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Old and New Questions on Soundscape, Musical Heritage and Musical Instruments

The Museo del paesaggio sonoro of Riva presso Chieri

1. Soundscape, cultural environment and history

In 2004, while I was working on my PhD research on the sources of the *Gabinetto Amonico* by Filippo Bonanni under the supervision of Febo Guizzi (1947–2015, at the time he was Professor of Ethnomusicology at the University of Turin), thanks to Arturo Artom, a piano collector, and to Annarita Colturato, a researcher of the University of Turin, Febo Guizzi and I had the chance to meet Domenico Torta.[2] Musician, composer, teacher and researcher, Torta had gathered an extraordinary collection of musical instruments and sound devices in the area around Riva presso Chieri, where he was born, which he occasionally displayed at temporary exhibitions. In addition to the great variety of instruments, hunting calls, toy instruments that in some cases meant important additions to the book on Italian instruments of traditional music that Febo Guizzi had published a few years before,[3] what struck me immediately was his familiarity with not only contemporary music practice and the various functions and meanings attributed to sound within a community, but also historical sources, among them the *Gabinetto Armonico*, the same treatise on musical instrument that I was studying, published in Rome in 1722 by Jesuit scholar Filippo Bonanni.

This first encounter created the basis for a joint work between Febo Guizzi, representing the University of Turin, and Domenico Torta, which involved the

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students in a long fieldwork research, in the realisation of a provisional display of the entire collection on the highest floor of Palazzo Grosso in Riva presso Chieri in 2005, in the partial catalogue of the collection in 2007, and finally in 2011, in the creation of a permanent museum, according to a project by Domenico Torta and Guido Raschieri.

While becoming acquainted with the musical traditions and with the knowledge about sound in the area of Riva presso Chieri and the neighbouring territories of the provinces of Turin and Asti, during the fieldwork made in 2004-2005, we all agreed on the name that the future museum would have: Museo del paesaggio sonoro, that is Museum of Soundscape. We were all aware of the connotation of the name, especially in English, being already commonly associated with Raymond Murray Schafer's work.[4] However, our perspective was quite different. Our aim has never been analysing the sounds of the Riva presso Chieri environment for purposes of acoustic design, neither were we artists in search of recordings to be combined in a post-production process. Moreover, as ethnomusicologists, the achievements of 20th century musical composition were not our main background. We were much more familiar with the complex and historically persistent diversities that Italian traditional music preserves (that we have learnt to appreciate thanks to Roberto Leydi[5]), and with the different ways of shaping musical practice according to the relationship with a cultural environment, as Alan Merriam, John Blacking, Steven Feld and many others have demonstrated.

During fieldwork we had the chance to become aware of the complex relationships between environment and humans that the knowledge of sound implicates, and we started to concentrate on such relationships. We also became aware of the fact that those relationships were historically grounded and were the result of many processes of change and of becoming that are still happening, involving experience of sound, seasonal activities, sense of time, communication, bodies, materials, human and non-human beings. We were fascinated by the fact, already studied by other ethnomusicologists and organologists, that a certain environment could determine certain practices of manufacturing sound devices, and also by the fact that the awareness of the sound behaviour of non-humans could determine a human way to make use of sound and to gather some knowledge that would be useful throughout life. At the same time, we were fascinated by the fact that the human use of sound could determine the typical features of a territory, influencing behaviour as well as the construction and usage of objects and buildings. This was our idea of soundscape, *paesaggio sonoro*, an expression that luckily in Italian does not have the 'scopic' connotation that

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4   R.M. Schafer, *The tuning of the world*, New York 1977.
5   R. Leydi, *L'altra musica*, Firenze–Milano 1991, and in a new edition, ed. Febo Guizzi, Lucca 2008.

Tim Ingold highlights in the word *soundscape*.[6] It rather focuses on the sound qualities of a humanly conceived territory, shaped not only by its physical and geographical features, and by the living creatures that live there, but also by the sense of belonging of its inhabitants or the humans that describe it.

After the experience of the Museo del paesaggio sonoro, I could make good use of Domenico Torta's appreciation of the plates of the *Gabinetto Armonico*. In fact, I was able to fruitfully establish a connection between various chapters of the treatise dedicated to musical instruments and sound devices and the instruments documented by Domenico Torta and/or our fieldwork. Just an example which perfectly links classical literature and ecology to the symbolic meaning attributed to sound is the instrument that Bonanni calls *Instrumento per le Api* or 'instrument for bees'.

Fig. 1 F. Bonanni, *Gabinetto Armonico*, plate XCIX.

As one can discover visiting the *Museo del Paesaggio Sonoro*, various metal objects (cans and metal sheets that are struck or shaken) were used by beekeepers for a supposed humans-bees communication. Bonanni documents the tradition of making noise – striking a kettle – to stop swarming bees; of course

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6   T. Ingold, *Four objections to the concept of soundscape*, [in:] eadem, *Being alive*, London–New York 2011, p. 136–139.

he quotes Virgilio's *Georgiche*, as well as other Latin sources and commentaries. Domenico Torta's uncle, Ernesto Fasano used to strike a sickle for this purpose. However, it is not true that bees are impressed by noise. As Italo Sordi has explained, it is a symbolic action carried out by humans to publicly claim the possession of the bees that are flying away, according to the ancient Roman custom called *occupatio*.[7]
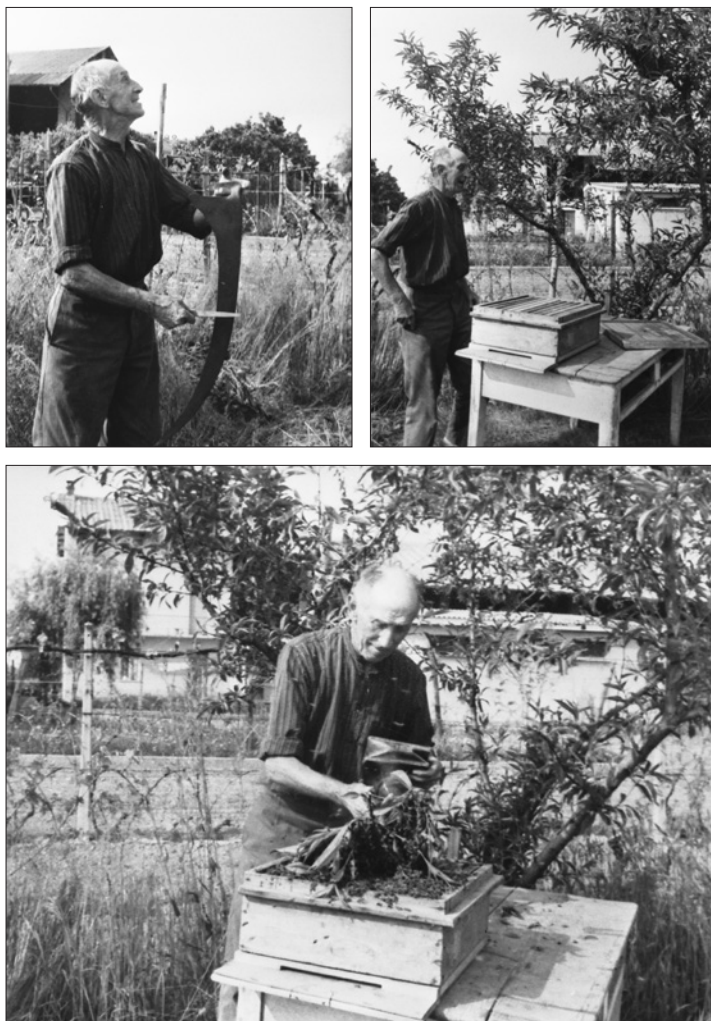

Fig. 2–4 Ernesto Fasano striking a sickle to stop swarming bees, and sending the bees into the beehive.

