



FONDAZIONE SPINOLA BANNA PER L'ARTE

**THE WORD  
TO THE ARTISTS  
TO THE TECHNICIANS  
TO THE INSTITUTIONS**  
**Segni per la Speranza**  
*opera multimodale*



WEB WALL WHISPERS

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SEGNÌ PER LA SPERANZA  
WEB WALL WHISPERS - WWW

## LUISELLA MOLINA

### *Director and General Coordinator of the Project*

#### THE PROJECT STAGES

In June 2016, the General Directorate for Contemporary Art and Architecture and Outlying Urban Areas of the MiBACT (Ministry for Cultural Heritage and Activities) proposed to the Italian Contemporary Arts Foundations Committee to invite the private foundations of which it is made up, including the Fondazione Spinola Banna per l'Arte, to come up with and implement an original artistic and cultural project, with a view to the redevelopment of outlying urban areas. What's more, the project had to foresee the involvement of students from the last three years of secondary school, thus meeting with the requirements of law No. 107/2015 known as 'La Buona Scuola'. The Fondazione Spinola Banna per l'Arte therefore decided to stage an artwork that would contribute to the artistic redevelopment of the outside wall of a building situated in a neighbourhood on the outskirts of Turin. And through the direct involvement, in terms of manpower, of the young people living in the area, an agreement was formulated to promote the creation of an innovative work, one with a profound social meaning, fostering civic integration and, at the same time, developing a greater awareness of beauty.

The project, entitled *Segni per speranza*, involved the artists **Giuseppe Caccavale** and **Stefano Gervasoni**, who during the creative process and as the project took shape, were assisted by other artists, technicians and institutions.

#### THE VISUAL PROJECT

The visual project of the multimodal work *Segni per speranza* consists in the creation of a mural, implemented through the painting medium, on the exterior wall on the east side of the gym building of the **Primo Liceo Artistico** in Turin (via Carcano, 31 – Parco Colletta neighbourhood).

The wall measures **48.65 m x 7.5 m giving a total of 365 m<sup>2</sup>**.

The choice of the location in which to stage the work was made in agreement with the **Progetto MurArte** of **Turin City Council** (Directorate of Cultural and Administrative Services – Visual Arts, Cinema and Theatre) which deals with public art projects and foresees the allocation of various wall surfaces for artistic projects.

For the implementation of the pictorial part, the project foresaw the involvement of the artist **Giuseppe Caccavale**, with the assistance of two collaborators, **Clément Valette** and **Timothée Chalazonitis**, along with classes **3D**, **4A** and **4B** of the Primo Liceo Artistico of Turin (school year 2016-2017, a total of 50 students) who took part in the creation of the artwork thanks to the school's work placement project. As well as the Head Teacher **Elisabetta Oggero**, the school's teachers and tutors involved in the work placement project **Claudio Donzelli**, **Anna Grassano**, **Giuseppe Graneris** and **Raffaele Nocerino** also took part in the project.

For the implementation of the visual part, the project took place as follows:

#### FIRST STAGE: FROM NOVEMBER 2016

Plenary meeting at the Lyceum with all the teachers and students together with the artist **Giuseppe Caccavale** and his collaborators, in order to share the planning of the itinerary. This was followed by smaller meetings with the chosen classes: the discussion unfolded around the literary and film input that inspired the work:

Natalia Ginzburg *Le piccole virtù* ('The Little Virtues')

Vittorio De Seta *Diario di un maestro* ('A Teacher's Diary')

Abbas Kiarostami *Where is the Friend's Home and Life and Nothing More...*

The aim was to broaden reflections on themes such as others, hospitality and on how a natural event like an earthquake, tragically present at the time, may provide the input for the reconstruction not only of the buildings but more profoundly of humanity, in a sort of 'human redevelopment'.

### **SECOND STAGE: FEBRUARY 2017**

A number of intensive exchanges were held at the Lyceum by Giuseppe Caccavale together with his collaborators, who together with the students, exchanged the bases of various visual disciplines, fundamental for the implementation of the project. This major sharing moment led to the transformation and translation of the chosen book and film input in order to render them graphically and visually, and transfer them to the exterior wall surface of the gym. The result of these elaborations was displayed in the exhibition staged at the Lyceum on the occasion of the inauguration of the work on 18 April (the exhibition will remain on show until 13 July 2018). It should be remembered that the choice of the four colours used for the mural were chosen from among those of the official colour scheme of Turin City Council.

### **THIRD STAGE: MARCH 2017**

The students of the Lyceum worked with their internal tutors on a writing project which drew on the reading and viewing of literary and film material. The sentences that the students came up with were then sent to Giuseppe Caccavale and his collaborators for the final elaboration stage and, on the basis of the main nations of origin of the school students, the sentences were translated into the most widely represented languages (**French, Chinese and Russian**). Hence the final form of the project was put together in collaboration with the school children themselves.

During this stage, analysing the technical situation for the creation of the work (the exterior part of the gym is made up of prefabricated panels of concrete sealed together with silicon), the Fondazione Spinola Banna per l'Arte believed it was best to call on the collaboration of the **'Venaria Reale' Centre for the Conservation and Restoration of Cultural Heritage**. The Centre made available its professional figures (**Arch. Stefano Trucco – President; Dr Michela Cardinali – Head of Restoration Workshop; Dr Barbara Ferriani – Professor and Restorer**) and its workshop resources, with the aim of identifying the materials best suited to the mural intervention (silicate paints, protective layers) and providing guidelines for the maintenance of the work in the future. For this collaboration, students from the **Undergraduate Course in Conservation and Restoration of Cultural Heritage** (University of Turin and the 'Venaria Reale' Centre for the Conservation and Restoration of Cultural Heritage) were also involved: specifically the ten students from the fourth year of the PFP 2 course (painted articles on wooden and fabric supports; wooden sculpted articles; wooden furnishings and structures; articles in synthetic materials, worked, assembled and/or painted) and course PFP 1 (stone materials and derivatives; decorated architectural surfaces), supported by restoration professors and by the directors of the various restoration workshops.

