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► **To cite this version:**

Raffaele Pinelli. Discovering Italian Free Metal Reeds: A Fieldwork Enquiry. *European Journal of Musicology*, 2022, *Musics/ Music Makers/ Musicologists' Transhumance*, 20 (1), pp.152-172. 10.5450/EJM.20.1.2021.152 . hal-03637033

HAL Id: hal-03637033

<https://hal.science/hal-03637033v1>

Submitted on 11 Apr 2022

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**Discovering Italian Free Metal Reeds:
A Fieldwork Enquiry**

Raffaele Pinelli¹

There's synchronism in life, and we met when it was supposed to be.

Lorenzo Antonelli

This article deals with the results of some of the research I carried out within the broader framework of my PhD thesis (Pinelli n.d.). My goal in the present context is to further enlarge on those results. Although such results were not the main object of my PhD, they did contribute to the description of the context in which mechanical bellows aerophones – of which the diatonic accordion is one of the oldest musical instruments – are produced. During the research I carried out to understand and describe the history of the organological developments of the diatonic accordion from the 19th century until today, it was fundamental for me to analyse both the context and the production processes involved. In this article, I therefore presented some of the results achieved in the complex – and still little known – production system of metal free reeds for mechanical bellows aerophones, starting with research at an important Italian factory, the *Voci Armoniche*, and thanks to my meeting its administrator, Lorenzo Antonelli.

The main reason I chose this topic is empirical: in the course of the field research I ascertained how, from a qualitative point of view, the knowledge and understanding of various aspects related to the production of such devices was partial, whether it be on the part of the social actors directly involved in the production of reeds and musical instruments, or on the part of the musicians who play these instruments. The second reason is scientific: systematic research on metal free reeds is scarce and by now

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outdated; moreover, I have yet to find any publication that examines their complex production system in an exhaustive way. Four important publications should nevertheless be mentioned: in 1972, the French Director of Research at CNRS, Emile Leipp (1972) wrote what has to date been the only study to examine the anatomical, physiological and acoustic analysis of reeds for accordions; in 1979, in the latest scientific monograph published in Europe on the diatonic accordion, Italian ethnomusicologist Francesco Giannattasio first presented, albeit not exhaustively, some information on the handcrafted construction of the reeds for accordions in Italy (Giannattasio 1979, 28–32). In 2005, French accordion craftsman Thierry Benetoux published a manual for tuning accordions which, although it is not a scientific text in the strict sense of the word, offers useful information about the processing of reeds and their assembly within these instruments (Benetoux 2005). Finally, in the last edition of the famous work dedicated to the history of the accordion by Frenchman Pierre Monichon (1971; 1985), updated and edited by Alexandre Juan after his death, one can find further historical information on the evolution of metal free reeds for mechanical bellows aerophones (Monichon and Juan 2012).

What I describe in this article is a work in progress which is the object of more exhaustive analysis within my PhD thesis. The multiplicity and diversity of the information collected in the diachronic and synchronic dimensions led me to prefer the ethnographic approach which in turn has undoubtedly influenced the writing.

With the intention of giving the most faithful rendering of both collected and analysed data, and my experiences in the field, I developed a peculiar narrative strategy. I therefore chose not to omit the description of the objective and subjective difficulties encountered, or indeed of the feelings experienced at the moment of discovery. I have therefore drawn up the text preferring the narrative form. In some moments, I focused on the description of the spaces and events experienced therein. At the same time, for a better understanding of the context, I made space in the text for the words of some of my informants, reported in direct speech, as they were recorded or transcribed in my notebooks. In order to not alter the narrative rhythm, I decided to entrust all the information related to the sources, and also those of a technical, historical and organological nature, to the footnotes.

*

The text is made up of three parts, followed by the conclusions. In the first part, which contains autobiographical references, I explain the reasons that led me to the detailed study of the diatonic accordion. Through the narration of my meeting with the diatonic accordion craftsmen Castagnari, the organological elements related to the instrument and to the reeds are presented, as well as information useful for understanding the complex context in which I conducted my research.

The second part begins with the discussion of the main topics of the article through the account of my meeting with the principal informant of the study presented here, Lorenzo Antonelli, and the description of the main place where the research was carried out, the *Voci Armoniche* reeds factory. In addition, historical information is presented both on the evolution of the production of reeds in a semi-industrial context such as the factory, as well as on the production context in which it operates, namely the important Multisector Industrial District of Recanati-Osimo-Castelfidardo.

The third part presents and analyses the data collected for the present study, including those relating to: the state and the central role in the production chain of the oral transmission of knowledge and *savoir-faire* between the craftsmen employed in production within the *Voci Armoniche* factory; the state of innovation, in a diachronic-synchronic perspective and in relation to the production of the reeds both in the factory in question and in the District. Furthermore, some of the present and future perspectives of applied research are dealt with in the conclusions.

Although this article does not claim to fill, but rather to point out, a scientific vacuum regarding disciplines such as ethnomusicology and organology, I would like it to be considered as a first attempt to investigate the complex system of the production of metal free reeds for mechanical bellows aerophones. I also hope that the reading of this paper can be a stimulus, as its writing was for me, for a broader reflection on the importance of ‘doing ethnography’ today within complex contexts and in a transcultural and multidisciplinary perspective.

The sound that fits in your hand

I was just a child when I entered a workshop for the construction of musical instruments for the first time. It was 1994 and I had just turned twelve. I had travelled a long way: 400 km is a huge distance in the eyes of a child. Early in the morning, my father and I had left my hometown on the Tyrrhenian Sea, in the south of Latium. We drove to Recanati, a small ancient town in a neighbouring region, set on the top of a hill, fairly close to the Adriatic Sea. My father had fulfilled my wish: to meet the makers of my diatonic accordion.

