However, these activities are very demanding in terms of time and resources and, especially in the Italian context, they still have low importance in the evaluation of the scientific activity of researchers, also because measuring their complex outcomes and impact is difficult (Jensen, 2014).

In the last 10 years, the opportunities for the scientific network to collaborate with different actors have multiplied and growing examples of participatory research experiences in which scientists work alongside non-scientists in the resolution of concrete problems are being promoted worldwide, changing the cultural attitude of all participants (Giatti, 2019; Kjellström and Mitchell, 2019).

Within this broad context, ecology (the branch of science which studies the interrelationships of organisms and their environments, in the complex interplay of functions and processes, information cycling, cooperative and competitive dynamics) must play a crucial role in a world of rapid change, characterized by socio-ecological conflicts, mainly generated by the prevalent economic model (Benessia and Funtowicz, 2013; EAA, 2021 a and b). Research in ecology has recently shifted towards a socio-ecological approach, where not only environmental but also social and cultural dimensions are considered (Haberl et al., 2006). Researchers in ecology are challenged to act as complex - multidimensional and multi-, inter- and transdisciplinary - professionals in the way they observe and study nature and the environment and to help establish a sustainable and responsible relation with the environment, also through engaging in dialogues with society.

Indeed, ecology is increasingly asserting itself as a way of thinking and being, not only as a scientific approach to describe the environment: “ecological living” is associated with values, ideas, habits, cares, activities, interests, green visions, as well as alternative ways of consuming and/or managing natural resources. Ecological vision is also identifiable in different knowledge practices and forms of culture. In order to embrace this vision and to disentangle complex and wicked global socio-ecological challenges, interdisciplinary research and collaboration are essential (Kelly et al., 2019).

The Cammini LTER initiative (D’Alelio et al., 2016; Bergami et al., 2018; L’Astorina et al., 2018a; Pugnetti et al., 2019) originated from questioning about the ecological researchers’ roles and responsibilities (L’Astorina and Di Fiore, 2018; L’Astorina et al. 2018a, 2018b), and therefore implicitly also about their training. This is generally centered only on the construction of specific disciplinary, technical, procedural, and even managerial competencies, not including transversal and soft skills or the exploration of alternative narratives and languages. Moving along alternative pathways is now a recognized research method, allowing participants to make connections between ideas and context, then translated in the ways language is used (Springgay and Truman, 2019). In Cammini LTER we used walking as a process of research, engaging thinking and doing together in an active interpretation of the world (Gray and Colucci Gray, 2018). The aim is to address especially the difficulties for researchers in engaging in social dialogue and sharing goals and significant knowledge with lay people.

Aware of the need for a cultural change, which could lead to involving both scientists and citizens in the care and responsibility for the territory where they live and work (L’Astorina et al., 2018a), some researchers involved in Cammini,

while trying to open up to and explore new ways to strengthen their dialogue with society, left behind, not only symbolically, the comfort zone they were used to (e.g. the desks, the laboratories, the mental schemes, the thematic congresses). This allowed them to experiment informal and unmediated modes of communication (**Table 1**), activating empathy with the people and places and overcoming the sense of separation and distance that often characterizes the relationships between science and society (L'Astorina et al., 2018a; Pugnetti, 2020).

The concept and practice of Cammini LTER, together with the different motivations of scientists participating in the initiative, have been explored and described in a previous issue of this journal (L'Astorina et al, 2018a). The aim of this special issue “Scientists moving between different narratives towards an ecological vision”, dedicated to the perspectives proposed by the participants in the CaFe experience, is not only to provide a documentation of the experience, but also to offer a model of methodological experimentation, crossing defined and safe boundaries and exploring perspectives that expand the visions, objectives and practices of scientific research, through dialogues across different perspectives and understandings of the world. The issue presents the set of experiences, comprising workshops, talks, practical sessions and theatre performances, realized during the CaFe.

CaFe was initially conceived during informal discussions and brainstorming among researchers working in LTER and in other socio-ecological contexts, as an expression of a personal need of self-driven professional learning, which could allow exploration of the dimensions of their action and of their world interpretation, and of their willingness to open their minds to other narratives and languages. In particular, it is the outcome of the crossroads of paths travelled in different contexts by the authors of the present paper, each having a different background and being motivated by different questions (Falchetti and Utzeri, 2013; Pugnetti, 2020; Guida and Falchetti, 2021; L'Astorina et al., 2021). They came together in Vicenza, in an informal meeting during the 23rd Congress of the Italian Association of Naturalistic Museums, where the experience of Cammini LTER was presented in a plenary lecture (Pugnetti et al., 2019). CaFe was elaborated and planned involving players with different disciplinary and artistic fields and interests (**Table 1**) with the aim of exploring relationships with Nature in an inter- and transdisciplinary vision. Participants were invited to go beyond their own disciplinary boundaries and languages, and to explore a broader idea of Nature that includes philosophical, ethical, emotional and spiritual, as well as scientific, dimensions (Esbjörn-Hagens and Zimmermann, 2009; Dhiman and Marques, 2016; Wamsler and Brink, 2018; König et al., 2021).