### **FOURTH STAGE: APRIL – MAY 2017**

Following the authorisation received by the **Local Public Art Sub-Commission of Turin City Council** and that of the **Public Works Area – School Building Work Sector 2 of the Metropolitan Council of Turin**, preparations began on the actual worksite, covering a surface of 365 m<sup>2</sup>.

Participants: Giuseppe Caccavale and his assistants, students from the Lyceum classes (on the basis of a schedule that foresaw their alternating presence in groups), teachers/tutors from the Lyceum, workers from external firms who provided a number of services (cleaning of the wall, hire of elevating platforms for working at

height, safety managers).

The work began with the cleaning of the wall, which bore graffiti (the oldest of which dating back to the 1990s): this operation called for more time than first thought because as the work progressed, it became clear that the graffiti (to be found only on the lower part of the wall) consisted of up to seven or eight layers of paint. The cleaning work, which was carried out using a range of techniques (pressure washing, sandblasting, chemical solvents), continued for four weeks, while at the same time work started on the painting process.

Given the time needed for the cleaning process, we immediately realised that the decision to use scaffolding for the work at height was unfeasible, and so we opted to hire a truck with an elevating platform. The painting process began by spreading a single base colour (brick red) before proceeding with the projection of texts onto the wall with the use of a projector placed on a scaffolding platform. This provided the basis for the painting of the sentences.

#### **FIFTH STAGE: JULY 2017**

Shortly after the end of the painting work, we realised that the paint applied to the silicon seams had a number of critical points (the silicon in a number of places had probably been subjected to excessive force during the pressure-cleaning process). We called on the **'Venaria Reale' Centre for the Conservation and Restoration of Cultural Heritage**, which with **Dr Daniela Russo** (head of planning) and three restorers **Arianna Scarcella**, **Isabella Dassetto** and **Chiara Cubito** performed the necessary maintenance: the surface area in question was cleaned through the removal of unwanted deposits. A new acrylic sealer was then applied with a plaster effect in the degraded or partially incomplete areas, consolidating the areas partially detached and those with gaps in the material or excessively degraded. Lastly, a mimetic touch-up of the paint was carried out on the newly grouted areas, using the same silicate paint as that used for the rest of the work.

#### **SIXTH STAGE: SEPTEMBER 2017**

Application of the anti-soiling protective layer across the entire surface. This sixth stage marked the end of the painting stage of the work *Segni per la speranza*.

Interactive Soundwork *web wall whispers – www*

The work *Segni per la speranza* was then completed with a **sound part**, an interactive soundwork titled *web wall whispers – www* put together by the composer **Stefano Gervasoni** and the computer music designer **Marco Liuni**, inspired by and interweaving with the painting work, providing an interactive exploration of imagery and sound.

The genesis of this part of the work was complex. Initially, the idea was to put together an artist's sound installation, audible in situ through loudspeakers, combining with the viewing of the mural. However, such speakers could not be integrated into the wall surface due to the material used, and would therefore have had to be positioned on the outside and in a visible manner across the whole surface.

There were many issues to bear in mind for the planning of this solution: from the type of sound system to be used, to the problems linked to the acoustic impact, and from the effect of humidity to the distance of any viewers of the work passing through the Colletta Park etc. After having assessed a great range of technical and acoustic solutions, it was decided that the traditional speaker system should be abandoned in favour of a sound component developed on a virtual platform.

We thus came up with an interactive audio-visual web application, accessible either via PC or mobile device. This was the outcome of teamwork, but above all the outcome of a collective reflection arising from various skills: composition in the traditional sense, programming and experience design in close dialogue between art, science and technology.

The visual work was photographed at high resolution (144 photographs to make up a single image of 18 gigapixels) and reproduced in the app (split into 300,000 tiles) where it may then be explored in a virtual fashion, moving in all directions across the surface, or drawing closer through levels of deep zoom, in a sort of three-dimensional immersion.

The sound material is made up of fragments of compositions by Stefano Gervasoni, the sounds of the mural worksite and the voices of 16 students from the Lyceum: the latter were in fact called upon to read the sentences featured on the wall in various languages, and each student thus read a sentence, transliterated where necessary into the foreign language. All the musical material underwent a process of sound design (digital elaboration of the sound and algorithmic composition) and was made available to the user through streaming, with a binaural rendering that makes it possible to perceive the sounds three-dimensionally (best listened to using headphones). The movement of the user across the virtual wall of the mural thus triggers combinations of the above-mentioned sound material, 'composing' original 'polyphonic' music.

For the implementation of this sound part, the Fondazione Spinola Banna per l'Arte, again with a view to directly involving young students, collaborated with the **Polytechnic of Turin** and the **'Giuseppe Verdi' State Music Conservatory of Turin**. These two institutions recently came together as part of a new convention to give their respective students the chance to attend courses offered by the other institution, thus investigating new artistic or technical subjects as necessary. And the project *web wall whispers* – *www* readily became part of this exchange.

