

# Chapter 7

## The Artists' Voices as an Inspiration for Intercultural Practices, Art–Science Paths and Innovative School Curricula



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**Abstract** This chapter presents suggestions, hints and models of creative intercrossings between art and science and of inter-trans-cultural/disciplinary approaches in educational practices and curricula. Two artists express their visions through interviews carried out by the authors. Two projects implemented by the authors together with artists confirm the value of intercultural experiences of art and science in educational, socially oriented processes involving values, participation, responsibility and citizenship, in a real socio-environmental scenario, with projection towards future actions of a community.

**Keywords** Cross-trans-culturality · Art and science · Curricular innovation · School projects · Citizenship · Participatory methodologies · Points of view of artists

### 7.1 Introduction

Art and science are two forms of human thinking and interpreting reality, historically inclined to cross their disciplinary boundaries and shift one in the other, following the cultural trends of the various epochs and places. Their visions, epistemologies and practices are distinct but can be integrated to create challenging, exciting experiences and products, enabling each other to improve their understanding of the world phenomena.

Many forms of art can create interconnections with science and give meaningful inputs for the comprehension of scientific topics. Scientific museums represent an example of this winning approach. They are protagonists of a deep revolution in introducing aesthetic and artistic approaches in their exhibitions and educational

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pathways, in experimenting manifold artistic activities (theatre, visual arts, music, dance, photography, etc.) and interventions of artists to improve cultural accessibility and understanding of their collections and promote audience development, in particular of young people and migrants. Their initiatives enrich and facilitate learning and appreciation of the scientific experiences in museums. Many researchers, universities (e. g., Stanford with its art and science courses) and institutes (e. g., the Italian National Institute for Nuclear Physics—INFN with the programme “Art and Science across Italy”) are working at the cross-road of the two cultures. On the other hand, science inspired in the past and still inspires a lot of contemporary artists generating for instance the “scientific art”, joining deep emotional experiences with scientific concepts.

## 7.2 The Artists’ Voices

One of these artists is Michela de Mattei, that the authors have followed in her path of experimentation of this trans-cultural art and interviewed about her vision. Her artistic research is intimately linked to her interest in natural sciences. She released the following amazing interview for this paper.

The relation between art and science is fundamental to my practice. My personal artistic research is linked to the relationship between humans and animals; therefore, science is a constant inspiration. Many of my works have indeed started from the reading of scientific papers, or from exchanges with biologists and teams of scientific researchers.

For example, my most recent video, which focuses on aquariums and marine life, has been deeply influenced by scientific studies, in particular by the dialogue that I initiated, over the past year, with a research project from the Plymouth Marine Lab, who is investigating the impact of artificial light on marine ecosystems. The video in fact addresses the question of nocturnality from a poetical and visual point of view. In general, my works questions the relationship between human and nature, playing between fiction and reality. It is thus always very important to ground my research in scientific knowledge in order to make free associations and orchestrate my personal narratives around the animal world.

Working together with scientific researchers is always one of the most interesting stages of my works. It allows me to collect data and information around animal behaviors, to start new conversations and expand my vision through new collaborations; but also to experiment innovative technologies. I often use scientific observational approaches and methods, like thermal cameras, interfaces, or technical systems of monitoring, including them in my filming and means of representation, as tools to enrich my personal aesthetic. More generally, I also believe that <<authoriality>> in art is nowadays outdated and artists have the chance to activate more collaborative forms that are essential to create and develop new territories in the field of art.

My experience working closely together with scientists and researchers from different fields like biologists, psychologists or anthropologists has been profoundly fruitful, for both me and my interlocutors. Actually, we often found ourselves working in a very similar way, through a very experimental approach. For example, we try recreating a determined world with specific elements and introduce an element of disruption (that for me is mainly a poetical factor) in order to observe the consequences. It is very interesting to see how scientists and

artists put the same intensity of attention when looking at things and processes, even aiming at different outcomes.