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7   I. Sordi, *Rumori e suoni di carnevale*, [in:] *Maschere e corpi. Percorsi sul carnevale*, ed. F. Castelli, P. Grimaldi, Alessandria 1999, p. 290.

Another interesting case study putting together ethnography, material culture, historical sources and music revival is the *torototela*. The museum exhibits two different instruments with this name: a musical bow and as a stick zither, in both cases with a resonator made of a pig bladder. The name is mentioned in various historical sources concerning some regions of Northern Italy to identify a musical instrument, a musician (often an itinerant musician, in many cases a marginal figure, a kind of a beggar) and the rhyme sung by him. However, very little evidence is available on the playing technique and the real experiences of the *torototela* players. The instrument is structurally very similar to the stick zither called *serrággia*, documented in Sardinia as a Carnival sound device.[8]

During his experience as a teacher, Domenico Torta asked his students to work on the 1861 description of the instrument by Angelo Brofferio,[9] aiming at reconstructing the *torototela*. In the meantime, he collected some pictures attesting the use of the instrument in various occasions in the provinces of Turin and Asti, mainly at wedding parties. Particularly important during our fieldwork was the encounter in 2005 with Guido Saracco (born in 1916) who preserved an old *torototela* that he used to play together with other traditional musicians on several occasions. Moreover, another evidence of the instrument on which we focused when preparing the 2005 exhibition, was a passage from Angelo De Gubernatis' book on wedding rituals, published in 1869,[10] which confirmed the presence of the *torototela* at wedding banquets in Riva presso Chieri.

The first reconstruction of the instrument as a one-string musical bow with a resonator made of an inflated bladder achieved according to Brofferio's description had some morphological differences when compared with the instruments we found in our fieldwork: sometimes two strings instead of one, the resonator was made of a gourd and there was a footrest.

The *torototela* was finally adopted by the ensemble of traditional musicians led by Domenico Torta, the Musicanti di Riva presso Chieri, and its tuning stability had to be improved. Therefore, a new instrument was invented, a kind of stick zither with keyboard (like a cello or a double bass), and which could be bowed or plucked or even struck.[11]

The two variants of *torototela* made by Domenico Torta also raised important questions when the instruments of the museum had to be catalogued and described according to the Hornbostel-Sachs classification. While Brofferio's model can be considered a musical bow (311.121.221-71), Domenico Torta's improved version with a keyboard and a bridge resting on the inflated bladder

8   G.N. Spanu, *Strumenti e suoni nella musica sarda*, Nuoro 2014, p. 174–177.
9   A. Brofferio, *Tutte le canzoni piemontesi e i poemetti*, ed. A. Viglongo, Turin 1966, p. 193.
10   A. De Gubernatis, *Storia comparata degli usi nuziali in Italia e presso gli altri popoli indo-europei*, Milan 1869.
11   Watch here a performance with both instruments: https://www.youtube.com/watch?v=6_M_y9QVZ5c.

is at a midpoint between simple and complex cordophones. Finally, by analogy with the *serrággia*, and according to its morphological features (which are closer to a stick zither than to a lute), we decided to consider it a stick zither played by a bow (311.221-71).

Fig. 5 Francesco Gatto Monticone (born in Asti in 1918) playing the *torototela*.

Fig. 6 The Musicanti di Riva presso Chieri playing the *torototela*.

The *Museo del Paesaggio Sonoro* raises interesting questions not only on the nature of musical instruments, but it also creates a special relationship with the people living in the surrounding area. Not only is it directly connected with the music making practices of the Musicanti di Riva presso Chieri, but also local people can recognize their own history, people and places in the stories narrated through its musical instruments and sound devices. Moreover, non-locals learn about the different solutions that the community of Riva presso Chieri has adopted to fulfil essential needs on sound, environment and culture that can be found in many other parts of the globe, sometimes recognising that they correspond to their own achievements (what Domenico Torta calls 'the ancestors').

The collaboration between the *Museo del Paesaggio Sonoro* and the University of Turin has stimulated various research interests, some of them not expected before meeting Domenico Torta. A few of them are summarised in the following pages. The *Museo del Paesaggio Sonoro* can be an amazing observatory to interpret the role of sound and music in society and in a cultural environment, mixing past and present, the process of changing of traditional music and the issues of folk revival. It raises questions on how to improve both a sustainable and non-nationalistic sense of belonging to a place and the awareness of the relevance of sound in human and non-human life through educational activities, involving both children and adults, schools (music schools as well) and universities as well. Finally, it raises questions on how to join the existing networks of museums of musical instruments, without affecting their distinctive features and those of the musical instruments they host.

2. The Museo del Paesaggio Sonoro
   at the crossway between Past and Present

On the occasion of the 2009 CIMCIM annual meeting in Florence, we presented the collections of the Museo del Paesaggio Sonoro, located in Riva presso Chieri, a small rural village not far from Turin.[12] At that time, we referred to a provisional and partially homemade set-up. We stated our conviction that the project should have proceeded in a close collaboration with the University of Turin, which I and my colleagues represented.

In 2011, a collective effort led to the constitution of a permanent museum centre, and its inauguration on occasion of the celebration of the 150th Anniversary of Italian Unity.

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[12]   C. Ghirardini, G. Raschieri, D. Tron, *The Civico Museo del Paesaggio Sonoro di Riva presso Chieri*, CIMCIM Annual Meeting, Session 4 Free Papers, Firenze, Università degli Studi, Aula Magna, 8 September 2009.

Fig. 7 A detail from the 2005 provisional display of the Museo del Paesaggio Sonoro.

The collections enjoy today a modern, multimedia exhibition space, ensuring the material safeguard of the instruments and the multilayer display of their deep cultural meaning. The Museum, erected on the memory of the past, has been created and functions now as a space of reflection on *Soundscape* in a contemporary perspective.

I will begin my presentation with a virtual journey across the new exhibition. This presents a summary of new perspectives on cultural themes and forms of musical expression prompted by the museum's creation. At the same time, I will outline a general view of the patrimony of the exhibited instruments, and its connection with the narrative framework of the museum.
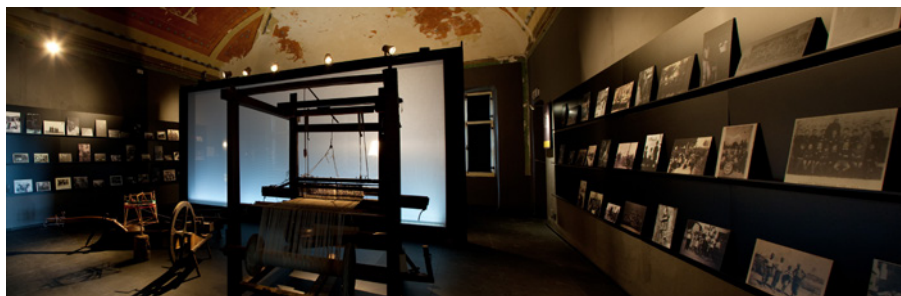

Fig. 8 The 20th century room.

The itinerary starts with the Sala '900, 20th century room, a space which invites the visitor to go backwards in time through various audio-visual accounts. The destination is a period in the last century which saw, in many ways, its final moment of existence. The XXth century has became a conceptual space where remote history and the contemporary split. This is also true in music where the diminishing presence of archaic elements usher new transformations in aural production and perception.