Under the guidance on one hand of the Professors **Marco Carlo Masoero** and **Antonio Servetti** of the Polytechnic (Degree Course in Cinema and Media Engineering) and on the other by the Maestri **Marco Zuccarini**, **Stefano Bassanese** and **Andrea Agostini** of the Conservatory (respectively teachers of electroacoustic composition and IT), and in close connection with **Stefano Gervasoni** and **Marco Liuni**, the young **Francesco Cretti**, **Luca Morino** and **Federico Primavera** (as part of their course training) recorded and prepared the sound material, organised the visual material, planned the navigation of the image and the infrastructure of the audio streaming and processing, deciding on forms of sound elaboration and thinking out the user-interaction mechanisms.

The implementation of the multimodal work *Segni per la speranza* enjoyed support from Turin City Council and that of the Metropolitan City of Turin. With this project, the Fondazione Spinola-Banna per l'Arte responded to the invitation received from the General Directorate of Contemporary Art and Architecture and Urban Outskirts of the MiBACT – the Ministry for Cultural Heritage and Activities – for a project on the theme of urban outskirts. 66 young artists were involved, collaborating with public institutions, with the aim of establishing a model which, given its artistic value, its way of including young people and offering social integration, may be replicated in other Italian cities with a view to fostering the rebirth of an appreciation of beauty, and in this sense, of the positive development of our urban outskirts.

Luisella Molina  
Milan, 15th April 2018

# GIUSEPPE CACCAVALE STUDIO

## *Visual project*

You can requalify a landscape by painting it with words. You can requalify by collaborating with other disciplines. You can requalify by letting others do the talking. You can requalify by joining forces, setting out on a common path.

Now in Turin, not in the centre but on the outskirts of the Piedmont capital, where from afar we can hear voices coming from a gym, the gym of the Primo Liceo Artistico (artistic secondary school) of the city. Words fly through the air like a ball in the children's hands. The landscape is coloured with words and notes. A whole team of students, musicians and collaborators, with the help of literary sources, including a text by Natalia Ginzburg, of visual sources including two films by Abbas Kiarostami and the splendid *Diario di un maestro* ('A Teacher's Diary') by Vittorio De Seta, paint a future horizon onto a wall, written in the words of the schoolchildren.

A lot of us came together to make these Segni per la speranza; the names of many of us now float through the air like signs for hope; every tree leaf is one of these signs, continually renewed at every turn of season.

This worksite is an interweaving of disciplines. A desire to cross through the new generations without any difference between the various cultures inherent to these disciplines; a desire to dress the landscape with garments tailored by the friendship of a multitude of fields of knowledge, without any hierarchy. On this worksite, disciplines came together such as visual composition, music composition, graphic design, literature, cinema, sound design coupled with the potential of the Internet. All this translated into a broad friendly embrace between students, artists and the landscape. And now there is a new horizon to admire, to decipher.

What effort must be made to do all this? In my own case, it was that of eliminating my own presence. Setting the example, sure, for the new generations: not as artists to provide them with a 'manner', but to foster within them a kind of behaviour, a sense of responsibility. Not a trinket of mannerism but a framework of responsibility.

Together with my collaborators, Timothée Chalazonitis and Clément Valette, we did not get onto the scaffolding – we flew onto the scaffolding, driven by the urgency of the task in hand, driven by the desire to share the transformation of a rundown landscape into the joy of work. The music of Stefano Gervasoni and the sound research of Marco Liuni are in there, inside the mural carpet of words, colours and notes then transformed into a flying carpet. It's the very needle of the spire of the Mole Antonelliana that sewed this carpet. This worksite came about thanks to the City of Turin. Now the needle of the Mole Antonelliana may feel happy beneath the city skies. This flying carpet aims to regenerate the gazes of the new generations.

Our whole country, at this moment, is in need of regeneration. Culture has been abandoned like a castaway in the sea of history, the sole political responsibility to be taken in these dark times for the world.

The 'signs for hope' thus lie in the others. I would like to thank all of them.

Giuseppe Caccavale  
Paris, 10. 03. 18

# TIMOTHÉE CHALAZONITIS, CLÉMENT VALETTE

## *Giuseppe Caccavale Studio*

This project is the result of numerous collaboration projects and encounters. And for us, it all started from our meeting with the students of the Primo Liceo Artistico of Turin.

We like to live in places with formal compositions and words, to bring out the activity of a space through a mural painting. The origin of this project, produced with students who will be the protagonists of tomorrow's society, was the porosity between the interior and the exterior of a place. This is where we accompanied them in the construction of the mural, toying with letter design and its positioning in space. These exchanges were brief but intense. This work is the result of a genuine group work that shows the strength of collaborating compared to individual work. Everyone wrote, composed, reflected on and around the wall. We were astonished by the participation of the students and by the skill of several of them in drawing letters with a paintbrush on the wall. In the discussion with Giuseppe Caccavale, over the course of the days of workshop, it emerged as being of the utmost importance that the texts should be written in the various alphabets in order to highlight the diversity of languages spoken in the school. Now the wall bears the signs of this diversity.

Luisella Molina, Francesca Doro and Rita Tommasi made it possible for us to work in very pleasant conditions and to focus fully on the project, and we are thankful to them for this. We would also like to thank Gianluca and Orsola Spinola for their kindness and trust. The mural painting work, put together in various stages, was an enriching experience for us and we hope also for the students.

We left this wall in the hands of Stefano Gervasoni and Marco Liuni in order for them to take it to the next level.

Timothée Chalazonitis  
Clement Valette



## ELISABETTA OGGERO

### *Head teacher of the First Artistic Lyceum of Turin*

Some notes on the work/study alternation course entitled Segni per la Speranza

The Primo Liceo Artistico collaborated on the implementation of the project Segni per la speranza as part of a work placement course which involved three classes:

3D Architecture and Environment section  
4A and 4B, Figurative Arts section.

The project was split into three stages.