3. The place and the participants

The CaFe initiative owes its name to the Cammini LTER (see Box 2), which we wished to recall in order to emphasize the continuity between these experiences, and from the place where it took place, the “Foresta Demaniale Feudozzo e Azienda Sperimentale La Torre” (Castel di Sangro, AQ, Italy), managed by the local department of Carabinieri per la Biodiversità. The location was ideal for our purposes: a natural, inspiring, “pure”, quiet, environment, able to host an experience aiming at triggering or recalling natural suggestions and fascinations.

CaFe was held in September 2019 and lasted five days. It was organized by researchers from different disciplinary and artistic areas (Table 1), who proposed experiences and knowledge pathways for activating new interests, attitudes, openings, and relationships within the group involved and with the surrounding natural environment, thus opening to reflections on new ways of doing and communicating ecological research.

The Public Forest “Feudozzo” (**Figure 1**) is part of a large woodland complex between the Abruzzo and Molise regions, near the Man and Biosphere (MAB) National Reserve Montedimezzo. The forest, which covers an area of about 360 ha, between 900 and 1300 metres above sea level, consists mainly of Turkey oak (*Quercus cerris*) and beech (*Fagus sylvatica*). The fauna is characterized also by the presence of endangered species such as the Marsican brown bear (*Ursus arctos* subsp. *marsicanus*) and the wolf (*Canis lupus*). The flora is rich in rare, endemic and protected species. The forest forms a single entity with the land and structures of the Centre “La Torre di Feudozzo”, which occupies an area of approximately 110 ha, and is well-known for the breeding of rare-breed horses (Salernitana and Persana breeds).

Of the fifteen participants, nine were recruited through a call launched by the LTER-Italy Coordination Committee and Secretariat, among the LTER site managers, extended to co-workers and collaborators, four were researchers working in the LTER-Italy sites with different roles (e.g. national network coordinator, research site manager, collaborators), three were researchers not directly



Figure 1. Foresta Demaniale Feudozzo e Azienda Sperimentale La Torre. (Photo credit: Amelia De Lazzari)

involved in LTER, and two were environmental guides, who also worked at some LTER sites. Six participants were researchers from LTER-Italy representing the organizing group, who selected and planned the activities, together with the practitioners from other disciplinary areas, and took part actively in the experience (**Figure 2**).



Figure 2. The participants in the CaFe engaged in different activities during the five-day experience (Photo credits: Sarah Gregg and Amelia De Lazzari)

Input for workshops, seminars and talks was provided by actors, epistemologists, photographers, scientists from various disciplines (Table 1), who furnished different viewpoints for investigating, interpreting and describing the natural environment.

All the participants explored together the main questions posed, which emerged out of the previous editions of Cammini LTER, through experiential activities held mainly in the field. The questions can be summarized as follow:

- How can researchers integrate scientific perspectives with other forms of description, knowledge, and interpretation of the world, such as artistic-aesthetic, philosophical or mythical?
- What can they learn from different narratives, expressive forms and cultures and how can these contribute to strengthen their relationship with society and Nature?
- How can researchers learn to dialogue with knowledge and perspectives from "non-experts"?
- What is the role of emotional approaches, which are considered by the neurosciences pivotal in building knowledge and responsible relationships with

the natural environment and society (Panksepp, 2004; Panksepp and Biven, 2012)?