Art and Science working together could have a role in engaging people to a more ecological way of inhabiting the world and sharing it with other species. For scientists, raising awareness on certain issues can be very difficult. For example, communicating what are the effects of light pollution on the underwater world is not an easy task, probably because as humans we are less able to empathize with marine creatures that live in a completely different environment than ours. In this sense, art, working on an emotional level, might be very helpful and more effective in <<moving>> people.

To mention another example, in 2019 I did a show in London around the phenomenon of “Blushing”. My research started with the discovery of an online platform connecting people suffering by this sudden rush of redness on their face, due to panic disorders or social anxieties. I did different interviews, trying to record the blush on camera with some of them, asked some psychologists to contribute to my research, and also made a new body of paintings using a thermo-chromic paint. The show explored the topic from different points of views, looking at it from different perspectives: in animals, in humans and in some materials. Metal, for example, must reach a certain change on temperature (becoming red and almost liquid) to change shape. I think that in a poetical way, this is exactly what happen to humans, they always have to pass through their most vulnerable state in order to make a change. Finding poetical associations and similarities between different fields, species, materials is for me an enriching challenge in the knowledge development process.

Looking at something through the artistic lens means for me making an effort to consider visual/sound clues, understanding a situation from the most perceptual point of view, in order to then be able to translate and reproduce it in my artworks: using video, sculpture or any other medium to create a feeling into the viewer. In my experience, the addition of an artistic and poetical point of view has been for my scientific interlocutors very productive and challenging, adding to their project a new perspective, free from any functional conclusion, or any rigorous justification.

Introducing artistic languages into scientific approaches might be a resource: to push the boundaries of thinking into a poetical extreme, or into an absurd scenario, that could appear out of logic and functionality, but might be able to help understanding or feeling the behavior of a different species, a completely different being that is in a way very similar to us, but it is not us.

The alliance of art and science can create opportunities to achieve—in and out of school—the new 2018 EU Agenda for Culture goals, namely creativity and creative thinking and the “Lifelong Competences for the 21st Century”, as critical thinking, problem solving and emotional skills, as empathy, imagination, curiosity, wonder, emotional intelligence, ability to perceive and appreciate diversity to explore different horizons, meanings, possibilities and solutions (Council of the European Union 2018). Both art and science contribute to the construction of basic, transversal, soft skills, but art opens other mental attitudes, for its intrinsic cultural enrichment as well as for the educational, eye-opening, cognitive impacts, engaging languages, exciting products and performances.

“Creative acts” are rare at school and teachers generally prefer stable, comfortable disciplinary pathways (Kagan 2013). The main pedagogists agree that artistic activities improve a culture of creativity at school, empower the imaginative potentiality of students and enhance motivation, autonomy, self-esteem and awareness of their own talents. In Italian school, art is limited to a very short time, under the “history of

art” approach; the aesthetic experience is poorly valorized and improved, despite its neurological, physical, spiritual and emotional impacts in the individual formation and in a community cultural orientation. Only in the artistic high schools (Liceo artistico), there are some opportunities to practice studio arts or laboratory activities. Experiences that intercross art and science are uncommon, despite their creative and innovative potential.

We face various pedagogical contradictions, as emphasized by Stefano Cataldi (musician and composer with whom the authors have established a creative collaboration) in the following interview.

I have no doubt regarding the fundamental value of art in the human formation, starting with school-aged young people. From them I learned about a painful contradiction (of my views) with the current educational system. I’m speaking about the Italian school, because I live and I studied here, but I can compare our system with the American one, where I also studied and taught, and the Anglo-Saxon one, of which I have a good understanding.