- 1) The students watched the film *Diario di un maestro* ('A Teacher's Diary') by Vittorio de Seta, and in class examined the essay by Natalia Ginzburg *Le piccole virtù* ('The Small Virtues').
- 2) The students shared ideas and relative sketches with the artist Caccavale and his assistants.
- 3) The final stage, of an operative nature, called for the breakdown of tasks on the basis of the abilities of the students, and as the works proceeded, a definite improvement could be seen in the organisational and decision-making skills of each of them. The group work turned out to be of fundamental importance, and made it possible to improve relationships among the students.

With this project, the kids were given the chance to work in an 'adult' context and to take part in the implementation of a work of great importance.

The following are a number of testimonies given by the students involved.

*The project Segni per la speranza was thought up especially with the aim of redeveloping the outskirts of Turin, both from an urban and a human point of view. In order to achieve such a satisfying result, it was necessary to go through a number of planning and work stages, each of which highlighted the particular skills of each student. (Giada)*

*Our work placement programme took place at the First Artistic Lyceum of Turin; we met the artist Giuseppe Caccavale and his collaborators, who I think managed to involve all the project participants through the passion that they show for their profession. (Emanuele)*

*I really enjoyed the practical part of the project: the implementation of the final project on the wall together with all my classmates. (Emma)*

## STEFANO TRUCCO

### *President of the “Venaria Reale” Conservation and Restoration Centre Foundation*

The collaboration around the project *Segni per la speranza* afforded the encounter between the Conservation and Restoration Centre (committed to the safeguarding of cultural heritage) and the Fondazione Spinola Banna per l'Arte (an entity dedicated to the production of new works in the field of visual and musical arts). In both, special attention is paid to training and study programmes, aimed most of all at the younger generation: this is the area in which it proves most fruitful to establish a dialogue allowing for a genuine exchange of experiences and skills at the service of the project. The interventions carried out over the years at the Centre in the field of contemporary art conservation have on various occasions led to discussions with the authors of the works submitted to our care, giving rise to the testimonies of the artists and thus completing the overview of information essential for the restorer, with first-hand accounts of the ideation process and how the work was produced. Various times it emerged that an in-depth knowledge of the techniques and the various materials may turn out to be indispensable not only during the restoration process but also during the planning and implementation of a work, thus allowing the artist to proceed with greater certainty in the choice of media, and to have greater control over the evolution of the work, made to stand the test of time. The possibility to contribute to the pictorial part of the project conceived for the Primo Liceo Artistico of Turin represented the ideal context to intertwine various levels of conversation: between the artist and the restorer, with the aim of coming to the most appropriate technical solutions for the deployment of the paint; and among the students of the Lyceum and those of the Degree Course in Conservation and Restoration, for a comparison on the theme of the fragility of the artistic heritage, and to set off a shared thought process on the need to periodically monitor the work even shortly after completion, so as to be able to intervene swiftly in the case of any alterations being needed.

The choice of the outside wall of a school building for the positioning of the work in particular raised a number of technical issues, linked to the support to be painted and the inevitable interference of weather and environmental conditions: elements which provided further motivation for the restorers, teachers and students to get to grips with this ambitious and complex project which, also thanks to the enthusiasm of Gianluca Spinola and the commitment of all the staff made available by the Fondazione Spinola Banna, is now reaching completion.

**VALENTINA BELLANTONI, JOLE  
NARVA BOTTI, LUISA CERVINI,  
DANIELE DUTTO, FRANCESCA  
ERBETTA, NICOLE MANFREDDA,  
VALERIA PONZA, SILVIA TAGLIANTE,  
BEATRICE VIGANÒ, ROBERTA VIOTTO**  
*students in the fourth year of the  
degree course in Conservation and  
Restoration of Cultural Heritage of the  
University of Turin and of the 'Venaria  
Reale' Conservation and Restoration  
Centre, studying in History and  
Application Techniques, academic  
year 2016/2017, professor* **BARBARA  
FERRIANI**

The students on the Degree Course in Conservation and Restoration of Cultural Heritage (University of Turin and the 'Venaria Reale' Conservation and Restoration Centre) collaborated with the artist Giuseppe Caccavale, with the Fondazione Spinola Banna per l'Arte and with the First Artistic Lyceum of Turin in order to implement the mural painting entitled Segni per la speranza.

During the fourth year of the course, issues are addressed linked to the contemporary artworks in a range of different artistic currents, examining various typologies of artefacts and materials used.

In this collaboration, our contribution did not only concern the planning of the work, in close contact with the artist, but also the communication of values such as preventive conservation and safeguarding: values which concern us all as consumers of such works. These activities, when carried out correctly, are capable of reducing the need for future restoration interventions, which are more costly and intrusive.

In order to guarantee the maintenance of the work in perfect condition, it is of vital importance to bear in mind the characteristics of the place in which the work is to be positioned, identifying potential issues. What's more, it is also fundamental to plan the implementation process, placing great emphasis on the most suitable materials with a view to guaranteeing the conservation of the cultural asset over time.

The safeguarding process includes the protection, defence and safeguarding of the works: tasks to be carried out not only by specialists, but by the community as a whole. Cultural heritage provides the trace of our development, of the passing of the centuries, as well as the changes in the life of man, and as such it is our task to conserve them so that future generations may get to know the story behind them.

The Degree Course in Conservation and Restoration of Cultural Heritage proposed the most suitable materials for the implementation of the work, and the proposals met with his approval. The assessments were carried out on the basis of the environmental conditions where the artwork was to be installed: the mural painting is exposed to the elements, direct sunlight and frost. The materials chosen were

designed to guarantee the conservation of the painting, bearing in mind the factors of degradation mentioned above.