Table 1. The main research topics of the researchers who provided input and the activities they conducted.

| Researcher | Research topic | Contribution in the Feudozzo experience |
|---|---|--|
| Giuseppe Barbiero <i>University of Valle d'Aosta</i> | Affective ecology, mindfulness, biophilia, sustainability | Talks: affective ecology and biophilia Workshop: green mindfulness |
| Sista Bramini <i>O'Thiasos Teatro Natura</i> | Science, myth and Nature | Workshops on sensorial perception of Nature Theatre performance: "Tempeste - Trilogia della rinascita" |
| Alice Benessia <i>Pianpiccolo Selvatico, Center for Research in the Arts and the Sciences</i> | Physics, epistemology, visual arts | Talk: reflections on the quality of research Photography workshop |
| Bruno D'Amicis | Wildlife photography | Talk and practical session: different perspectives on ecology and how to use photography as a tool for discovery and education |
| Roberta Latini <i>Abruzzo National Park, Scientific Service</i> | Zoology | Sensory theatrical experience: "To lupo: the wolf tells its own story" |
| Alessandra Isidoro <i>Abruzzo Mindfulness</i> | Sociology, mindfulness, hatha yoga | Mindfulness workshop: reflections on sensorial perception of Nature |
| Francesca Guida <i>ECCOM - European Center for Cultural Organization and Management</i> | Sociology of cultural processes, cultural study-community artistic practice, the role of cultural diversity in modern society | Facilitator and evaluator |

The exploration of these questions didn't take place by walking from one LTER-Italy site to another, as in the previous Cammini LTER, but through a different kind of movement, an inner one, guided by unique experiences, alternated with moments for reflecting and debating all together on the proposed themes. The dialogue between researchers from different disciplines and cultural backgrounds, in a suggestive and intimate location, helped the participants to arouse new ideas, feelings and attitudes, accompanying them in a path of self-directed learning about their way of doing and communicating science.

Participants alternated activities in the field conducted as workshops with input lectures on the different topics. During the evening, moments for reflecting and debating all together on the daily experiences were organized and facilitated (Falchetti and Guida, 2021), each participant being asked to share impressions and emotions through a notebook and by writing on post-it notes, then collected in cumulative posters (Figure 3).

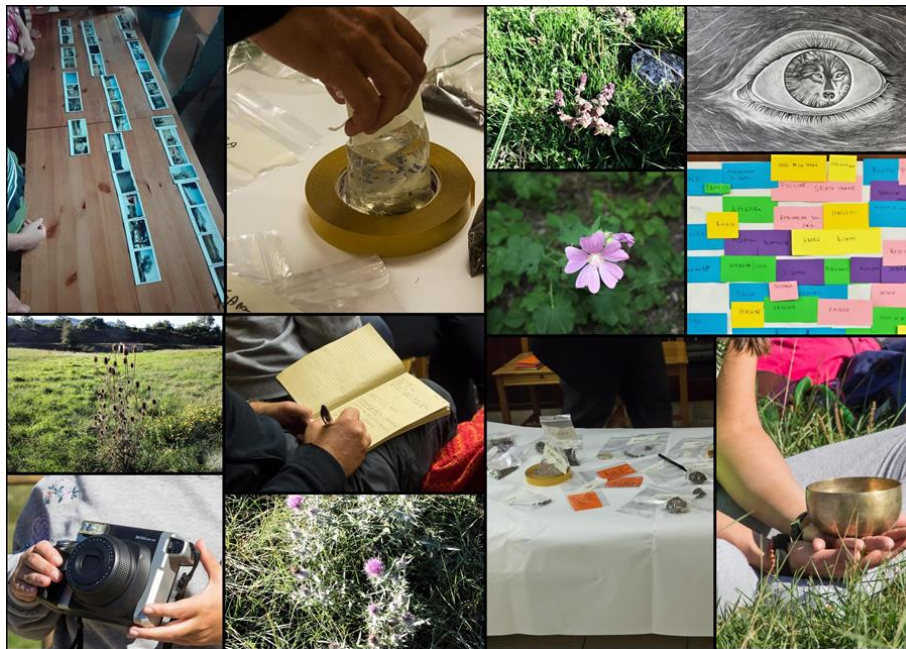


Figure 3. Objects used during the activities and natural elements of the CaFe setting (Photo credits: Sarah Gregg and Amelia De Lazzari)

The activities during the five-days experience were documented by a photographer and by an artist. Most of the experiences are fully described in other papers from this issue (Barbiero, 2021; Benessia, 2021; Bramini, 2021; D'Amicis, 2021).

4. The CaFe concept

During CaFe, we launched a reflection about specialisation, fragmentation of knowledge fields and difficulties in communicating across their boundaries. According to Kuhn (1962), different disciplines convey different ontologies and these can influence our vision and relationships with society and Nature. Science does indeed offer a powerful narration, but it has revealed its limits and cannot offer by itself answers to the complexity and uncertainty of our times (Waltner-Toews et al., 2020). This is a reason why we decided to choose *narration* and *narrative* as two of the leading concepts of CaFe conversations. The idea was to act as storytellers in a special “Cammino”, confronting alternative narrations and their particular languages and questioning if and how to integrate them into our thinking and research methods.