When we got to Recanati, precisely to the village of Castelnuovo, we arrived at an old building. As I looked at it, I realised that it was our destination. I could not fathom how the building before me could really be the place where my instrument had once been made. I had been looking forward to the moment when a modern building would appear in front of my eyes, surrounded by trucks and people at work and filled with every type of material. Indeed, I had imagined diving into a crowded setting full of noise with people moving around everywhere but, as was always the case during my early years, this was just a dreamed-up reality that did not exist. The stunning scene I had before me was exactly the opposite of what I had expected. I was struck by the lack of mechanical din, the absence of any person on the little

stone street before the greenish wooden front door of that building. I felt I was in a place where time had stopped still many years before. Signs of an ancient past and traces of human development were visible to my watchful eyes through the surrounding architectural works. This setting, within the house workshop, was the backdrop to my first meeting with the Castagnari family, craftsmen for the past four generations. Nowadays, professional musicians and music lovers² consider them to be among the best makers of mechanical bellow aerophones in the world. My surprise was so great that I have never missed an opportunity since then to spend time with them.

The years passed by and my first diatonic accordion was joined by others. In fact, when I was a teenager, I decided to become a professional musician and to dedicate myself to the study of such unusual instruments. Thanks to the relationship established over many years with the Castagnari, in 2004 I managed to get a prototype of a diatonic accordion that could meet my specific requests. Indeed, I wanted to go beyond the organological limits of many of the diatonic accordion models produced in Europe until then. These limits did not allow the execution of some modern repertoires and they curbed my creativity. I was twenty-two years old and I was a musicology student. I began to ask myself and others specific questions about my instrument. I tried to find theoretical and applied answers according to the Castagnaris. These questions have stayed with me ever since. As a musician, I have always been convinced that historical, technical and organological knowledge about musical instruments is an essential tool for any professional musician and composer. As a student, this interest encouraged me to specialise in ethnomusicology and, subsequently, to expand my fields of study in organology, ethnology, anthropology of techniques and transmission of knowledge and *savoir-faire*. Driven by curiosity, and motivated by the lack of answers, at the age of twenty-eight I decided to undertake a PhD in order to develop my research concerning the diatonic accordion and its history.

In 2013, during a research session at the Castagnari workshop, I asked Massimo Castagnari, third generation member of this family of craftsmen, how the creation of diatonic accordions began. Massimo replied that “It always starts from what is inside: the reeds.” This reply surprised me and continues to amaze me today. In fact, despite my adequate knowledge of the instrument, I never imagined that the conception of a diatonic accordion, of a bandoneon or a chromatic accordion, could simply start from the smallest device it contains. This device is a small metal rectangle named *piastrino*,³ with two symmetric

² Further information about the Castagnari family is available on the website www.castagnari.com, last access 15 February 2021. As regards the first analysis of their role inside the complex and varied economical system of mechanical bellow aerophones, musical instrument factories, and particularly about the diatonic accordion, see Pinelli (2017).

³ Term used by metal reed constructors to designate the plate on which the metallic tongues are fixed.

and rectangular *luci*⁴ in the centre, on which two *linguette*⁵ are fixed, asymmetrically, one on each side. This small object fits in the palm of your hand and has extraordinary value. These reeds, hidden inside the musical instrument, produce sound.⁶

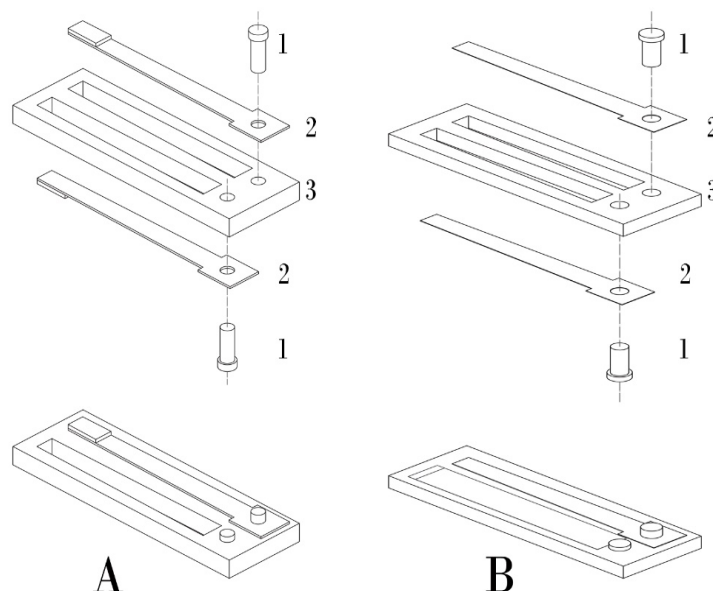


Figure 1: Axonometric drawing: two metal free reeds with two gaps. A: drawing of the bass reed of melodic part (treble keyboard); B: drawing of a middle reed of melodic part (treble keyboard). Legend of numbers: 1 – rivet; 2 – tongue; 3 – plate or body. Drawing: Marco Castagnari and Chiarina Basile Baldassarre, Recanati (MC), Italy, 2017 © M. Castagnari and C. B. Baldassarre.



Figure 2: Bisonorous metal free reed with a double gap post-assembly: view from above. Photograph: Raffaele Pinelli, Osimo (AN), Italy, 2016.

⁴ Term used by metal reed makers to describe the gap, an opening in the plate through which, because of the non-constant pressure of the air bellows, the vibration of the metal tongues is generated.

⁵ The tongue is a fine thin layer of metal with a similar form of an irregular hexahedron, fixed to the plate by a metal rivet (means *ribattino*). The tongue is the dynamic part of the reed, in contraposition to the plate which is the static one. The presence of two tongues in the reeds with two gaps, such as those used inside the mechanical bellows aerophones, makes it possible to have two sounds, each one specific to each of them. If the sounds (notes) of the tongues are the same, the reed is *unisonora* (that is, it plays in unison), such as the ones inside in the chromatic accordion; on the contrary, if the sounds are different the reed is *bisonorous*, such as, for example, those inside in the diatonic accordion.

⁶ The free reeds inside the mechanical bellows aerophones, between the diatonic accordions, are opposite to the beating reeds (singles or double). In the free reeds, the oscillation of the tongue through the gap in the vertical direction is “free,” but constant. The numerous musical instruments that adopt such types of reeds, in addition to those belonging to the family of mechanical bellows aerophones, includes, among others, the harmonica, the harmonium, the Jew’s harp, the Chinese *sheng* mouth organ.