The painting was applied to a reinforced-concrete wall, on the exterior of the gym of the Primo Liceo Artistico, partly covered in graffiti. The graffiti were removed with micro-sanding techniques so as not to alter the concrete surface which was to host the contemporary work.

For painting onto concrete outdoors, acrylic paints could have been used, which characteristically dry quickly and are particularly bright. However, given their poor permeability, the coat of paint withholds the water from the humidity in the wall and from rain. This may lead to parts of the colour falling away or bubbling on the surface, leading to the loss of integrity of the image.

For Giuseppe Caccavale's mural painting, a silicate-based paint was therefore proposed, offering better water resistance, permeability to water vapour and great breathability: these characteristics allow for the better conservation of the work when exposed to the elements. Lastly, the paint was coated with a protective film of anti-graffiti and antismog material, in order to protect the painted wall from acts of vandalism and from dirt settling on the surface.

# STEFANO GERVASONI E MARCO LIUNI

## *Music and planning*

I would like to thank to Fondazione Spinola Banna for creating the conditions for an in-depth reflection within our workgroup which ultimately led to this work bridging the gap between the arts, science and technology, and allowed for it to be implemented. Following on from the words of Giuseppe Caccavale, who explained the spirit of the project and stressed the highly poetical aspects and values of Segni per la speranza, and before handing over to Marco Liuni – to whom my own special thanks go for having brilliantly coordinated an arduous undertaking and for the great motivation he passed on to those implementing the work – who has the task of illustrating the technical-scientific aspects of the project, I would like to offer my own testimony on how this collective reflection led us to the creation of *web wall whispers* – *www*. The fact that a work process favoured by circumstances and desires deliberately brought together by the Foundation ultimately led to the creation of a work which individually could only be sensed vaguely, and which instead thanks to the power of teamwork became the result of shared abilities, is one of the distinguishing characteristics of Segni per la speranza.

Thus the idea took form in both a physical solution (music played through loudspeakers transparently embedded across the surface of Caccavale's mural, the sound of which underpins the visual exploration of the mural in loco at a 'neutral' distance), and a virtual solution (the interactive and three-dimensional exploration between vision and listening which allows for the creation of interdependent levels of perception e not 'neutral' ones, i.e. carried out on various levels of approach with the visual material, from the wholeness of the mural to its microscopic level of detail – an experience not possible 'physically' – and which are directly linked: the act of viewing produces a sound output and vice versa).

The work was shaped by continual interaction between programming, experience design and musical composition, and will be accessible via PC and mobile devices thanks to an audio-visual web app: a visual exploration on various levels of depth of the work that generates a one-off musical composition, created on the basis of the texts of the murals recited by the students, of the dialogues and sounds recorded during the creation of the mural itself, and of its high-resolution documentary images. From a sound point of view, the composition reconstructs the itinerary of visual exploration, joining the sound points activated by the visual exploration of the user in a three-dimensional and interactive manner to one another. The user interacts with the work in a visual and audio manner, as the two experiences are always bound up in one another in real time.

A utopia was thus brought into concrete existence, that of the 'open form' (in line with the fortuitous denomination given by Umberto Eco) which lies at the heart of every artistic attempt at participatory fruition, or of creation based on the complicity of an artist and his/her audience.

For *www*, the musical form is generated in a unique manner on the basis of the explorative path chosen by the user, on the basis of his/her desires, wishes and the unforeseen elements of chance, wanting to settle on a detail, overlooking others, sensing the possibility to establish a link with another visual detail, getting inside it an letting oneself for a moment be carried away by listening to the acoustic grain on a field of colour, zigzagging dynamically between various levels of depth or between distant areas on the same level, simply to see 'what effect it has' from a sound point of view and thus have a visual perception of it, and much more. This is both a playful and an intellectual experience at the same time. We were careful to keep this approach

active: we want to create a participatory dimension, in which the author (in the classic sense of the term) very carefully selects the elements and the forms of development of the visual-sound interplay, and obliges the user to take part in the game with the same level of exigency, being sensitive and mindful of what s/he produces while navigating. But in order to do this, the author needs the skills and the sensitivity of a team which – with the tools of IT and network technologies – creates the infrastructure that allows all this to be accessible to an audience that may experience it and complete the creation process in their own way. The democratisation of art does not mean its banalisation. It does not mean ‘we are all artists’, but rather that we are all aware of the depth, of the efficacy and of the uniqueness of an artistic gesture, and of the refinedness of its implementation.

Lastly, from this idea of open form, i.e. participatory, based on the awareness that music listening is the result of a complex system of interactions between memory and perception that creates the specific musical form for each listener on the basis of his/her capacity to store and interrelate data, conserving, modifying or cancelling others, the discourse shifts onto the idea of what kind of artist’s profile is still clearly conceivable in such prosaic modern times in which poetry, utopia and the search for beauty as forms of thought seem to have a somewhat limited right to exist. These are the trappings allowed only to a number of ‘chosen’ artists who, being endowed with the faculty – more often for socio-lobbyistic-politico-economic as well as soundly financial reasons – to dispense beauty, are deemed to embody genius a priori. In actual fact, in this age in which while art has a right to citizenship, in which it is called upon at most to contribute to collective entertainment (and not – might we say it? – to raise the spirit), and the quality of artistic work – the real fruit of skill and genius seem to be considered academic values, entirely insignificant – that of the brilliant artist is a simulacrum, a social need in times of aridity of the spirit and of the non-gratuity of the beauty which we have dragged through history and a past – including that of the avant-garde – imbibed in glory. And which today we would like to maintain alive in an entirely artificial manner, making do with the idea that art and the artists à la Michelangelo are alive and are still necessary. But the real importance, in my opinion and among those of us who gave life to *www*, must now be attributed to the individual works, to the single outcomes that, on their own, one by one, confirming and settling over the course of time, determine and establish the profile and the value of an artist. Our work, motivated by the mural by Giuseppe Caccavale, is therefore a single collective contribution to beauty meant as a common good, as a vital need to be shared, just like clean air and water. Single, collective and responsible: in this sense, with Marco, Francesco, Luca, Federico, Antonio, Andrea, Guido and Riccardo, we made the effort to bring together many individual skills in a shared and synthetic work, united in an effort aiming towards the same goal. Only united, giving it our best and putting aside the creative narcissism of each one of us, were we concretely able to work on the implementation of this dream which today we may offer to the community in order for it to become a means by which to dream and hope together with us.