Scholars have widely explored the meaning of *narration* and *narrative*. Pedagogists (Bruner, 2003), biologists-cyberneticists (Bateson and Bateson, 2004), neuroscientists (Damasio, 2012), and anthropologists (Clifford, 1997), have described *narration* as a way of thinking, a process whereby brain translates physical experiences and mental activity, a tool for interpretation and communication, a representation of reality in language. Human cultures develop as they are shaped through narrations, which both become and define cognitive and perceptive cultural paradigms, with greater or lesser awareness of the limits and potentialities of a given and other narrations.

Here we follow the definition of narrative proposed by Giampietro (2021): an epistemic device used by human beings to identify and describe relevant causal relations over events, which is necessarily based on a given point of view of the external world. To describe complex observed systems, scientists apply a finite set of attributes, selected on the basis of a prevalent narrative. In this sense, narratives can address complexity because they are not about objective reality, but are statements of what is significant (Allen and Giampietro, 2006).

Another key concept for CaFe was *Nature*. During the workshops our visions and descriptions of Nature were explored and discussed to discover ways in which an ecological vision and natural essence can coexist. What is our personal relation with and experience of Nature? How do we approach our studies

on the natural environment? What are our interests and attitudes towards it? During his seminars on Affective Ecology, Giuseppe Barbiero (2021) highlighted some limits of traditional ecology and stimulated a lively debate on the opportunities offered by other ecological models which include affective and emotional elements, practices and relationships of care, able to reconstruct or recreate connections and bonds - old and new - with Nature. The mindfulness practices experienced by the participants awakened an unexpected sense of affiliation and trust, affective attitudes towards Nature.

As a way of provoking collective reflection, Alice Benessia (2021) proposed a historical account of how science and technology have been defined, legitimized and demarcated over the course of the past three centuries, from the early stages of scientific and industrial revolution to the contemporary age. She considered a variety of figures ranging from scientists from different disciplines to philosophers, sociologists, public officials and entrepreneurs, showing the evolution of the narrative of science and technology over time, and so leading to an intense discussion of the present condition of researchers.

5. The artistic experience of CaFe

Art and artistic research were also central in the CaFe program. Art - music, theatre, photography, dance, visual arts - allows experimentation at a multiplicity of descriptive levels and dimensions, but also to explore other expressive forms, such as “sonification”, the movement between art and science describing natural phenomena by means of musical notes and scores (Vicinanza, 2004). Participants of CaFe were introduced to the artistic dimension by Sista Bramini @TeatroNatura (2021) through her workshops offering perceptive-motorial experiences, inspiring different perceptual experiences, through theatre gestures and direct contact with natural elements, fostering new “embodied” and emotional knowledge. Her theatre performance “Tempeste - Trilogia della rinascita”, where science, myth and Nature interact, opened new cognitive, sensorial horizons and emotional resonances in the participants, totally new to some of them.

The wildlife photographer Bruno D’Amicis (2021) offered different perspectives for ecological research, which introduced natural complexity and challenged descriptive and emotional dimensions. He introduced the transformative and introspective power of photography, where the relationship with Nature generates knowledge, empathy with natural elements and a feeling of belonging. Photographing Nature, according to D’Amicis’ vision, is an ethical and personal pathway towards an intimate perspective. The role of *beauty* in the relationship

with Nature, even if not introduced as a specific topic by the researchers, shaped the whole experience in Feudozso. The natural place played a role in triggering the participants' aesthetic sense and emotions, while the wildlife photographs by D'Amicis revealed the possibility of harmonizing a rigorous research approach with a fascinated observation of Nature. Beauty is generally ignored in scientific research and mainly considered as an aesthetic category in ecological studies. On the contrary, it can be a potent narrative element and direct ways of knowing and affective attitudes towards Nature. In the case of the perception of ecological-sustainable futures, beauty is a value and an intellectually stimulating resource that combines aesthetic artistic significances with the ecological and ethical ones of sustainability. Studying the "environmental aesthetic" leads to recognition of the aesthetic appreciation of the natural environment plays a leading role in human relationships with Nature. From all these perspectives, the artistic-aesthetic experience taking place during CaFe represents a possible experimental model for conceiving a new, richer and more complex ecological research that is inter- and transdisciplinary and also multidimensional.