Noticing my surprise, Massimo Castagnari explained that to make a good mechanical bellow aerophone one should always calculate the space occupied by the reeds *a priori*.⁷ This is the only way you will, “be able to plan properly and harmoniously a desired music instrument.”

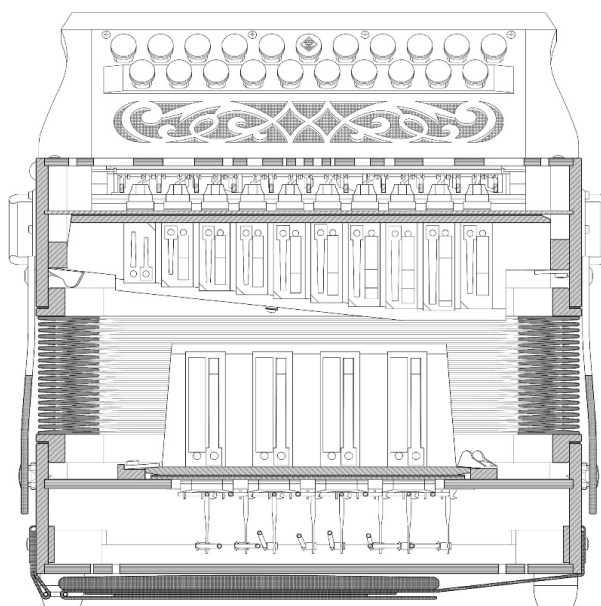


Figure 3: Frontal axonometric view 1:2 of a diatonic accordion, ‘Studio’ model, made by Castagnari. One can see the size and position of the reeds once they have been assembled on the reed blocks. Design: Marco Castagnari and Chiarina Basile Baldassarre, Recanati (MC), Italy, 2016. © M. Castagnari and C. B. Baldassarre.

It is important to point out that diatonic accordion makers do not make the reeds, bellows and accessories themselves. Mechanical bellow aerophones are assembled from a huge number of components: a small accordion has more than 950 parts. An example of this is the *Studio*, Castagnari’s eight-bass model with two melodic rows (Fig. 3). Components are made by four specific categories of craftsmen: the musical instrument, the reed, the bellows and the accessories each have their own maker.

⁷ In the language of accordion makers, the *gioco di voci* refers to the reeds in each mechanical bellows aerophone considered as a whole. Each *gioco* is characterised by two different sets of reeds: one for the melody (the reeds in the right box of the music instrument) and one for the harmony (the reeds in the left box). Each of them is assembled by craftsmen on various wooden reed blocks (*somieri* in Italian), which, in turn, are mounted inside the two boxes. The reed blocks, called *castelletti* or *soniere* by the craftsmen, are similar to an irregular hexahedron. Therefore, the number, size, and weight of the reed blocks depends on the number and type of reeds used. We can deduce how the calculation of the size of the reeds-set is indispensable for determining the internal volumes that in turn will affect the external volumes of the musical instrument. For more precise information related to the acoustic and anatomy of accordions, I refer to the interesting study by Leipp in 1972.

From a macroscopic point of view, this production chain highlights the existence of and requirement for highly specialised manufacturing processes which take on distinctive features. Here, in fact, each of the productive units is not only specialised in the processing and transformation of certain raw materials but also the keeper of certain secrets. The latter relate to the knowledge and *savoir-faire* that have been transmitted orally, from generation to generation, to specific workplaces and through particular processes. These will be discussed later. From a microscopic point of view, the *stagnigni*⁸ make the reeds by processing metals; the *maticiani*⁹ create bellows by transforming paper and paperboard, and finally the accessory makers create different kinds of components (celluloid, leather and metal ones) on behalf of the three other specific categories of makers. In the end, in addition to looking after the construction of some other instrument parts as well as taking care of the final assembly, the musical instrument craftsmen are in regular contact both with the musicians who can give them indications regarding organological customisations,¹⁰ and with the other actors involved in the production chain. The origins of this organisation of production date back to the period between the first and the second half of the 19th century.¹¹

At the beginning of my PhD I decided to focus my study on every aspect of diatonic accordion production. Therefore, I understood that I had to visit at least one reed workshop¹² belonging to the

⁸ Regional term used by the craftsmen community in the Marches region to indicate the reed makers.

⁹ Regional term used by the craftsmen community in the Marches region to indicate the bellows makers.

¹⁰ In the late 1970s, we observe a growth of accordion production in Europe after a long production standstill. This recovery was made possible also thanks to specific requests from the musicians to the craftsmen. Marc Perrone, a French musician with Italian origins, was the first to commission a personalised diatonic accordion. Perrone asked Mario Castagnari, member of the second generation of the Recanati family craftsmen, to modify one of his diatonic accordions. Later on, he asked the Castagnari family to make a few model instruments that would allow him to compose and realise modern repertoires. The trend of instrument personalisation demanded by musicians, professionals or not, strengthened during the 1980s and 1990s, to such an extent that production based on commission, has become the production standard. We can find an example in the recent “MAS” model, originating from the cooperation between the Recanati’s family of craftsmen and some young Italian musicians, including the talented musician and composer Simone Bottasso. The discussion of these events will be in my thesis (Pinelli n.d.).

¹¹ According to the tradition, the production of accordions in the Marches region and in Italy started in 1863 thanks to the first atelier belonging to Paolo Soprani in Castelfidardo (Ancona). For further information, see Giannattasio (1979, 46). However, we can suppose that the first ateliers to repair, modify and construct the first prototypes of mechanical bellows aerophones appeared in Italy in the first half of the 19th century. The recently discovered manuscript by Greggiati, *Metodo per l’Armonica a mantice* was written between 1839 and 1842 in Ostiglia and contains evidence of the presence in the north of Italy in 1833 of one of the first diatonic accordion prototypes, which the author calls *armonica a mantice*. Moreover, we know that several methods for learning this kind of instrument and related repertoires were already available in the same period. References about this topic are again in the afore-mentioned manuscript by Greggiati in Monichon and Juan (2012).

¹² Nowadays there are four reeds constructors in the Marches region: *Voci Armoniche*, Binci, Cagnoni, Artigiana voci.