I shall now hand over to Marco Liuni, creator together with myself of the sound part of the work inspired by Giuseppe Caccavale’s mural, who may describe much better than I can the technological and scientific aspects connected to the staging of this work.

Stefano Gervasoni 12.3.18

Segni per la speranza is the result of collaboration between schools, universities and institutions of the city of Turin. By promoting this project, the Fondazione Spinola Banna per l'Arte proposes a reproducible model of urban redevelopment through art: the art object is the lexicon shared among various disciplines, building bridges and steering the community towards the development of original and innovative solutions. The starting point is the expression of a clear artistic goal, and the will to decline it in a collaborative context which is an interface between art, science and technology. The path undertaken is that of an ambitious work in which complementary skills are brought together in a continuous exercise of mutual listening. The result is the mural ideated by Giuseppe Caccavale, into which the 'whispers' are shaped: the voices of those who gave life to the project, and the music of Stefano Gervasoni. Such whispers are intangible and thus ubiquitous: they constitute the voice of the wall of the Primo Liceo Artistico of Turin, which may be heard simultaneously throughout the world thanks to the advanced use of web programming.

*web wall whispers* – *www* aims to broaden the confines of web audio art to the universe of interactive composition, producing an audio-visual experience of high quality in keeping with an open form determined by the exploration of the user; the work is conceived so as to offer a fruition that is never repetitive, which may take place through rapid exploration or spread over the time span typical of a concert or a traditional audio-visual installation. The user has access to images of the mural work in high resolution and the continual unfolding of an interactive musical work: thanks to an innovative, dynamic and stratified concept of audio streaming, the listening process is always polyphonic (the sound material activated by the gestures/actions of the user is composed each time and overlaps in various layers with various degrees of presence) and is never the same twice. The listener traces the musical form as s/he visually explores the wall, and may be guided by the images or by the sound that entails, moving through them in great depth, following their own audio-visual navigation itinerary. The listening experience is extremely immersive thanks to the binaural rendering, which makes it possible to reproduce a three-dimensional sound perspective through headphones or earbuds, also programmed as part of the web audio: the fruition of the work takes place via the simple access to a web page on a PC, tablet or smartphone, without downloading any additional application.

The creation of *www* is the merit of the synergetic work of Francesco Cretti and Luca Morino, emblem of interdisciplinary collaboration between territorial sources of excellence such as the Polytechnic and the 'Giuseppe Verdi' Music Conservatory of Turin.

The work, its constituent materials and the knowledge developed for its implementation belong to the community, which along with its future students, artists and researchers, is endowed with the task of taking care of it, and of making use of it in new contexts (museums, monuments, urban or natural landscapes). The paradigm to which this gives rise is that of a liquid authoriality, ramified and spread throughout the dense network of collaborators, in which each may offer solutions based on his/her own skills and nobody is a mere executor. A model capable of generating innovation and genuine competitiveness in both artistic and scientific research, and in which the work of art is a medium, a stimulus for the socio-economic fabric of the community.

Marco Liuni 13.3.18

## MARCO ZUCCARINI

### *Director of the "G. Verdi" State Music Conservatory of Turin*

I would like to say these words not only to thank the Fondazione Spinola Banna per l'Arte for having involved the Conservatorio Statale di Musica "G. Verdi" of Turin in this wonderful and meaningful experience, but also to express my own personal adhesion to the artistic and social scope that underpins this idea. Art and music together are the highest expression of the human soul, and find their reason for existence even more in their coupling, in initiatives that involve society itself and the social fabric of a city.

My heartfelt thanks go to the Fondazione Spinola Banna per l'Arte, the Professors Stefano Bassanese, Andrea Agostini and the young Luca Morino for this marvellous operation that I for one believed in right from the start.



## LUCA MORINO

# *Implementation of IT music system | computerised music processing*

Student of the School of Electronic Music at the “Giuseppe Verdi” State Music Conservatory of Turin

The following document represents a brief account of my contribution to the development of *web wall whispers – www*, as a student on the Course of Electronic Music at the “Giuseppe Verdi” State Music Conservatory of Turin as an exam project for the course on Advanced Programming for Musical Information Science.

*www* is a web application based on the interactive exploration of images and sound. My role as a member of the *www* team was that of computer music designer, meaning that I dealt largely with the musical and sound aspect of the application.

### TASKS

As the computer music designer of the *www* team, I worked on:

- **The generation of musical material** starting from the initial audio material – the recordings of the voices of students, recordings from the worksite and of school soundscapes, fragments chosen from the compositions of Stefano Gervasoni – through the digital elaboration of the sound and the algorithmic composition of the materials.
- **Sound Design** of the Action Sounds: sounds deployed to underline the interaction of the user.
- **Coding** audio files to make them suitable to web transmission, while maintaining recording quality.
- **Planning of the multimedia and interactive architecture** of the application, seeking out forms of sound elaboration for the generation of the final materials that would be in line with the notions of the composer and implementable in the web audio framework that had been developed.