The experience is therefore a snapshot of a previous world, a crucial setting for numerous subjects developed in the museum itinerary. Only two iconic objects, a plough and a loom, symbolize the simple subdivision of the local society in *peisàn*, the peasants, and *tessiùr,* the weavers. At times, the space is enveloped in fog and darkness to evoke the patina of the time, but likewise to paint the real and imaginary landscape of the pianura padana, whose west-most edge is captured by the museum. The walls enclosing the central space are crowded with photographs, creating a kaleidoscope of peasant life. This display has been designed to show a view of the past which is constantly updated. Periodically, reproductions conserved in the museum's archive are fashioned into new exhibits. An important stimulus to collect new material was offered to the community with the aim that the Museum, especially in areas devoted to showing a collective portrait, could become a public space of reflection and identification. The soundscape which completes the tableau is composed of the sounds of the work, words and songs recorded in the same community.

The second room is located centrally inside of the exhibition complex. Thanks to its large size, it allows for the development of multiple important themes. One compartment is dedicated to ephemeral or spring musical instruments. Here, the world close to its essential nature, already introduced in the first room, acquires new significance. The exclusive focus on plant materials in the display underscores the primacy of the primordial relationship between man and the environment. Bark pieces, blades of grass, flower stems, fruit seeds become musical instruments from infancy, or, if you will, from the infancy of mankind, just as a sound gesture itself approximates a natural force. A second area of the room is reserved for terracotta instruments, first of all globular flutes and *ocarinas*. This section highlights different kinds of productions discovered in the area: simpler sound objects, born from play with clay discarded during the fabrication of bricks, juxtaposed with more refined instruments.

Another area is devoted to a series of instruments popularly employed in musical accompaniment. The centre features one of the most interesting instrument of the collection: the *torototela*. The name refers to a musical bow, whose diffusion in the area of Northern Italy is attested by oral and written memory. The name denotes the instrument as well as the performer, often an itinerant street player. The historical sources concerning the *torototela* indicate that this instrument and musician already disappeared in the 19th century. Contrary to

this, the oral record proved the permanence of the instrument until recent time, in the Riva and Asti areas. The remarkable character of this piece lies in the resonator made from an inflated pig bladder, through the reuse of butchery scraps, also observable in other sound objects.

Fig. 9 Museo del paesaggio sonoro, second room.

Figg. 10 Descriptive boards.

Figg. 11–12 Descriptive boards.

Figg. 13–15 The hunting calls of the Museo del paesaggio sonoro.

The second half of the room illustrates the calls practiced in the course of hunting. The exhibition space holds a vast collection of calling instruments, as well as an immersive installation. The visitor is led through a path where he/she can see, among the branches, sudden lights and hear bird chirps of species living in the region.

The following space is again split into two areas: the first one is devoted to the bells tradition, the second to the local tradition of the processional floats and to the language of the *fini dicitori* [the refined reciters], both connected to patron saints' festivals.

A virtual space once again separates the two thematic areas, recreating a bell tower interior. In the middle of this circumscribed space, the bell tower keyboard is reproduced; it was once employed to perform the *baudetta*'s melodies, the pieces reserved for holidays in which the virtuosic skill of the player was showcased together with the ability to vary simple music themes. The areas near the installation display objects and documents related to the bell tradition, from the building techniques to performance practices. Another part of the room holds the section dedicated to the ritual instruments employed during Holy Week in place of the merry sound of the bells.

Fig. 16 Fra Stefano (Attilio Portesine 1922–2000) playing bells through a keyboard in the bell tower of the church of San Domenico in Chieri.

At the end of the room is a space dedicated to popular religious festivals: there an eighteenth-century cart stands out, which is used even today as part of the St Albans festival. The surrounding area is permeated by the soundscape of the feast. A beam of light illuminates on and off the only cart from which a voice recites the *stranòt*, folk rhymes invoking the Saint and issuing public condemnations of persons and behaviours.

Fig. 17 The installation dedicated to the *fini dicitori*.

Fig. 18 Toy instruments.

Onwards in the itinerary, we find the section devoted to toy musical instruments. Often created through the reuse of simple, everyday things, they hold in their modesty an immeasurable richness of physical and symbolic details.

The vast space which subsequently opens, centres on dance repertoires and the sounds of the band. The thematic focus follows the tradition of the so-called *Musicanti*, namely the groups of wind instruments, and notably the *quintet* (the quintet), whose role was to enliven communal festivities. The ball, locally called *bal a corda*, was in the past an occasion for recreation and socialising. Highly specialized musicians played their instruments in the centre of the dance floor. This expressive language was born within the world of the brass band which acquired increasing relevance and diffusion from the early nineteenth century and became the preferred channel for the popularization of repertories and codes of cultured music. The virtuosic fusion of refined elements with lively folk material made the *quintèt* (and similar ensembles) a real testbed until the middle of the last century.

Fig. 19–20 The room dedicated to the Musicanti.

Today, the room which concludes the exhibition is divided lengthwise into two sections. The first gallery is devoted to the complex subject of the "transition". If in the opening of the XXth century room the visitor witnessed a conservative space where the connection with a nearly-static past was stressed, now the contrary emerges. The viewer is immersed in events and projected to a new, antithetical reality. On the one hand, the 20th century room represents an imaginary contact with a distant memory, on the other, the "transition room" is the space where the countless channels flowing towards the present coalesce. The display cases house objects, instruments and sounds selected to inspire multiple readings that embody the change.

Fig. 21 The "transition room".

Fig. 22 Cesare Gastaldi, a piano restorer, and a barrel piano by the Cuconato Company, Turin, first half of the 20th century.

The last space is titled *Sala della Plastica*, the Plastic Room. Here the colourful contemporary arena is placed on stage; a thick mesh fence hangs musical instruments and sound objects of standard and industrial manufacture. Viewed with attention, beyond the apparent chaos, a new tableau emerges merging multiple strands of musical culture which seem to be only the prerogative of a remote history.
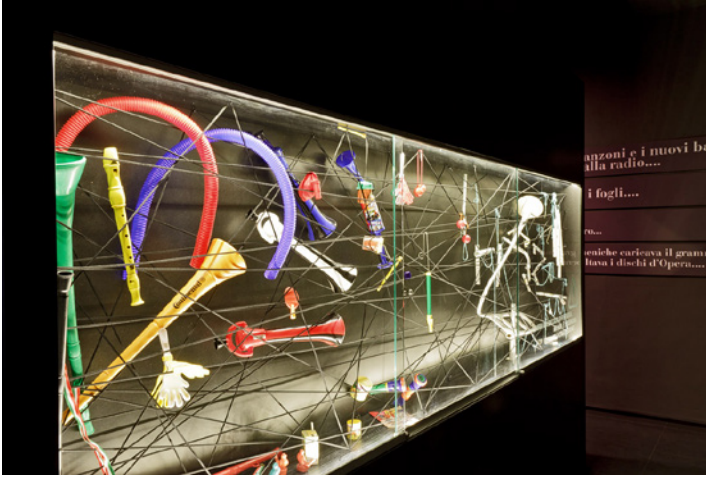
Fig. 23 The Plastic Room.

The Museum offers then the representation of a traditional musical heritage through material objects and stories, set against historical and contemporary processes of transformation. The exhibition also includes a body of abandoned objects, not only to satisfy a need of musealization, but also to open a window into practices which have fallen into disuse. At the same time they represent a natural space of continuous permanence of a sound universe and its instruments of expression.

If the task has been the musealization of marginal musical spaces and musical instruments, the experiment has been successful, achieving notice on the national level. The knowledge of the ethno-organological patrimony remained for a long time the purview of specialists, while the new interpretation of traditional practises of instrumental expression of the past was operated by amateurs, or compilers without philological knowledge. Historically, the experiences of folk music revival in Italy proceeded alongside scholarship during the sixties and seventies. Beyond that limited time-frame, a split between the two approaches predominated and largely persists today. Given this, the Museum plays an important role in the dissemination of knowledge, grounded upon

reliable research. In so doing, it is a real cultural engine, re-establishing new foundations for thought and perspectives of traditional musical practises. We will see how the Museum has succeeded in establishing in a circumscribed, but expandable context, a new kind of constructive relationship.