MIDROC – Multisector Industrial District of Recanati-Osimo-Castelfidardo,¹³ currently the global epicentre of mechanical bellow aerophone production. I thereby asked Massimo Castagnari for details of the kinds of reeds used by his workshop and information concerning his suppliers. Massimo did not really answer but said: “I think it’s more appropriate that you meet Lorenzo Antonelli in person. You can ask him all these questions.” Indeed, I had some specific questions in mind. These mostly concerned the history and the construction techniques of the reeds because the relevant information in the scientific literature was, and is, poor and out of date. Massimo’s words, and also my presence there, motivated me to immediately get in touch with Lorenzo Antonelli, the current director of *Voci Armoniche*.¹⁴ I went to meet him the next day in his factory.

Our first meeting was short. I just wanted to get in contact with him in order to understand who exactly he was and to organise the next research fieldwork. I needed to understand whether Lorenzo was willing to let me visit his factory. I knew that this type of research would be completely different from any other I had been engaged in, such as in archives or different types of musical workshops, where I had contacted archivists, historians, methodologists, various genres of music instruments makers, or even musicians and festival organisers. I knew that it would be different with Lorenzo Antonelli. This time the fieldwork was something that I had never explored. Moreover, the only concomitant research efforts at the time were to be found within the areas of sociology and anthropology of work and its study of the factory setting.¹⁵ Likewise, I never expected to be immersed into one of the reed makers’ workshops I had read of or heard about during my fieldwork research.¹⁶ On the contrary, I was expecting an industrial plant, with machines and workers on the move. In the past I had already been in contact with industrialists for professional and research reasons, so I was well aware of the possible risks whatever my expectations.¹⁷ I expected the worst, but still hoped for the best!

¹³ Also known as the ‘District of Musical Instruments of Castelfidardo-Recanati-Loreto,’ nowadays the MIDROC’s large, wide and certified specialised production of a variety of musical instruments involves 14 municipalities in the provinces of Ancona and Macerata. The district’s history – today linked not only to musical instrument production – began with the construction of accordions in the 19th century. In this regard, local accordion craftsmen still attribute the origin to Paolo Soprani’s first workshop established in 1863 in Castelfidardo. As regards studies on industrial districts, including Italian ones, in a historical, economic and sociological perspective see Bagnasco (1977), and Sabel (1994).

¹⁴ Massimo told me that the Antonelli family has provided reeds for the Castagnari for over forty years, in the 1960s as the F.lli Antonelli brand, from the 1970s to 1990s as the SIVA brand, and nowadays as *Voci Armoniche*.

¹⁵ On this cf. n. 31 of the *Ethnologie Française* review, titled “Anthropologie ouvrière et enquêtes d’usines.”

¹⁶ One of the rare descriptions of the activity of MIDROC’s reed makers is contained in Giannattasio (1979, 28–32).

¹⁷ Investigating the production processes of a sound device like a metal free reed in a profound way and for the first time ever involves an in-depth study of every phase in its making. This approach is more complicated if the fieldwork takes place not in a small workshop as the one described by Giannattasio (1979), but within a medium or large-sized factory. In fact, the very production system of a factory implies a multilevel organisation which is split up into shops where craftsmen do different production tasks and specialised jobs. In this way, the research *in situ* needs an expert mediator able to describe the process and to show what is “invisible” to the eye of the

In the body of a sleeping whale

The meeting with Lorenzo Antonelli, just like the one with Castagnari, was quite a surprise. Lorenzo welcomed me to his factory at the end of the day. The factory was empty. The craftsmen had gone home at the end of their shift.

After introducing ourselves on the ground floor near the factory's front door and near the two technical offices, Lorenzo immediately invited me to visit the plant. I had never visited a metallurgical factory before. I can still recall the strong enveloping smells of the oils and grease used in the engine rooms on the ground level, but I was not bothered at all, either here or in the reeds fitting shop.



Figure 4: Shearing machine. Photograph: Raffaele Pinelli. Voci Armoniche factory, Osimo (AN), 2013.



Figure 5: Finished goods and semi-finished storehouse. Photograph: Raffaele Pinelli. Voci Armoniche factory, Osimo (AN), 2013.

researcher. In addition, for the phases of *ex situ* research to be more effective, it would be ideal to work with a person from inside the factory who is able to decode and explain the collected information both about knowledge and *savoir-faire*, and about quantitative-qualitative historical data.

What I wanted to ask Lorenzo Antonelli was whether he would be willing to collaborate and work closely with me, letting me in and thereby allowing me to get more information about the factory, including its industrial secrets. I was therefore well aware that he might have refused.

While we moved from shop to shop, I tried not to be distracted by any sound or noise. I felt I was getting into something like the body of a sleeping whale. The machines in the shops were still. There was no noise, and everything was tidy. Contrary to my expectations, the environment was welcoming to my eyes.

After this brief visit to the shops, Lorenzo briefly, but precisely, described the production in his factory. He showed me his vision and determination. He told me that he had started his work as head of the family business (the SIVA – Società Italiana Voci Armoniche, founded in 1973, a direct emanation of the Fratelli Antonelli,¹⁸ founded in 1935) in the late 1990s, just before the establishment of *Voci Armoniche*.



Figure 6: Mechanical unit at the F.lli Antonelli factory in the early 1950s. Photograph: Unknown – Antonelli family archives Osimo (AN), between 1950 and 1955. © Antonelli family.

¹⁸ In the 1930s the market demand for accordions grew enormously. The North American market was one of the major markets affected by this growth. To satisfy this demand, some of the major Italian accordion companies were forced to reorganise their production. Among these were the Paolo Soprani and the Settimio Soprani companies, both from Castelfidardo, and two of the world's major producers of accordions. Like just a few other factories in Europe, and unlike today, these two companies from the Marche managed the accordion production entirely within their own industrial plants. This is where they made the reeds, the bellows, the mechanics and, of course, the finished musical instruments. On seeing the tremendous growth in market demand, Luigi Antonelli, who was head of reeds production at the Settimio Soprani factory, decided to set up business. In 1935 in Osimo, together with his two brothers Cesare and Filippo, he founded the F.lli Antonelli (Antonelli Bros.) factory specialising in reeds production. In the early 1970s, following a corporate restructuring, the Antonelli family set up the SIVA – *Società Italiana Voci Armoniche*, which replaced F.lli Antonelli in the production of metal reeds. In the 1970s and 1980s, subsequent to a sector crisis, a second division was set up in SIVA for the cold-pressing of metal. For more information on SIVA's history and products, please refer to the company website at www.sivasrl.net.