The educational system, globally, is losing the capacity to place Art at the rightful position in the citizen education. Art has always woven a relationship with other disciplines, but today we face a paradox: <<No, No... I don’t like math; I play music; I’m an artist...>>; I often gather similar assertions from young people. I do not blame them; responsibilities are elsewhere. Yet, it would be easier to start the students’ education from the math of the sound, to help them understand that each body reacts individually to sound vibrations depending on personal anatomy, from the shape of the bones that although identical in numbers (in the human being born with the chance to be anatomically normal) are qualitatively different in each of us and reacting differently to vibrations. The same voice tone, that is our inefaceable timbre, derives from these differences. I’m speaking about quite tangible elements, representing our microcosm, easy to understand for every “trained” educator. After that, it would be possible to move on to the mind, emotions, philosophy, to other arts, so that magically we could have <<human beings>>, shaped by the knowledge of art, governing the nations.

It’s not casual that our civilization - among whose ruins we prowl frenetically as zombies - was born from the Trivium education: grammar, rhetoric, dialectic and from the Quadrivium education: arithmetic, geometry, astronomy and music. Trivium and Quadrivium were considered an “unicum”, the fundamental base for education. Today, Leonardo da Vinci would not be allowed to train...today we have experts with certifications, with pile of useless scraps of paper expensively obtained both in economic and human terms, that are frequently awful obstacles to a true formation. They are rather homologating instruments useful to reset the differences that make nature so beautiful and varied and that allowed the lowly and enchanted human being to mirror him/herself in it, with the desire of understanding nature and observing it in a respectful silence. Art teaches us to love each other in the differences and characters that make each individual unique and incomparable.

I see many problems, especially in regards to the new generations, that I meet every day as students/pupils, and thanks to my two daughters and their friends that are becoming for me a research field. They are hungry for knowledge but frequently deprived of the possibility to learn. The artist is too much mixed up with the jocker, with the trickster. Media presented to people an idea of the artist fully deformed. For longtime the artist has been considered crazy, naturally gifted with creative talent, one who, between a drug and another, makes “art”, considered as a profitable short-cut to face life without the sacrifices required by every conquest. In the world in which our young people are permanently immersed, all are artists and, dear me, we are losing the meaning of what Art is.

True Art dignifies everything because it is generated by the artist’s sacrifice. The artist must be an excellent artisan; each of us could become such, just devoting himself/herself to his/her own activity with integrity and accuracy. This is the last point about the relationship between

art and the new generations. The “homo faber fortunae suae” contributed to the technology advancements; today, young people play music by using software that give them the illusion of being able to play. The man who wants to know and learn is a man that gets his hands dirty, tries to relate constantly to “lower and higher things”. For example, he strives to observe a leaf, to understand its structure and relate it to a musical shape. For this powerful conceptual endeavor, he needs a primordial emotion: wonder. Wonder constitutes for the artist a real drive towards the order that he/she will express in his/her artwork. I note in many young people that I meet the lack of sound/healthy wonder capable of driving them to make acceptable, even great sacrifices. I am sure that our young people need confident, reliable leadership to indicate the path. The experience lived with the students at the Mercati di Traiano confirms my impression.

### **7.3 Case Studies of Projects Joining Art and Science**

The integration of artistic approach and activities is a statement for the authors' projects, no matter their disciplinary fields and social/educational aims. Our methodologies embrace multi-inter-trans-cultural strategies, languages, topics and build collaborations with a variety of actors, institutional and civil society partners. School is one of the authors' work-field, with the goal of collaborating for innovative curricula, transformative (transgressive?) didactic and education, inspiring new languages, narratives and performances.

The two following projects “Green Routes” and “Live Museum Live change” are examples of this strategy.

#### ***7.3.1 The Project “Green Routes” for Environmental and Social Sustainability***

Taranto (Puglia Region, Italy) is a wonderful city affected by a dramatic pollution (due to a large steel manufactory) that has changed the city aspects, life styles, aspirations and wishes and has obscured the inhabitants' visions regarding their future. The city is facing a complex socio-ecological problem, materialized in a conflict between public health and employment–local economy. Young people, students, are not able to look at their lives optimistically. The project “Green Routes” carried out by the authors in partnership with many institutional and social actors (see [www.greenroutes.it](http://www.greenroutes.it)) intended to engage the local population in a participative process to design (or to wish) more sustainable scenarios and futures, by little but meaningful interventions of urban ecological and social regeneration and educational pathways for sustainability.