From another perspective, the crisis of original traditional repertoires which crescendoed in the second half of the twentieth century due to socioeconomic and cultural transformations, generated a distorted, trivialised vision of folk music as folkloristic or rustic remnant. They were seen as forms of expressions lacking a certain coarseness but which found commercial success in an empty and disoriented cultural reality. It is precisely in this respect that the Museum can offer (and offers, in fact) a guide. The perspective presented should not be understood, nonetheless, as coming from a place of conservatism; the research is aimed at truth, in the sense of being verifiable and a response to reality. It is not, it should be stressed, a reconstruction of a false authenticity, along the lines of past ideologies which have historically caused great distortions.

The attention to transformations and the caution in undertaking efforts of the "restoration of an intangible heritage" construct limitations and temptations of mythologising. Seen in this light, the Museum functions as a place to educate the public about music of the past. This aim to disseminate knowledge and offer new models of alternative expression blossomed since the foundation of the institution through the interaction between local actors and the team of researchers that assembled around the figure of Febo Guizzi. A long period laying the foundations of the Museum was dedicated to these purposes.

As a part of his educational activity, as a music teacher in middle school, Domenico Torta, the first promoter of the Museum, started his own collection of musical instruments, stimulating and guiding young students to reflect on their own cultural present and past, through the survey of objects and musical practices. In this way, through the intergenerational link, a marginalized cultural space started to be recovered. A cultural space which had, in the meantime, become marginal was saved through the recovery of inter-generational links. Constructive and interpretative skills were restored, bringing new life to important functional and symbolic systems of sound production. This operation did not focus solely on observation and collection, but also promoted the re-acquisition of applied knowledge and abilities. The survey conducted in the school environment was the first of the museum's collection efforts.

Equally important, in the local context, the rural area surrounding the village of Riva presso Chieri, Domenico Torta and his team revived a musical practice and the living memory of expressions which were in danger of vanishing. From these roots grew an inner experience of reuse of traditional musical forms and new performances. Independently of this, but linked to the revivals of folk music in an urban setting was the birth of the group of musicians, Musicanti di Riva presso Chieri. The playful spirit shown in the following videoclip

(*I Musicanti in "Serramënna"*, from an idea of Domenico Torta, directed by Stefano Quaglia, realised by Pentagramma, 1993) reveals the main objective of the group. It aimed to reinforce the practice and support the celebration of community festivals, especially in regards to dance repertoires, which faithfully followed traditional models.[13]

Since the crucial germination of this museum project in 2004-2005, the activity of the group centred on staging musical theatre pieces. In this way, a new impetus arose to recount the history of a community through its intrinsic musical language and relay the features of peculiar musical instruments. This encompassed themes such as work, play, ritual, celebration, the expression of feelings, and the existential dramas of self and society. The aim was to create, on the stage, the soundscape of those situations or human conditions expressed aurally. A temporary exhibition of the collection of musical instruments sometimes accompanied the performances of the group. When the decision was made to house the collection in a permanent location, the first exhibition was created based on these early models of display. The union between exhibition and the described reality was maintained in the successive museum project. The collection, most importantly, was not the simple gathering of neutral objects, but every artefact represented the material testament of human events and a witness of the interwoven relationship of humans and sounds. This focal point is clearly displayed in the museum; from the beginning, the visitor can establish an interpretative bridge between the object and the relayed message. When this goal focuses on a now-distant past, the present can be evoked through analogy and dialogue.

During the initial stages of creation, we attempted to establish a conversation between the traditional museological solutions and the adoption of multimedia. One example is the room devoted to instrumental arrangements for dance, where the narrative is accompanied by wall projections of the musicians in action. In viewing this, one has the impressions of seeing distant ghosts but this is no fiction – they are real recordings of folk musicians skilled in balancing a musical language stretched between historical traditions and contemporary survival.

In these few intervening years, the museum has acquired a central role in musical education in the area, thus attaining one of the central goals of its foundation. One of the most interesting experiments consists of itineraries of soundscape reading. This starts with the observation of the surroundings, identifying their key characteristics, and ends with the recognition of their transformations.

Similar to visual literacy, school groups are invited to listen to soundscapes in the museum's collections. A third encounter, places youth in contact with systems of sound production and the structure of instruments, towards the acquisition of elementary playing competences. A musical performance was born from another educational endeavour. It was titled "piccolo popolo *f*ievoli

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[13]   https://www.youtube.com/watch?time_continue=34&v=6WSKxFr_2nw

Fig. 24–25 The wall projections in the Musicanti room.

ƒiabole ƒrivole", four shortest musical fairy tales. The piece, composed by Do-
menico Torta, employed again the group of Musicanti di Riva presso Chieri, this
time engaged in a musical dialogue with the Teatro Regio Orchestra of Turin
which further promoted the project. Multiple messages were expressed through
the concert. I will mention only two of them: first of all, the effort elevated and
displayed in an important public venue, the journey of translating into spectacle
and into contemporary reality the museum patrimony. This always had a dou-
ble life, inside the walls and outside the confines of the institution. Secondly, the
symbiotic relationship created between instruments, languages and the move-
ments of cultured and folk music could be interrogated beyond simplifying
rhetoric, revealing the central aspects of a universal auditory instinct.

3. Educational itineraries

The museum collection and its set-up lend themselves well to educational school itineraries. In recent years those who have benefited are mainly students from the Region's middle schools. The educational itinerary was developed by Domenico Torta, thanks to many years as a middle school teacher, and it is shared with expert guides at the museum. As previously mentioned, the musical instruments on show are in part the collective work of middle school students from previous generations, and so the tour is a way of passing knowledge on from one generation to the next, something which gets the young students more involved.

The tour begins in the square in front of the museum. Here they must open their eyes and look closely at the surrounding landscape; with keen curiosity, and a little background knowledge, it will be easier to understand what is a difficult and elusive concept for children, that of *soundscapes*. The urban and architectural stratification of Riva, like so many European cityscapes, is full of enigmas. We can see the bell tower, the old parish church from the 1700s, flanked by a large mansion with two double lancet windows that stand out. Then some modern houses, built in the early twentieth century, others of a more recent build and a number of old houses with thick sloping walls. The guide points to an old seventeenth century map of the town, and the children are encouraged to find signs of the most ancient parts of the urban landscape on the map, and to work out the age of the various buildings, guided by a number of clues, such as the characteristic sloping walls of seventeenth-century buildings; or double lancet windows pertaining to medieval times. A short walk along the streets surrounding the museum leads the children to discover traces of the ancient canals that once bordered the city walls, and the theme of oral memories is introduced, an explanation of how our elders still remember the water channels in front of the walls, a memory that lives on. Then the traces of the original walls are examined, and the ancient medieval tower and its pointed arch – one of the ancient gateways to the city. But this is where the situation gets tricky. Right in front of the tower there is a second arch, an ornamental feature on a gateway leading to a house, which to all intents and purposes looks like that of the tower; but, on close inspection, the workmanship is different, there is a difference in materials, in aspect. It is in fact a reproduction, from the late-nineteenth century. In the case of the double lancet windows on the house by the church: one is real, the other is fake – one of them being a twentieth century reproduction. *Which is the real one?* – the youngsters are asked. But while it may be easy to tell which nineteenth-century arch is a reproduction, in this case it is much more difficult, because the imitation double lancet window has been crafted with such great skill and there are no obvious signs that distinguish it from the original. The landscape therefore can be deceiving and in different ways: shamelessly, as in the case of the arch, and in a subtler way, as in the case of the

double lancet window. And so it is in sound and, this being said, the young-sters enter the building, and make their way to a construction that immediately has them puzzled – a sort of bell tower built with tubular bells cut at different heights, a keyboard and a system of ropes and hammers.