The new company was founded in 2002 following the merger with another historical MIDROC reeds-producing factory: the Salpa,¹⁹ property of the Breccia family, and founded in 1946. The merger between the reed manufacturing division of the SIVA and Salpa companies happened particularly thanks to Lorenzo's will and commitment. The aim was to intervene in advance on the crucial aspects common to the two companies. These included the intergenerational changeover between the old and new craftsmen, both inside and outside the factory;²⁰ the preservation, through the acquisition, of information relating to the knowledge and the *savoir-faire* of craftsmen; the technical and organisational adaptation and upgrade of the production chain; the emergence of marginalisation and the productive decline of the two companies due to market contraction. As regards the latter aspect, it should be added that in the 2000s the Italian market for reeds had fallen sharply on account of the sector crisis occurring between the 1980s and 1990s. This was caused by the closure of the Eastern-European market following the dissolution of the USSR, and by a poor organisation of production and R & D which, in turn, had caused insufficient competitiveness in the foreign market. At first, this led to a decrease in orders from the accordion makers to the MIDROC reed makers. The reed makers who survived bankruptcy were therefore forced to reorganise themselves. The merger was therefore the only solution that could guarantee the SIVA and Salpa companies safer prospects.

Lorenzo also added details about his relationship with the reed factory. He told me about his professional career and studies, explaining his initial detachment from the world of reeds even though he was the son and nephew of *voci armoniche's* makers.²¹ He pointed out that his work within SIVA started alongside his father Vinicio at the head of the two manufacturing divisions. In 2001, after his father's death, he took up the management of the factory. After the establishment of *Voci Armoniche*, SIVA abandoned the production of reeds in 2002 to focus exclusively on the cold-pressing of metal. SIVA is now an Italian established leader in the shearing and stamping of sheet metal and in the construction of progressive or compound dies for shearing, bending and deep drawing. Its production facilities are part of the same industrial plant (taking up about 50% of the workplace) in which the *Voci Armoniche* factory is also located.

These details did not surprise me. I knew that during the first great crisis of the accordion industry in the 1960s and 1970, some of the Italian reed factories, particularly ones from the MIDROC, had transferred their technology and knowledge to the related production sectors. For example, reed companies had taken up precision mechanics. This was what happened with SIVA. This practice of

¹⁹ As Luigi Antonelli had done in 1935, Salpa's founders, Alessandro and Remo Breccia also trained at the Soprani factory. Both worked as technicians in Paolo Soprani's factory and then in the Settimio Soprani one.

²⁰ The homeworker craftsmen were essentially involved in the mounting of the reeds.

²¹ The *voci armoniche* ('harmonic voices' in English), are the words used in the MIDROC area to indicate reeds made for mechanical bellows aerophones.

technology and knowledge transfer to the new production sectors, not entirely alien to what was already made, is common to MIDROC companies and Italian industrial districts whose analysis takes us back to past periods.

The MIDROC is a part of what has been defined ‘Third Italy’ by Italian sociologist Arnaldo Bagnasco (1977), in contrast to the poor Italian area in the South and the efficient industrial triangle between Genoa, Turin and Milan in the North. Following Bagnasco’s definition, the scholar Charles Frederick Sabel goes further and gives a definition of ‘Third Italy’ as “a string of industrial districts stretching from the Venetian provinces in the North through Bologna and Florence to Ancona in the South, and producing everything from knitted goods (Carpi) ... [to] shoes, white goods, plastic tableware and electronic musical instruments (Ancona)” (Sabel 1994, 107). He demonstrates how these factories survive:

these districts escape ruinous price competition with low-wage mass producers by using flexible machines and skilled craftsmen to make semi-custom goods that command an affordable premium in the market. Their technological dynamism distinguishes them apart the small firms that emerged during the Great Depression of the 1930s. Whereas the firms of that volatile epoch used traditional tools and skills to maintain existing goods, the new industrial districts constantly renew their products and production methods. (Sabel 1994, 106)

Flexibility, technological dynamism and skilled labour have underpinned the success of the Italian industrial districts, such as MIDROC, whose history started in the 19th century with the small workshops of diatonic accordion craftsmen.

The tour around the shops of *Voci Armoniche* over, Lorenzo opens the doors of the Siva factory. In the single large room, one finds large-size last generation numerical control machines. I detected a kind of dichotomy between the ancient and the modern: on the one hand there were the old machines and ancient workbenches full of the older tools from the *Voci Armoniche* shops. On the other hand, we had the automated mechanical presses of the SIVA plant. This contrast between the two factories and the two different areas of the same plant persuaded me that I might have reached the right place for my research. I foresaw that there could be a strong connection between methods, production strategies and organisation of the two factories. And that Lorenzo was the only person in charge.²²

²² The coexistence of the two factories in the same building, their sharing of the same managing director (Lorenzo Antonelli), as well as the history that accompanies them, make SIVA and Harmonic Voices two complementary realities. In this respect, Lorenzo confirmed that many of the innovations in the production chain of *Voci Armoniche* derive from the know-how gained over the years by the SIVA shearing and stamping division.