### IMPRESSIONS

I found this work very educational and interesting, mainly due to the approaches and mechanisms established in the work by the team. What’s more, I had the chance to enhance the skills acquired during my course of study and to examine a number of technical and musical aspects with extremely qualified individuals.

## MARCO CARLO MASOERO

### *Professor of Industrial Technical Physics*

## ANTONIO SERVETTI

### *Adjunct Professor in Computer Engineering*

## TURIN POLYTECHNIC

The project *web wall whispers – www* was produced with the participation of Turin Polytechnic in the technical-computer part of the web application. This was actually a multidisciplinary activity, midway between the technical area and the artistic, which saw the involvement of the Degree Course in Cinema and Media Engineering thanks to Dr Francesco Cretti, under the supervision of Prof Antonio Servetti.

The Degree Course in Cinema Engineering is in fact a context in which students are trained, bringing together the strictly technical subjects of engineering with ones of a more bound up in the humanities.

As an example of this all-round training offered to students, the activities for this project started out from a recent convention that Turin Polytechnic and the “Giuseppe Verdi” Music Conservatory of Turin stipulated through Prof Marco Masoero and Prof Stefano Bassanese in order to give students the chance to include a number of the subjects offered by the other institution in their own study course, so as to enhance their preparation, but also to give students and teachers the chance to collaborate together on different projects, as *web wall whispers – www* shows.

The contribution of the Polytechnic to the *web wall whispers – www* project was designed to transform this work into a virtual experience based on recent innovations introduced to the panorama of web technologies designed to increase the active participation of the user in the fruition of multimedia contents through the web browser.

In particular, the technology at the basis of the IT implementation was defined by the W3C Consortium, which coordinates the development of web technologies, under the name ‘Web Audio APIs’. This technology introduces the possibility to synthesise and process audio natively, within web applications, so as to extend the user experience from the visual to the acoustic domain.

In the *web wall whispers – www* project, ample use is made of this technology so as to ensure that the user of the work is capable of playing with the audio material that is offered to him/her as a basis. In addition, the native functionalities of the Web Audio APIs were extended here to cover new scenarios and expressive approaches.

While Web Audio technology was in fact designed to work with files downloaded previously from the server, in the *web wall whispers – www* project, it was adapted to this function so as to be able to work with streamed audio instead of audio files, which is transmitted progressively by the server to the client in real time.

The high quality of sound and visual material used by the project would in fact have taken a long time to be downloaded onto the user device using the traditional approach before the user experience – i.e. the audio-visual exploration of the mural – could begin.

Furthermore, this solution also extends the scope for user interaction with the audio material, making it possible to 'choose' an audio portion from all the sound material available on the server and transmit only what is necessary for its reproduction and elaboration in real time, offering major savings on the users' data traffic consumption, with a consequent benefit of lowering costs both on the user and the provider sides.

# FRANCESCO CRETTI

## *Web productions*

Doctor of Engineering of Cinema and Media – Turin Polytechnic

The following document represents a brief rundown of my contribution to the development of the *web wall whispers – www*, on the occasion of the post-degree internship carried out from the end of October 2017 to the end of February 2018, in terms of project options and design, technological choices and actual implementation.

*www* is a web app based on the interactive exploration of two forms of contents:

- Imagery (the mural work *Segni per la speranza* by Giuseppe Caccavale), through its in-depth navigation;
- Sound (extracts of compositions by Stefano Gervasoni), through the real-time streaming of musical contents;

The development called for various steps, which may be summed up in the following points:

- Planning of image navigation through the 'deep-zoom' technique;
- Planning of streaming infrastructure and audio processing;
- Planning of user-interaction mechanisms;
- Distribution through web server;

### IMAGERY

Deep-zoom navigation is obtained through the following steps:

- Very high resolution photograph of the wall, obtained with more than 150 photographs and their successive stitching together, to make up a single large-size image (a total of around 18 Giga pixels). This passage was implemented by the photographer Guido Suardi;
- Generation of a mosaic of tiles, made up of a set of more than 300,000 images of 256 x 256 pixels, organised on the basis of the TMS (Tile Map Service) scheme: a standard borrowed from the applications that allow for the navigation of geographic maps;
- Implementation of an interactive viewer of the image, which allows for its navigation through zooming and panning. For this step, the open-source tool 'OpenSeadragon' was used, then modified to include specific features required by our app (in particular concerning the commands for user interaction, dynamically variable on the base of various 'states' of the app).

### SOUND

- Coding: on the basis of the high-quality audio material produced by Stefano Gervasoni and Luca Morino, it was necessary to code the files to make them suitable for transmission via web, but so they would maintain their recording quality. The choice fell to the AAC codec, developed by Apple, famous for its high quality at low bitrates.
- Segmentation for streaming: the fruition of the audio is possible through content streaming. The concept of streaming is based on the segmentation of multimedia contents into smaller portions (in our case, ones of six seconds), and on their sequential reproduction as they are downloaded. This has the great advantage of allowing the user to save data storage space, and endows the app with greater reactivity.
- Use of WebAudio APIs as a control system: once the audio flows have been obtained via streaming, they are processed through the use of the

Web Audio APIs, i.e. a series of functionalities, developed from 2011 but widespread only since 2015, which allow for the elaboration and management of audio contents via web. The use of this instrument has not yet been explored in all its potential, which confers an experimental aspect to *www*.