Fig. 26 The "bell tower" at the entrance of Palazzo Grosso.

Fig. 27 A student of the Middle School of Chieri playing the "bell tower".

Here some fundamental themes are introduced. In a community that shares a code, I can play a certain short melody and say something that everyone in the town can understand. I can say, for example, that a man has died:
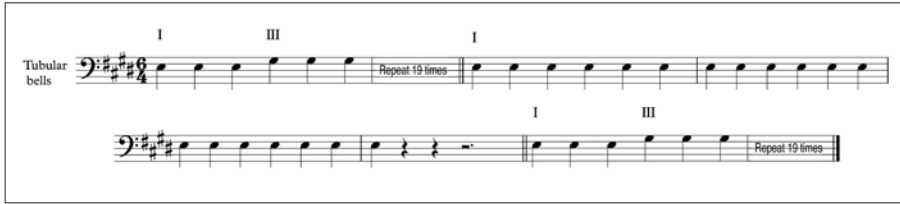
Or, a woman has died (same pattern repeated 19 times, but with two hits on the first bell – *campanone* – and two on the third – *terza* or *mezzana*); or, a priest has died (same pattern with four hits on the *campanone*, and four on the *mezzana*); or, even, that the Pope has died (same pattern with nine hits on the *campanone* and nine on the *mezzana*). By ringing the bell with the hammer, I can say that a storm is approaching, or that a fire has broken out. Selecting certain parts of a single bell, and using the hammer, I can simulate the sound of three bells by emphasizing the right overtone.

Typically, this first part, which we have not gone into detail here – many other are the codes used – is quite evocative, due to the loudness of the bell tower, completely obliterating the students' recent experience of quietly contemplation of the town's soundscape; and because the player hits the keyboard in a vigorous manner, as if wrestling with a thousand-tentacled instrument that has taken on a life on its own. His intent, perhaps even more so than the volume of sound, leaves the students transfixed by such a powerful and unusual experience.

In the meantime, two essential themes are introduced in this first contact, in compliance with a sensitivity and philosophy which will bring meaning to the entire tour programme: the first is that codes are also necessary in the interpretation of soundscapes, without which we are unable to interpret its reality; the second is that instruments are a complex sphere, and that an instrument can be played in different ways, to say different things.

The tour programme continues on through the various rooms of the museum. In general, each room features a few chosen examples out of the many instruments held in the museum's rich collection. The criteria behind this choice are various. On the one hand, there is an attempt to build on what the students already know by activating new possible hermeneutic paths in the reading of sound realities, on the other hand by exhibiting very particular instruments, as in the case of the *torototela*, each time beginning with the instrument before moving on to historical sources.

The following is a typical situation: you ask "What is it?", pointing to the head of a recorder, the instrument in front of which you find yourself. The students call out in unison, "It's a flute!". But now the head of the duct flute, disassembled, is beaten against the middle joint of the instrument, and it becomes an idiophone. The head is then mounted on the middle joint and, pointing to the recorder which is now complete, the question is once again asked, "What is it now?" As a rule, the students respond: "Now it's a flute." "Oh no, just a moment," you reply, and the middle joint of the recorder, again dismantled, is now played like a trumpet. It is through such a variety of games that the fundamental principles of organology are introduced. In a similar fashion, the history of musical instruments is conveyed with a particular focus on the rich collection of musical toys, birdcalls and animal calls. Special emphasis is placed on a young child's capacity to learn the principles and forms of instruments with a long-standing tradition – "ancestral instruments", thanks to Domenico Torta's brilliant teaching approach. The section on bird calls, which is reached following an evocative walk through a stylized forest full of birds and mysterious creatures, introduces the relationship between man and avifauna and, more generally, between man and the natural world. Some of these instruments are presented as puzzles to be solved, for example, "the instrument for the bees", that, only in the end, is it revealed for what it is, an instrument used to signal that a hive has swarmed and to lay claim to it, in relation to the human community and ownership.

This introduces a somewhat subtle theme, that of projection, by the human community, of fantasies and myths with regard to the sound nature of the animal kingdom and the complementarity of analytical-rational and mythical-magical explanations. Other stories are not told through narrative, but in such a way that first and foremost it is aural apperception that reveals the historical depth of subliminal memories – deposits present in our sonic awareness – which can be brought to the surface through the discovery of a sound and its history. This is the case, for example, of shells from which, as demonstrated, the sounds of ship and ferry sirens still derive today.

There are so many rooms and theme-based itineraries during the visit that it would be impossible to cover all of them here. But the musical instrument construction workshop deserves particular mention, located in a specially--equipped classroom for lessons in applied ethno-organology. Here many instruments – such as spoons, bottles, glasses, globular flutes, membranophones – are built by.

The last room in the museum houses a rich collection of musical toys, some used in sport, as in the case of the *vuvuzela*, which hit the headlines during the 2010 FIFA World Cup in South Africa. It is the final room and it portrays modernity: all the instruments in this room are made of plastic and are the result of industrial manufacturing, something that does however ensure that organological principles and ancient instrumental forms can pass through,

albeit transformed, into our own lifetime. It is also an invitation to read the soundscape in a non-nostalgic key, questioning forms of survival and the regeneration of "ancestral sounds" that the children have come across and become familiar with in the previous rooms.

Due to the originality of this educational itinerary over recent academic years, the Museo del paesaggio sonoro has hosted workshops for the University of Turin's ethnomusicology course as well as education programs for secondary school and middle school teachers.

4. Towards the digitization and on-line accessibility of the musical instruments collection

The catalogue of musical instruments of the *Museo del Paesaggio Sonoro* consists of about 250 records; it was compiled in 2007 and covers just a section of the entire collection of the Museum. Febo Guizzi's set of rules for cataloguing musical instruments, created after a long experience with different Italian collections of musical instruments, was used as the model for metadata.

That model was formerly conceived as a basic text file consisting in a sequence of about 30 fields belonging to the same hierarchical level. We consider Guizzi's rules the best model available in Italy for a correct and rich description of musical instrument collections. Therefore, we aim at improving and aligning them to Information and Communications Technologies (ICT), in particular to those connected to the *semantic web* and the *Linked Open Data* (LOD). The first outcomes of this process are a draft for a XML Schema implementation, the project of a mapping to LIDO (a XML Schema for metadata harvesting), and the analysis of the interpretation of musical instrument *vocabularies* in LOD environment.

Implementing a new technology does not involve a mere translation of content. When mapping to a new format or adopting a new software, language or policy, a further examination of the original model is necessary.

XML[14] is a markup language that is essential for digital cataloguing. It provides a means to handle documents with structured information easily; this is the reason why it is the main tool for metadata management. The information contained in a XML *document* is structured like a tree diagram, a hierarchy of elements containing text. Those elements are "nested" in a specific manner and can be mandatory, optional, repeatable or not repeatable; a XML *schema* is a set of rules defining those costraints on the structure and content of *documents*.

The creation of the XML Schema led us to analyse the nature of Guizzi's rules. The fields of the rules are structured in a way that reflects Guizzi's concept

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14   XML (EXtensible Markup Language) – https://www.w3.org/XML/

of musical instruments as *sound objects*, summing up his knowledge as a scholar of organology, ethnomusicology and anthropology of music, while they also help the museum curator to have a correct approach to musical instruments.