Lorenzo's words made me realise that he had a particular vision of the factory, which was somehow very close to that of Adriano Olivetti,²³ the 'enlightened' Italian industrialist. I felt, therefore, that he might agree to meet my demands. I explained my intentions. I intended to carry out a detailed analysis concerning the history and the production process of the reeds, with a diachronic-synchronic approach and through intensive fieldwork research, *in situ* (i.e., in his factory), *ex situ* (i.e. outside of it, and especially in the regional and national archives) and based on the comparative method practice (i.e. in two other production realities in MIDROC, both different in terms of production methods and history). In this way, I aimed to focus on analysing another reed maker, but in this case a small *atelier*, such as Claudio Binci's.²⁴ Moreover, I would begin a parallel study into the resources of the regional and national archives. These would allow me to deduce historical and qualitative-quantitative information both about the research and the development of the artefact spread on the national and international market.²⁵

While I was explaining that it was my firm intention to spread and share the results of my research with the makers, musicians and scientific communities, Lorenzo interrupted me and said:

Raffaele, I am trying to implement a restructuring process of the company for continuous improvement. The *Voci Armoniche* is now in a period of deep crisis due to a lack of awareness of how the production process works and what the value of its products is. The whole accordion district is in crisis for the same reasons. I think you are here at the right time. We need someone from outside the factory and the District who can help us shine a light on our past and our present. I intend to start a revolution: it will be perhaps a small thing in the industry area, but a great thing for our company. It's my intention to put good manufacturing practices and awareness at the centre of our actions. I want to understand why our

²³ Adriano Olivetti (Ivrea 1901–Aigle, Switzerland, 1960) was an Italian industrialist and engineer. In 1938, he was head of the family business and beginning to show both his strong administrative skills and his precise vision as regards factory organisation. He was an intellectual, a writer, an urbanist and engaged in different social projects. His factory became the subject of the first sociological research in Italy. He promoted several social, cultural and leisure initiatives for his employees. He inspired numerous cultural initiatives and in 1946 founded the Edizioni di Comunità, a publisher specialising in social sciences that gave a boost to human and cultural studies.

²⁴ I chose Claudio Binci for two reasons. The first of these had to do with my intention to recognise elements of continuity and/or discontinuity in the intergenerational production techniques and methods between Nazareno Binci (described in Giannattasio (1979, 28–32)) and Claudio Binci. The second aimed to describe the differences between the two types of reed production: Binci who uses a low-intensity production model (he works in a small workshop with some members of his family; his production only concerns only one range of reeds); the *Voci Armoniche* factory which adopts a production model inherent in the economies of scale (between thirty and forty craftsmen work in the factory and there are a changeable number of home-working craftsmen; production nowadays concerns five ranges of reeds).

²⁵ I have been carrying out research on the archives of patents, trademarks, models and industrial designs at Rome's State Central Archives since 2012, and also at the ISTAT (National Institute of Statistics) archives.

production process has remained unchanged for over sixty years. I think that this is the only possible way to provide a future for the company and for my craftsmen. So, you have my complete willingness.²⁶

This response reassured me. I realised the great opportunity I had been offered: to enter into the most prestigious and ancient European reed factory to carry out the research for my PhD, and at the same time to offer my direct contribution to innovation. In other words, Lorenzo had offered me the chance to go beyond the limits imposed by theoretical research and to experiment the field of applied research. So, from that moment on I was in regular contact with Lorenzo, as well as with the Castagnaris.

When a factory is the fieldwork

After two months, we met again in order to start my field research and our collaboration. I presented him with my work plan: to closely examine his factory's reed production system, integrating historical data first about *Fratelli Antonelli* and then about *Voci Armoniche*. During our first research meeting in December 2013, he showed me, with a hint of pride, what he called “his book.”

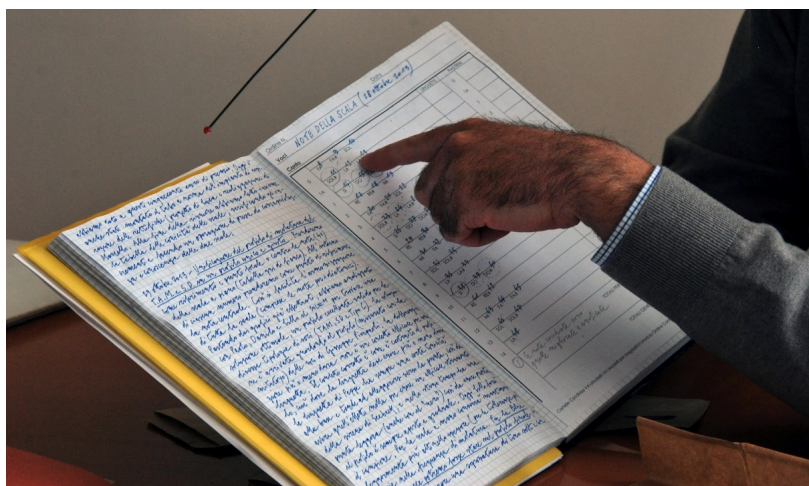


Figure 7: The *carnet de notes* by Lorenzo Antonelli. Photograph: Raffaele Pinelli, Voci Armoniche factory, Osimo (AN), 2013.

The book seemed to me like a *carnet de notes*, where he had been meticulously jotting down the most important moments experienced in the factory since he had decided to start the ‘revolution’ he had told me about. In his *carnet de notes* I got glimpses of his thoughts, intuitions, the reports of the working meetings, as well as technical hypotheses, still to be verified, concerning the relations between the reed shapes, its acoustic performances and, moreover, the results achieved and still to be reached on an innovation and production level. Lorenzo wanted to better understand the processes behind every production step as well as the historical reconstruction of his factory following his memories and those

²⁶ I transcribed these words in the hotel after I had met Lorenzo Antonelli on 3 December 2013. Later I asked Lorenzo to verify them.

of his craftsmen. He had been keeping written reports about his conversations and informal interviews with the senior employees of his company.

Lorenzo, a graduate in Political Science with further training acquired in Corporate Management, was aware that the biggest risk for a company like *Voci Armoniche*, is the interruption of the oral transmission of knowledge and *savoir-faire* between craftsmen, be they of the same generation or not.