Sustainability is a matter and a very complex domain of interrelated problems and interventions. Science, namely ecology, gives some answers (with contested approaches between deep and shallow ecology) to environmental–ecological issues, but the “sustainable education” that should act on the “change of thinking” shifted in the last twenty years from a purely ecological to an interdisciplinary approach,

including art both as support to scientific topics and as a method of reality interpretation (e. g., Morin 1999, 2000; Sterling 2001; Lotz-Sisitka et al. 2015).

Poetry, visual arts, theatre and other forms of art have inspired and enlightened the new sustainability education. The project Green Routes hired many artists through a public call and gave a wide creative space to them, their suggestions, hints and performances. One of them was Guendalina Salini—a Roman artist active in the national and international arena (see [www.guendalinasalini.info](http://www.guendalinasalini.info))—with the commitment of activating the local students' and other citizens' imagination and participation by artistic performances and artworks related to Taranto landscape, nature and sustainability. In an interview, Guendalina expressed her intent to “Sprout and raise words of hope for Taranto”. She launched participative laboratories in many private and public symbolic city places for the creation of an artwork in which students and other citizens had to write and draw on the ground some words, using seeds of ancient wheat, to express their hopes, feelings and ideas germinating and growing. The “words” were cultivated by the community and fostered “green and living narrations” in houses and urban environments, inspiring revitalization and ecological transformation. After the “birth” of the seeded words in the city, the artist realized a final artwork “Paesaggio indeciso”, sending a message about the resilience of nature.

“In this setup I split a grey stone sheet resembling the asphalt and I put among the cracks some thyme and other spontaneous native plants to simulate that local nature, with its inner vital strength, has regained space, breaking the stone that stifled it”. This artwork was installed in the backyard of the city Conservatory, also as a metaphor of the strength of culture and music, good for urban regeneration.

The laboratories organized by Guendalina have also ignited the students' motivation and imagination. Some high-school classes (IISS Vincenzo Calò of Taranto and Agrario of Massafra) worked for the initiative “Green Garden Collective”, that engaged the same students and other citizen in a series of micro-projects to create a widespread garden in the city of Taranto. The students experimented “ecological art”, realizing little artistic gardens to place in the most polluted—run down City neighbourhoods, entrusting to their inhabitants the task of taking care of them. This strategy introduced to the community problems such as ecological sustainability, civic responsibility, proposing ideas for the city regeneration. Green Garden Collective generated a coral pathway that engaged the city community.

Following this experience, the students improved their contacts with ecological problems and learned about eco-biological features of local vegetation and of anti-pollution and resilient plants. Chemical and other scientific points of view were introduced and the students also received and elaborated a responsible civic-social message for recovering ecological relationships, reconciling community and environment and emphasizing the beauty of nature, thanks to the artistic inspiration. The power of beauty for inspiring awareness towards environment is acknowledged (Kagan 2013): “beauty” as an element of sustainable thinking and acting and as an educational multi-, inter-, trans-disciplinary tool.

### 7.3.2 *The Project Live Museum—Live Change*

A lot of disciplinary issues and curricular arguments can be approached by Heritage Education. Therefore, this is a domain in which students can face disciplinary topics, but also territorial problems that hire civic responsibilities. Therefore, many school projects carried out by the authors encompass multi-perspective and multidisciplinary experiences on cultural heritage.