In the Introduction to his volume about the musical instruments of Italian traditional music,[15] Guizzi points out that in many occurrences instruments are "the only direct witnesses which allow us a view of history". Thanks to their ability to survive the passing of time they are independent from the "contingency of human memory and presence" and they are available for observation and interpretation even if there are no other witnesses of the musical context of their direct utilization.

On the other hand, the ethnomusicological approach sets that *sound object* within a richer anthropological frame.

> Some of the criteria applied in the most comprehensive and mature work of organological classification […], particularly those concerning the essential movements to produce sound with instruments […], or to adapt basic materials to musical usage in different ways, are the result of a consideration that only the ethnomusicological approach could achieve, that is the approach which takes into account the ongoing musical event, where the relationship between man and instrument is the focus of interest, as an essentially anthropological moment.[16]

The relationship between man and the *sound object* is achieved in a more or less conscious process of *cultural making*. Thanks to the implementation (even if only potential) of some bodily techniques, the instrument becomes a complex objective node that embodies "productive, functional, acoustic, musical, communicative, formal, aesthetic and symbolic" features:

> Because of their nature of material things, one can say that instruments […] may represent a kind of revised and corrected version of the 'neutral' layer theorised by Jean Jacques Nattiez, and therefore, an intermediate position between a poietic (the accomplishment of an event) and an aesthesic (perception) process. Indeed, the instrument has an autonomy *per se* in its material consistency, which is separated from man and from his corporeity. Moreover, as a manufactured product, it unavoidably descends from a construction process that determines its design, and it

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15   F. Guizzi, op. cit., p. XIX–XXV.

16   "Alcuni dei criteri utilizzati nella più compiuta e matura opera di classificazione organologica […] in particolare quelli relativi alle condotte fondamentali messe in atto dall'uomo per produrre suoni con gli strumenti […] o per rendere adatti all'uso musicale con modalità diverse materiali di base, sono il risultato di una considerazione che solo l'approccio etno-musicologico aveva consentito di maturare, e cioè quello che prende in esame l'evento musicale in atto, all'interno del quale il rapporto tra uomo e strumento è posto al centro dell'interesse quale momento squisitamente antropologico". F. Guizzi, op. cit., p. XXII. Here the author refers to the Hornbostel-Sachs Classification which is included as an appendix to the volume in an Italian translation with a series of additional comments by the author.

is integrated functionally in the sphere of musical 'making' that is culturally determined by and an expression of the human inclination to music.[17]

The *Museo del Paesaggio Sonoro* really highlights the double character of the object that, at the same time, is the result of a manufacturing process and a potential device to produce sound through musical techniques. The instruments kept there, sound devices (toy instruments, hunt calls) as well as musical instruments in the strict sense of the word, cause observers to wonder about 'how the instruments were made' and 'how they are played'.

In this case, the most relevant aspect of soundscape is not so much related to its acoustic environment, but rather to the culturally shared expertise of *sound making*, connected to a specific environment and to the materials which it provides.

Guizzi's set of rules have been conceived bearing in mind the anthropological richness embodied in the *sound object*; this is the reason why the first moment when the organologist examines the object is always present and never forgotten in its structure. The first XML Schema implementation of Guizzi's rules consists of the sequence of six main Metadata Sets: *Identification*, *Classification*, *Context*, *Description*, *Resources*, and *Administrative data*. The coherence of the model, in particular the way different expertise and points of view alternate, can be verified only by implementing it and consulting the analytical notes.[18] The records compiled according to this model are rich in well-organised data; they take into consideration the scientific classifications and acknowledged references. That is the expertise we think museums should provide to *semantic web* technologies.

The *semantic web* is an extension of the traditional World Wide Web; its achievement requires the evolution from the *web of documents* to the *web of data*.[19]

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[17] "Per la loro natura di cose materiali, si può dire che gli strumenti […] possano essere collocati a rappresentare una sorta di edizione riveduta e corretta del livello 'neutro' di Jean Jacques Nattiez, posto in situazione intermedia tra quello poietico (quello della realizzazione dell'evento) e quello estesico (o della ricezione); esiste infatti indubbiamente un'autonomia dello strumento in sé nella sua consistenza materiale e separata dall'uomo e dalla sua corporeità, così come peraltro è imprescindibile la sua discendenza di manufatto da un processo costruttivo che ne determina la 'fattura' e, a sua volta, la sua integrazione funzionale nella sfera del 'fare' musicale culturalmente codificato ed espressivo dell'umana predisposizione alla musica". Ibid., p. XLVI. When citing Nattiez, the author refers to J.J. Nattiez, *Fondements d'une sémiologie de la musique*, Paris 1975.

[18] Some instruments described according to Guizzi's rules can be found in C. Ghirardini, *Per la definizione di una scheda SM. Considerazioni a seguito di esperienze di catalogazione di strumenti di ambito popolare italiano e di strumenti musicali meccanici*, "Philomusica on-line" 2009, Vol. 8, No. 3, p. 241–264, (http://riviste.paviauniversitypress.it/index.php/phi/issue/view/08-03.

[19] For an introduction to semantic web and Linked Open Data, addressed to cultural heritage operators: M. Guerrini, T. Possemato, *Linked data: a new alphabet for the semantic web*, "Italian Journal of Library, Archives and Information Science" 2013, Vol. 4, No. 1, p. 67–90, http://leo.cineca.it/index.php/jlis/article/view/6305/7891.

The model of the *web of documents* is a web of HTML pages connected by hyperlinks. These links are not semantically structured; their semantics not being comprehensible to the machine, the human agent has the task of interpreting the document and choosing which hyperlink to open.

On the other hand, the model of the *web of data* is a relational database. The monolithic HTML page evolves to the shape of aggregations of data (minimal particles or concepts, resulting from a process of 'atomization' of the information) that can be reaggregated in different ways and for different purposes. These data are connected by links whose semantics is explicit; the 'meaning' is expressed in machine-readable formats: if in the *web of documents* only the human agent chooses which hyperlink to open and how to interpret the document retrieved, in the new *scenario* of the *web of data* the machine also is able to interpret data and infer new knowledge.

Semanticization of links between data provides the *web of data* with the ability to make aggregations of information describing things belonging to the *real world*; Tim Berners-Lee, the inventor of the World Wide Web and founder of W3C[20], defines the semantic web as a "web of things in the world described by data on the Web".[21] Here the focus is not only on its technical evolution, but also on the extension of the concept of 'web'; it now encompasses the fabric of meanings connecting "things in the world", in order to render descriptions made of aggregations of data "in the Web".

Such an innovative process requires that the human input be scientifically correct and organised with coherence; for this purpose, museums, archives and libraries are encouraged to play an active role in defining the new web by formulating strategies and providing effective tools for digital representation of the 'meaning' pertaining to their specific domain. More in detail, they must identify concept terms (atoms of information) by assigning them URIs[22], compile concept term lists and define semantic links between those concepts; such tools are called *vocabularies*, *taxonomies*, *theasuri* and *ontologies*.

The semantic web uses a group of technologies which are often visualized as a pile (Semantic Web Stack) where each layer uses the means provided by the lower layer. In the case of fig. 28, the layer *taxonomies* also includes *vocabularies* and *thesauri*[23], while *ontologies* are situated on an upper layer of the stack.

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[20] W3C (World Wide Web Consortium) is a non-profit organization founded in 1994 with the aim of delivering standards and recommendations for long-term Web development. It is the most relevant organization supporting the development of *semantic web*.

[21] T. Berners-Lee, C. Bizer, T. Heath, *Linked Data – The Story So Far*, "International Journal on Semantic Web and Information Systems" 2009, vol. 5(3), p. 2 (doi:10.4018/jswis.2009081901).