In most of the MIDROC factories, from the smallest to the biggest, and particularly in the business of musical instruments (except for those where the productive process does not include specialised skilled craftsmen on the production chain), the production processes require a non-negligible number of skilled and highly qualified craftsmen. According to my fieldwork research in the MIDROC productive realities, the competences needed by every craftsman essentially depend on two elements: time and learning. Time means the totality of specific practices, repeated almost every time and applied to achieve selected tasks. Learning is imparted by a craftsman called *maestro*,²⁷ whose competences and abilities are recognised by the craftsmen and makers community. It unfolds in two separate phases. The first concerns the transmission of knowledge and *savoir-faire* imparted orally to an apprentice by a *maestro*. In this phase, the apprentice learns all the procedures and the abilities required for work through the reproduction of gestures. Knowledge transmission, mediated by gaze and language, is always supervised by the *maestro*. Generally, the craftsman-*maestro* transfers all his knowledge to the apprentice. This occurs especially in smaller contexts, such as amongst home-workers or in family-run ateliers. However, sometimes this may not happen. Some special techniques may be omitted by the *maestro* for several reasons. For example, the knowledge he believes to be more precious actually constitutes trade secrets, capable of ensuring its possessor a certain type of authority within a professional context and/or a community. It should also be added that in such areas characterised by a specific knowledge of traditional technologies, much of the knowledge is implicit in the *savoir-faire*. Therefore, the explication, as well as the transmission of certain practices, can be expressed only through gestures and not verbally.²⁸ In such cases, the apprentice may therefore be able to carry out such techniques and knowledge only by observing a *maestro*'s work. During fieldwork carried out in the grinding shop at the *Voci Armoniche* factory, Lillo, one of the oldest craftsmen, had some difficulty in answering my questions about his technical training. He told me:

²⁷ About this definition cf. Chamoux (2010, 149). Here she talks about the division of systems of *savoir-faire* transmission (transmission by impregnation and transmission by learning) among the habitants of Cuacuilá (Huauchinango, Mexico).

²⁸As regards the traditional knowledge implied in *savoir-faire* and the aspects of its transmission in the context of specific traditional cultures, see Angioni (1989).

I learned what I can do when I was teenager, in the factory. [...] The craftsman with whom I worked and who trained me did not tell me everything. I noticed that. Then I started looking at everything he did. Sometimes I tried to ask him things, but he did not answer me completely. [...] I had to do it myself ... I tried to imitate it. Sometimes he told me that what I was doing alone was fine. Other times he told me the opposite.

The second phase regards the change from a condition of apprenticeship to work, employment or self-employment. Generally, this passage from one condition to the other depends on the acknowledgement of the *maestro* as regards the correct transfer of knowledge and *savoir-faire* towards the apprentice, trained by the *maestro*'s own will or by the management. This reductive, but functional example of the transmission processes that rule the turnover among the social actors of the production chain (within some companies characterised by the use of handicrafts in the industrial field) allows us to notice how the MIDROC companies, as far as production goes, strictly depend on the ability and willingness of their craftsmen and on the transmission of knowledge and *savoir-faire* between them. It follows that the survival of certain practices and processes relating to craftsmanship are connected to the destinies, and the intentions, of each craftsman. Thus, from a macroscopic point of view, it is evident that within a macro-productive system such as MIDROC's accordion production chain, where the productive specialisation areas are numerous and multilevel, the interruption of the oral transmission of knowledge and *savoir-faire* between craftsmen can become a risk to both the companies in which they operate, and to the production of the industrial district.

During my fieldwork research *in situ* in some of the MIDROC companies involved in my investigations, including the *Voci Armoniche*, I met several craftsmen who told me that they were doing the same job as their father and their grandfather with whom they had learnt their craft. Some of them showed me the tools they used at work. They told me they had received the tools from other craftsmen belonging to another generation. In addition, in the case of intergenerational transmission between members of the same family, it is not unusual to witness the presence of tools used by the father or even the grandfather of the craftsman interviewed. In some cases, the tools they showed me were unique objects, that is, not available commercially. They had in fact been created or modified by craftsmen to respond to specific purposes. The practice of creating, adapting and modifying work tools, as well as machinery and related parts, is a feature of craftsmanship and is still alive within semi-industrial production chains.



Figure 8: Some tools and the old workbench of a craftsman from the *Voci Armoniche* assembly shop.
Photograph: Raffaele Pinelli, Voci Armoniche factory, Osimo (AN), 2014.

It is thus evident that in such a scenario the oral transmission of knowledge and *savoir-faire* sheds light on particular elements, revealing a material culture which has yet to be described in detail by scientific studies. These elements are considered to be of non-negligible importance.

In this kind of organisation of production and work, the heritage of knowledge and *savoir-faire* useful for the production of artefacts (from single parts to musical instruments) is entrusted to the memory of the social actors involved. In fact, during my research in MIDROC, I never found any archives relating to the projects for manufactured products that had been or were to be carried out, nor was there any historical information about production processes. Nor did I find documents relating to practices of research and development. This was also the case for the *Voci Armoniche* factory.

Therefore, the yield of the production chain, as well as the results achieved by the companies, in quantitative-qualitative terms, largely depend on the abilities of the craftsmen. In the case of *Voci Armoniche*, and in contrast with the Castagnaris,²⁹ Lorenzo's role is quite exclusively connected with the management office. Lorenzo is not a craftsman and he has never had any technical or practical training. He does not possess any particular craftsmanship and *savoir-faire* knowledge even though, during his time working, he has sought to learn and describe expertise. Self-motivated by the idea of improving *Voci Armoniche's* production methods, he wanted to comprehend how his employees worked and so he decided to investigate by observing practices and having informal conversations with the craftsmen. Not satisfied with the answers he received during this phase, Lorenzo decided to undertake an independent survey, applying different methods to the field of investigation, particularly as a means of objectively describing

²⁹ Nowadays, a characteristic of the Castagnari family is that all the members of the third generation of diatonic accordion makers have craftsmen skills. Massimo Castagnari, for example, has the knowledge and *savoir-faire* to construct a diatonic accordion.

the reeds produced. With this in mind, the first step was to measure tongue profiles via the introduction of new machines and the creation of software for this purpose. The *carnet de notes* mentioned previously is a trace of his route along the path of memory. Lorenzo told me that, when he was executive manager of the SIVA factory, prior to the merger with Salpa in 2002, he totally entrusted the management of reed production to the department heads.³⁰