“Live Museum Live change” was a project aiming to rediscover and valorize the cultural and social values of a unique archaeological site: the Mercati and Museum of Traiano in Rome. Also, in this project the authors engaged students, artists and other social actors to foster different visions of the site and emphasize various approaches to its knowledge and interpretation (see <https://traianolivemuseum.com/>). Many artists answered to the public call and worked in partnership with experts, students and common citizens. Within a wide range of initiatives, some classes of two Roman high schools (Liceo Mamiani and Liceo Dante) were engaged for the realization of new experimental narrations of this cultural heritage inspired by and in collaboration with artists.

Among these intercultural–interdisciplinary experiences, it is noticeable the production of the “Taccuini botanici” (Botanical notebooks), combining art and science, realized by the young artist Gaia Bellini (see <https://www.singulart.com/it/artista/gaia-bellini-11443>) during a pathway including groups of students, that reinterpret and valorize the site by the natural elements living there. The Notebooks contain a chromatic inventory of the botanical species of the site, after the extraction and the transformation of their natural colours and the print on books. The plants have been classified by their botanical features and names and by this special chromatic inventory. Gaia’s suggestion was to perceive and describe a place by its shape and natural colours. Nature is the vital element of Gaia Bellini’s artistic research and poetics, and the colour is her expression. “My research... wants to create ... the identity of a place, as of a person, by what is living there... The Mercati di Traiano are a site where the material elements narrate vital cycles that, in connection with the natural ones, suggest birth, evolution, continuous transformation. My artistic Books should call all people to rediscover the beauty that educates”. In the research carried out by the students with this artist (they also realized some “mood stories”, by photographs of the natural elements of the site) arises a thought about nature, its resilience, impermanence, its power of integration with human elements/artefacts, but also feelings, emotions suggested by the site and the value of its conservation.

Another relevant experience was carried out by one of the classes directed by the musician and composer Stefano Cataldi. This artist, together with the students, converted the main themes, sounds and architectural shapes of the site in music, creating a sound geography image of the Mercati di Traiano. The composition (entitled “Timeless Mercati ... at the boundaries of the sound”) was realized after various activities: visits at the site; an observation and “rationalization” of the site’s architectural shapes to identify rhythmic elements and features to translate into musical rhythm; debates about its cultural values; interviews to visitors; recording of local

sounds/voices; a study of ancient musical instruments; exploration of some classic-formal music compositions; and, finally, an electronic transformation of all the audio recordings and of the architectural rhythms. This musical composition was placed at the site for a new unique narration that combined the physical–objective experience and the artistic one, with a great reward to students and the artist for the product in itself, but also for their active participation in a social–cultural and citizenship project.

All the students, teachers, artists and other participants worked in a creative, harmonious partnership, nourishing the inter-generational, interdisciplinary, inter-expert dialogue and generating new co-produced forms of knowledge and culture rewarding for all.

## 7.4 Conclusions

The interview with Michela de Mattei provides an invaluable point of view from the world of art on the mutual intellectual and emotional input of the experiences placed at the intersection between art and science. Her statements could be broadened to other interdisciplinary–intercultural experiences crossing different visions, epistemologies and sensitivities.

The interview with Stefano Cataldi expresses the artist’s awareness of the intellectual, practical benefits and the contribution in “humanity” supplied by the artistic practices for educational purposes, as well as the awareness of the intellectual and spiritual deprivation in absence of art.

The two authors’ experiences/projects provide an example of valid intercultural practices in the school pathways generally based on the classical disciplinary study and support the option to develop innovative school curricula, in a Responsible Research and innovation (RRI) perspective, able to create or improve recommended skills and creative knowledge, as well as citizenship, participative and responsible attitudes, because they offer more opportunities to meet and face real and problematic contexts, territorial issues, matters of sustainability and future.

Artists’ participation is critical to activate new competences, perspectives, visions, interpretations, emotional participation, creative thinking and motivation. Likewise, the engagement of different actors, professionals, institutions and civic agencies enriches the educational experiences with different ways of thinking and practical models that are usually excluded by the current schools’ horizons.

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