[22] In Information Technology, a Uniform Resource Identifier (URI) is a string of characters used to unambiguously identify a resource. https://en.wikipedia.org/wiki/Uniform_Resource_Identifier

[23] Nomenclature related to these tools is not yet unambiguous. Usually, *vocabularies* can be used as a general term including all them (vocabularies, taxonomies, thesauri and ontologies), while it is stated that *ontologies* refers to a higher layer than the others.
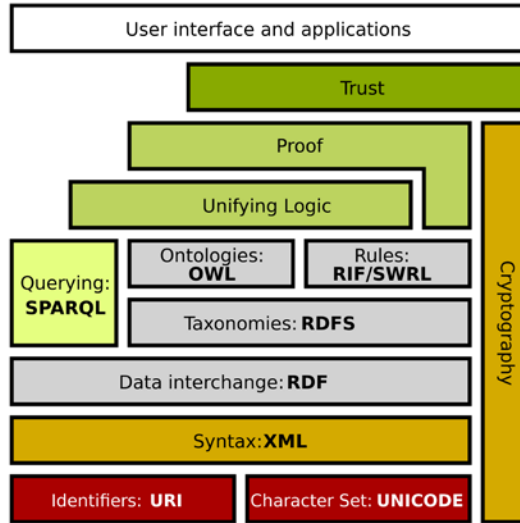
Fig. 28

Linked Open Data are a "set of best practices for publishing and connecting structured data on the Web"[24] which supports the development of the semantic web[25].

In the field of musical instrument cataloguing, MIMO (Musical Instrument Museums Online) is the most relevant international project implementing Linked Open Data. From 2009 and 2011 it digitized, harvested and published metadata and resources (audiovisual recordings and images) related to about 50,000 musical instruments deriving from 21 European museums. Its dataset is published on two websites[26], and is connected in Linked Open Data (LOD) format to the database of Europeana, the European Digital Library. MIMO delivered three LOD *vocabularies*[27]: a controlled list of Instrument Makers, a tree-structured taxonomy for Hornbostel-Sachs Classification and a multilingual *thesaurus* of musical instrument keywords.

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[24]   T. Berners-Lee, C. Bizer, T. Heath, op. cit., p. 1.

[25]   Linked Open Data „is an expression used to describe a method of exposing, sharing and connecting data via Uniform Resource Identifiers (URIs) on the web. With linked data, in other words, we refer to data published on the web in a format readable, interpretable and, most of all, useable by machine, whose meaning is explicitly defined by a string of words and markers". M. Guerrini, T. Possemato, op. cit., p. 67.

[26]   http://www.mimo-international.com/ is the front-end website, intended as the focus of the *post-project* dissemination; www.mimo-db.eu is the publicly accessible *back-office* database interface, including advanced search tools and means to explore keywords and Hornbostel-Sachs Classification *vocabularies*.

[27]   Here, we refer to the general meaning of the term.

From a scientific point of view, the adoption of a tree-hierarchy as a *criterion* for Hornbostel-Sachs (HS) Classification entails some difficulties. In its original concept, the HS is intended as a tree-hierarchy based on a *criterion* similar to the Dewey Decimal Classification; but, sometimes, in order to describe complex sound objects, more numbers have to be combined together (in the case of polyorganic instruments[28]) or, more often, a suffix must be added to the HS number. The HS is supposed to be a dynamic classification model, while HS Linked Open Data vocabulary delivered by MIMO is a rigid representation, a crystallization of the HS model as it unfolds when applied to a specific dataset at a specific moment. As a consequence, adding a suffix creates a new number: so we have to deal with *two different numbers* (e.g., 314.122 and 314.122-4) belonging to the same conceptual level, rather than with *one single number* to which a suffix has been added.

Moreover MIMO's HS Classification does not implement the poly-hierarchy[29] and the use of colons and brackets devised by Eric von Hornbostel and Curt Sachs for the description of polyorganic instruments; since there are no technical obstacles in their implementation, we suppose that the decision is merely for the sake of simplification[30]. As a consequence, the juxtaposition of two numbers to describe a polyorganic aerophone creates one new number, for instance, 422.122+422.22-62, which, in this system, is forced to have only one 'parent' element (422.122), rather than two parents (422.122 and 422.22-62).

These anomalies derive from the incomplete matching between the 'real' HS model and its LOD representation; we know that such complications are common when representing knowledge in digital environments, and that this is a compromise solution which has been considered acceptable in this specific context.

Unlike the HS Classification, which is specialised, the keyword *thesaurus* is aimed at general users. Each MIMO instrument must be associated with a *keyword* deriving from a tree-structured multilingual *thesaurus*. A non-scientific *criterion* has been used when structuring its hierarchical levels, reflecting the linguistic and musical expertise widespread in some western social groups. Instruments are divided into nine main groups: elements of musical instruments, mirlitons, electronic, keyboard, mechanical, percussion, string, wind, and 'other' instruments.

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[28]   Complex instruments composed of more instruments belonging to different HS classes or to different subdivisions of the same class; for example, the *müsa* is an Italian polyorganic aerophone composed of different reedpipes (i.e., one oboe and one clarinet).

[29]   In a poly-hierarchy one *child* can have more than one *parent*.

[30]   "Since the numerical codes must be used consistently within the databases of the different MIMO partners, in the practical application of Hornbostel Sachs numbers to multicategory instruments within this digital context none of the abbreviations suggested by Hornbostel and Sachs have been used." *Revision of the Hornbostel-Sachs Classification of Musical Instruments by the MIMO Consortium*, p. 3.

This classification merges heterogeneous *criteria*; as a result it cannot be used consistently: some instruments must be categorised in *ad hoc* classes or, from a scientific point of view, in wrong classes.[31] In our opinion, this is not the right structured information that museums, as experts in the domain, should provide to the semantic web; in this case a basic controlled list, with no hierarchical framework, would be more suitable.

Considering the role played by the vocabularies in LOD environment, defining a *keyword* means defining a concept that describes one or, better, more than one item of the domain; since *keywords* are related to the language concerning the instrument we must assume that this is a very variable issue. Therefore, in our opinion, it is more advisable to avoid local names, because, as over-contextualised terms, they are not easily reusable.[32] As a more general *criterion* to define *keywords*, we suggest the use of *typological headings* as described by Febo Guizzi and Anthony Baines.[33] The *criterion* for its formulation can be derived from some levels of HS Classification (those that combine instruments with morphological and functional homogeneous features), but, at the same time it is, as Febo Guizzi explains in his set of rules, "empirical, abstractive and linguistic. One has to analyse the instrument well to recognise general features that match those of analogous instruments or instruments in the same taxon […]. Moreover, the current linguistic habits and the more specifically organological terms have to be taken into account."[34]

In order to upload your metadata to the MIMO database, you have to map them in LIDO,[35] an XML harvesting schema developed by ICOM-CIDOC[36] and intended for delivering metadata concerning cultural heritage domain. LIDO is event-centric: most of the information related to the object that can be linked to time (e.g., *making, use, acquisition*, *restoration*, *exhibition*) must be expressed in the form of an *event*. It has derived the event-centric model from

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31   This is the case of the *Jew's harp*, classified as a 'percussion instrument', whereas under the HS Classification it is a 'plucked idiophone'. Since HS and keywords vocabularies are linked each other, two different and misleading classifications appear for the same instrument.

32   The same *type* of instrument may be identified by too many local names so that it is unlikely that an agreement on which one to choose would be easily reached; those local names are often expressed only by oral tradition, and their transcription involves a problem of data consistency.

33   A. Baines, *Organology and European folk music instruments*, "International Folk Music Journal Council" 1960, 12, p. 10–13.