## **USER INTERACTION**

- Virtual speakers and points of attraction: onto the image, various points are mapped in which virtual speakers are positioned: this makes it possible to associate given audio contents with specific zones of the wall. Each of these virtual speakers behaves like a point of attraction, in such a way that the user, exploring the drawing, may de/activate the virtual speakers on the basis of his/her nearness to the corresponding points of attraction.
- Play-area mechanism: In order to manage the virtual speakers, the first mechanism implemented is that of the play area: a circumference is drawn around the visualised field, and at every movement of the user, the play area is updated: the points of attraction lying within the play area are activated. The points of attraction that move outside it are deactivated. For the others, their state remains unchanged.
- Real-time processing on the basis of user actions: to complete the interaction mechanisms, a distance model was added based on three main effects: reverb, binaural spatialisation and the low-pass filter. For every point of attraction present in the play area, the parameters of these effects are modulated on the basis of the position of the user.
- Other effects: in some cases, other effects are applied, unlike those used for the distance model. These effects aim to create 'intermediate' and transitional situations, in which the user explores new sound contents and various kinds of interaction, which in particular are the high-pass filter and distortion.
- Other sound contents: there are other types of sounds that may be encountered by navigating through *www*, which do not correspond to the mechanisms of the virtual speakers and the play areas, and these are:
  1. Action Sounds – sounds associated with the user's actions
  2. Pre-Binauralised Sounds – sounds that do not pass through the chain of elaboration outlined above, but which have effects 'incorporated' directly in the original audio file.
  3. Sounds Associated with Colour – sounds of which the volume is associated with the presence of a specific colour in the portion of wall being observed. They may only be discovered in the very deepest level of zoom.

## **CONCLUSION**

The coupling of these mechanisms provides the user with a profound navigation of the image (ranging from a view of the entire wall down to microscopic detail) and an immersive experience from an acoustic point of view.

Through his/her actions, the user creates his/her own composition, deciding (or by doing so unconsciously) which sound extracts to reproduce, with what effects and with what balance to strike between them.

In this way, at every access, and according to the different approach that each user may adopt, countless musical compositions are generated, slightly different from one another in terms of composition, sonority and duration.

## GUIDO SUARDI / Fotosintesi

### *Photographic relief*

Procedure of photographic relief of the mural work *Segni per la speranza*

For the technical rendering of the mural work on the façade of the gym of the Primo Liceo Artistico of Turin, it was necessary to proceed one step at a time; I shall briefly try to illustrate below the various work stages which led me to create the final image. We started off producing an image of intermediate resolution (of around 260 megapixels) which had the twofold purpose of constituting the base for the initial development of the project and of determining the ideal level of enlargement for the final file. Once these parameters had been set, the next step was to decide on the number of images to produce and how they should overlap, in relation to the focal length used and the relative shooting distance.

In order to simplify the operation of photographic rendering, we decided to carry out the shots from a distance of around twelve metres at a constant height of around four metres, using a focal length of 180 mm. This choice allows us to reduce the vertical shooting angle of the single sequences as much as possible and therefore keep distortion to a bare minimum, a level easily correctable during the post-production stage.

The prefabricated elements that make up the façade turned out to be useful to split up the surface into sub-zones, as well as offering an excellent reference for joining them back up after shooting.

From past experiments, we had in fact already established that no software is capable of precisely rendering an image of such complexity through an automatic editing process, due to the great concentration of key details, i.e. the elements that allow the program to line up the images correctly.

We therefore decided to use the preliminary image, suitably interpolated, as the 'skeleton' for the new composition at very high resolution which was underway, as if it were the reference diagram for a jigsaw puzzle.

We therefore split the façade into eight sections, lining up the images one by one, section by section, and so placing them manually on the reference image.

Once the composed image had been created, we could proceed to the next stage, i.e. that of retouching the photos, in order to obtain an ideal fusion between the real image and the graphic image; in this way, the drainpipes were eliminated, and the continuity of the wording was recreated where it was missing. Lastly, the windows were dulled because the transparency of the glass constituted an element of disturbance for the interpretation of the image.

The mural work *Segni per la speranza* in numbers:

- 144 photographs at a resolution of 36 megapixels, taken during the shooting phase.
- 18 images taken of each of the eight wall sections
- 180 mm the focal length used for shooting
- 455 Megapixels – the size of each of the eight sections of the mural work
- 2,902.73 Megapixels the final resolution of the whole façade
- 17.3 GB the average size of the elaborated file
- 3.7 GB the size of the final file in tiff format with LZW compression (NB: 4 GB is the upper limit tolerated by the tiff format)

## RICCARDO ANTONINI / Formaviva

### *Graphic design*

Formaviva produced the web platform for *web wall whispers – www*, the project promoted as part of the multimodal work Segni per la Speranza by the Fondazione Spinola Banna per l'Arte.

For the creation of the platform, Formaviva came up with a graphic design which tries to integrate the already known image of the Fondazione Spinola Banna per l'Arte with the artwork. This was the basis of the choice to produce a logo which would visually/ chromatically draw on the concept of the Foundation, and with a logotype made up of the use of three different fonts, in the attempt to highlight the various characters used in the mural.

The website was created with the aim of highlighting the application as much as possible. Therefore, the initial loading time was reduced to a minimum: a key factor in the user experience. That was done by using HTML, CSS and Javascript code, as small and clean as possible, using the latest standards and thus avoiding the need for heavy additional libraries.

The entire site system is conceived as a one-page application, in which the additional contents may be accessed such as the description and the credits without ever leaving the page, even in the passage from one language to another.

A simple command bar, with intuitive icons, also makes it possible to break down the language barrier in the use of the application. Through a click from the home page, the web app may therefore be reached and navigated, enveloping the user in a truly enthralling experience.