6. Concluding reflections and perspectives

According to UNESCO (2000) and the World Science Forum (2019), peace, cooperation, democracy, social dialogue and inclusion, justice, and equity are all values and objectives that science should embed. Similarly, Agenda 2030 considers and asks for actions, proposing a new ecological vision which includes peace, justice, equity, equal rights, well-being and quality of life on Earth in its call for the strategy "Changing our world". This invokes a deep cultural change in the usual scientific models, to make it possible to effectively face complex socio-environmental reality (Kelly et al., 2019). However, most scientists remain oriented towards technology and productivity, rather than towards new ways of thinking, new ethics, and social commitments. Only in recent years has post-normal science (Funtowicz and Ravetz, 1993) challenged prevailing models, testifying that the path for changing is difficult, but necessary and possible.

The ecological researcher's path should promote a thinking, attitudinal and behavioural transformation towards sustainability and peace with Nature. This path should address the researcher towards balance and harmony between personal realization and socio-environmental wellbeing. Achieving these goals also depends on the researchers' feelings and not merely on their technical expertise. During "Cammini LTER" LTER researchers started exploring ways to improve their dialogue with society, aiming to overcome the communication gap and introducing people to unfamiliar forms of LTER research, while fostering an

intimate link with Nature. Out of this experience, an internal critical debate began concerning the necessity to explore different forms of sensing and knowing, challenging well-established rules and models, the impulse which led to the CaFe experience.

The visions and lessons learnt during CaFe were various, reflecting the heterogeneity of expertise, interest and expectations of the participants. Some of them are described in the paper by Falchetti and Guida (2021), who analyze in detail the outcomes of the discussion during the experience as well as the answers to a questionnaire the participants were asked to fill-in, in order to collect their feedback after the experience.

In this extraordinary pandemic period, where the relevance of science for society has become evident but also controversial in public debate, the answers of the participants made us appreciate the relevance and the challenge that this experience - using unusual practices and informal settings to promote reflexive and responsible attitudes - can represent for scientists invited to move outside the comfort zone of their institutional workplace. The impressions reported by the participants, the words and the expressions used to describe them, confirmed the initiative as an opportunity - unusual for their scientific paths - where scientists could reflect on their research practices and narratives.

One of the main topics that emerged as a challenging issue concerned the sense of “belonging to a scientific community”, despite different areas of specialisation and fragmentation of knowledge fields. Moreover, the necessity to move beyond the common idea of communication as a process of “transmission” of scientific contents from those who are supposed to know (scientists or experts) to those who don't know (the public) emerged. For example, in Sista Bramini's workshop communication was experienced as a process of mutual listening between different forms of knowledge and narratives, revealing the weakness of only referring to one's own perspective when faced with planetary challenges. If considering ecosystems and biodiversity - as well as the responsibility towards them - does not only imply facts and data but also values to be shared among all social actors, then collaboration is necessary among all different players who live in, manage, or study a territory. Within this scenario, communication becomes a necessary precondition to allow relationships between actors to become more intimate and aware and to make all take care of the environment in a constant and effective way (Folke et al., 2011; Jamieson, 2011).

Sharing ecology entails the potential to create an intimate bond with nature and the territory. During CaFe, most participants experienced another type of

knowledge of the places and communities they are studying, based on qualities connected with emotions and with a peculiar kind of perception, which deeply bond us with Nature and can fruitfully coexist with scientific and rational knowledge and words (Harding, 2011; Barbiero, 2011, 2014). Gathering theoretical knowledge together with sensory experiences and approaching Nature from different points of view (scientific, artistic and well-being), which was the main aim of CaFe, led the participants to start integrating in their research an inner dimension, including emotion and affectivity, thereby enriching knowledge building.

An important part of these reflections was dedicated to research practices. Participants focused on how their habit of being “caged in rigid and bureaucratic schemas”, including automatisms and repetitiveness in actions, can be an obstacle when they are asked to engage in dialogue with society. Within this context, the necessity to acquire skills in communicative contexts cannot be disconnected from the need to develop a new inner attitude, welcoming plurality and transdisciplinarity in their scientific approach. They also expressed the willingness to continue along this new path, seeking ways of finding and sharing alternative experiences and approaches within daily experiences. Some of them criticized the conditions of research work, characterized by excessive competitiveness, as a limiting factor in the communication among colleagues.

All the participants agreed that, while the traditional formula of Cammini LTER is still a desirable one for the future, the CaFe experience represented a new starting point for reflecting and linking together the different paths explored as well as the valuable knowledge encountered along the way.

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Competing Interests

The authors have declared that no competing interests exist.



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