34   "Di carattere empirico, astrattivo e linguistico: si tratta cioè di esaminare bene lo strumento per ricondurlo a caratteristiche generali che lo accomunino ad altri analoghi o all'interno dello stesso taxon […] e considerare poi gli usi linguistici correnti e quelli più specialmente organologici".

35   LIDO, Lightweight Information Describing Objects, http://www.lido-schema.org/

36   CIDOC, Comité International pour la Documentation, ICOM (International Council Of Museums), http://network.icom.museum/cidoc/

CIDOC-CRM,[37] the Conceptual Reference Model defined by ICOM-CIDOC. CIDOC-CRM is an ontology, a form of knowledge representation within a domain, in this case the cultural heritage domain. An ontology defines terms necessary to design the digital representation of a specific domain; these terms identify entities and concepts populating the domain, and semantic relationships connecting them. The event-centric CIDOC-CRM's upper level is represented in fig. 29.[38]
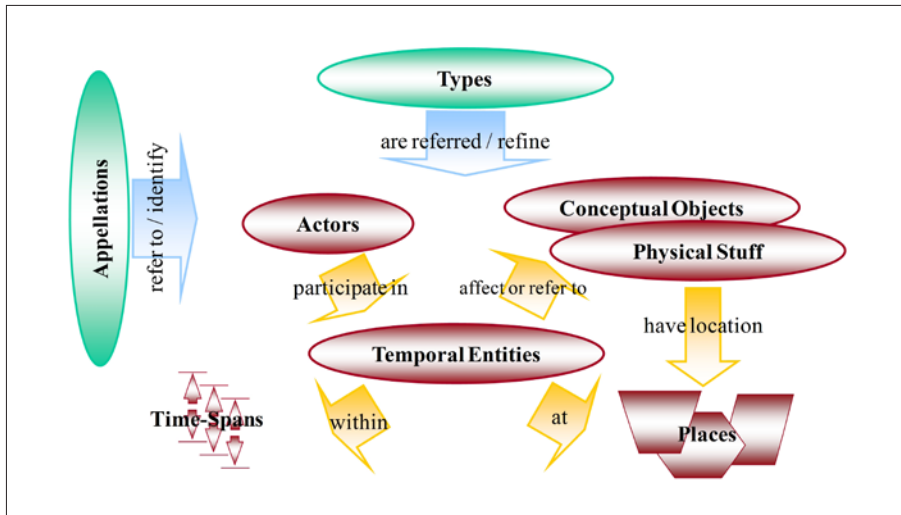

Fig. 29

There are many different models of ontologies, and the event-centric one is not very common[39]; furthermore, it is quite complicated, as we can experience in the mapping of Guizzi's set of rules to LIDO schema, that entails some conceptual stretches; for example, if one wants to use LIDO to describe which materials the musical instrument is made of, he is forced to talk about a 'fabrication' event, even if it is unknown; whereas in Guizzi's rules the field concerning 'materials' is autonomous because of the conceptual priority that Guizzi gives to the direct examination made by the organologist.

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[37]   http://www.cidoc-crm.org/

[38]   For an introduction to CIDOC-CRM: C. Oldman & CRM Labs, *The CIDOC Conceptual Reference Model (CIDOC-CRM): PRIMER,* CIDOC CRM Special Interest Group, 2014 (http://www.cidoc-crm.org/docs/CRMPrimer_v1.1.pdf).

[39]   As a matter of fact, Europeana's EDM (Europeana Data Model) a metadata description model oriented to semantic web, supports the co-existence of both event-centric and the more widespread object-centric approach (e.g., models based on Dublin Core).

In order to facilitate the process of mapping to LIDO, we planned a second implementation of Guizzi's set of rules in a further XML Schema, where information related to *events* is enclosed in the original fields, whose sequence and priority are preserved.

Semantic web and Linked Open Data are state-of-the-art technologies for cataloguing; they provide the heritage of cultural institutions with the opportunity not only to be published on the web, but also to be properly integrated in the new web. In the case of musical instrument museums, this process is also an interesting starting point for organological research: the demanding and compelling task of representing 'knowledge' and 'semantics' in a digital environment requires enhancing expertise and improving tools for the representation and classification of the musical instrument domain.

5. Conclusion

In our opinion, the Museo del Paesaggio Sonoro is a challenging place dealing with important issues concerning music: both the old questions on the transformation of traditional musical heritage and the new ones on the relationship between culture and nature that have recently been raised in the ethnnomusicological research and in the humanities.[40] The Museo del Paesaggio Sonoro is a place where it is possible to study the cultural environment by establishing historical and intergenerational links, and to understand the strict relationships between sound and environment by observing musical instruments and sound devices and experimenting with musical practices. The visitors and researchers are involved in the process of transformation of the practice of music, they experience its consequences on human relations and on the cultural environment, they are involved in processes of "becoming animal"[41] – when imitating the sounds of birds with the hunting calls – or the in experience of *antimusica*[42] – when dealing with the horns and the noise makers for the Holy Week rituals. Old and new concepts about music and sound merge together, while technologies represent a challenging means to enhance knowledge in the Anthropocene.

The Museo del Paesaggio Sonoro preserves mainly musical instruments. Our intention to improve Febo Guizzi's set of rules to catalogue musical instruments in order to align them to Information and Communications Technologies is grounded in our materialistic approach that considers musical instruments

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[40]   I am referring to R. Braidotti, *The Posthuman*, Cambridge 2013 and to A.M. Ochoa Gautier, *Acoustic Multinaturalism, the Value of Nature, and the Nature of Music in Ecomusicology*, "boundary 2" 2016, Vol. 43, No. 1, p. 107–141.

[41]   G. Deleuze, *Mille plateaux*, Paris 1980.

[42]   F. Guizzi, *Le raffigurazioni del Cristo deriso e il "demoniaco" nei rituali della Passione*, [in:] *Charivari*, F. Castelli (ed.), Alessandria 2004, p. 201–243.

as carriers of history and of traces of usage, rather than a means to achieve a trascendental idea about music. Moreover, Guizzi's set of rules imply a deep reconsideration of the Hornbostel-Sachs classification and of the terminology used for musical instruments. As far as Hornbostel-Sachs classification is concerned, we do not consider it as a static set of labels that must be attached to the various items, but a versatile system of knowledge that can be modified and improved according to the requirements of the researchers and of the musical instruments collections, as the two authors stated in the introduction to the classification.[43] We have adopted MIMO, the most important European project of digitization of musical instruments collections, as our reference point for the XML Schema implementation, however, this model raised many questions. Our previous experience in cataloguing the musical instruments of the Museo and our long reflection on the Hornbstel-Sachs classification and on the typological definitions for musical instruments and sound devices carried out with Febo Guizzi since the late 1990s has guided us in the various observations concerning the best way to adapt a process of describing musical instruments to a shared technology without losing our methodological premises. The process of digitization is far from neutral, hence the necessity of a quite technical part on the digitization process in this paper, which, we hope, we will be able to achieve in the next few years.

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[43]   "In certain circumstances it may be necessary not only to re-arrange the rankings of the concepts and create new subdivisions, but also to incorporate into the higher ranks of the classification some criterion which has purposely not so far been used. There is nothing to prevent this being done, and we should like to illustrate it by a final example, at the same time showing how we envisage the development of our system for special purposes." E. von Horbostel, C. Sachs, *Classification of Musical Instruments: Translated from the Original German by Anthony Baines and Klaus P. Wachsmann*, "The Galpin Society Journal" 1961, Vol. 14, p. 3–29, quotation from p. 12. See also the revisions and integrations by Febo Guizzi to the Hornbostel-Sachs classification in F. Guizzi, op. cit., p. 409–482.