In a general way, this condition of twofold dependence between the directing and managing part of the factory, the owner of production resources, and the craftsmanship part, the keeper of production knowledge and *savoir-faire*, guarantees a kind of balance within the factory while simultaneously exposing it to the obvious risk of deadlock. For example, think of the loss of a given method that has matured over the decades due to the absence, interruption, or partialness in the transmission of knowledge and *savoir-faire* between craftsmen. I observed another critical point during my research period in the *Voci Armoniche* shops. I initially wanted to describe not only the production steps involved in producing the reeds, but also their technical construction. I asked Lorenzo the reason behind every single production choice. After our conversation, I realised that the production processes used by the craftsmen were ‘automatic.’ Each of them, in fact, reproduced almost mnemonically what they had learnt from the previous generation, without questioning the nature of their work and their productive tasks in relation to a complex production system. Craftsmen’s answers to my technical questions were often the same: “This is what I do because it’s always been done in that way. It is the tradition.” This kind of consideration, recurring frequently in many of my interviews and discussions, opens the analysis to the concept of “tradition” as something unchanging, concealing an idea of stillness, which cannot be investigated in this paper. During my first interview with Lorenzo in 2013, he told me: “Nobody writes anything down in the unit department. And nobody has ever written anything down.” These words confirm the presence of a kind of management tolerance towards this type of behaviour in the factory.

A further consideration regarding the aforementioned concept of ‘unchanged tradition’ concerns the research and development processes. I wanted to track the history of the technical development of reeds in MIDROC, and I chose to discuss this with Lorenzo. He confirmed something I had verified at the Central State Archives in Rome. By researching the patents registered in Italy and concerning mechanical bellow aerophones (inventions, models, trademarks and industrial designs), from the 19th century to the current era, I became aware of the fact that for almost sixty years there has been no significant innovation in the reeds sector. Moreover, in just over a hundred years, very rarely had the

³⁰ There are four units at the *Fratelli Antonelli* and at the *Voci Armoniche*. Three units work on reed construction: grinding, cutting, assembly. The fourth unit deals with storing products and is the only sector to dialogue with clients and “home-workers” (specialised craftsmen who work on different production steps). This set-up was conceived by Luigi Antonelli, Lorenzo’s grandfather during the 1960s, in the period of greatest industrial growth.

Italian reed makers resorted to patents, intended as a tool for the protection and development of industrial and commercial innovation. The diagram in Fig. 9 is proof of this:³¹

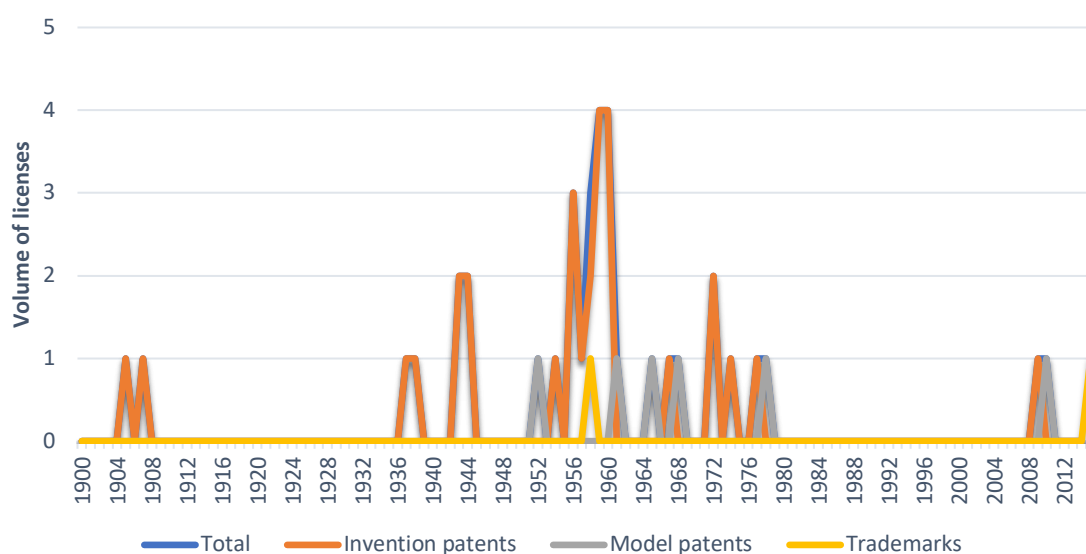


Figure 9: Reed patents in the corpus of Italian Mechanical bellows aerophones between 1855 and 2014. Elaboration of data: Raffaele Pinelli.

The reeds production system has always been hidden and inaccessible outside the circle of those who are the producers. Proof of this is the lack of quantitative-qualitative information about the relation between metal free reeds and musical instruments. Moreover, during my fieldwork I could not find any more precise or up-to date information than the data already in my possession, not even amongst the productive actors of MIDROC. This is a relevant detail because the makers, more than anyone else, would surely have an interest in fully understanding the nature of the relationships that bind each of the components they themselves make. These historical and cultural limits, therefore, have strongly contributed to the lack of innovation. In fact, in the case of reeds makers, the musical instruments makers have never asked them to provide any new solutions (i.e. new reed models and/or new materials).

The musical instruments makers themselves and the reeds makers I interviewed all confirmed the latter statement. If we extend the subject further, we should also note the almost total absence of joint initiatives between all the MIDROC area factories and craftsmen towards the research and development of collaborative solutions aimed at improving both process and product.

³¹ We can consider patents as primary sources. The qualitative and quantitative analysis on the patents' registration trend is only one of the indicators used for analysis in research and development fields. Even so, in a context like that of MIDROC where the absence of archives is balanced out by the memory of social actors involved in production, the examination of patents is a fundamental tool to enquire into the phenomena in a historical perspective. As regards general information on patents in the Marche region in the 20th century and on the use of patents as sources for the study of innovation, see Giulianelli (2006).

Conclusion

The relationship between interviewer and interviewee, i.e. between Lorenzo and myself, was based on scientific considerations and analyses. Our curiosity was inspired by and our attention directed towards a common object. Each of us started from his own specific point of view, sharing knowledge, experiences and evaluations with the other. I shared my knowledge as a scholar and musician while Lorenzo shared his expertise as director of two factories. Lorenzo was willing, he opened the doors of his factory which became a ‘living’ laboratory where both of us studied and searched for answers about past questions and solutions concerning the present and future. A factory is truly a fixed place and a colourful breeding ground of what will be. In my opinion, it is the place where the idea of ‘return’ blends with that of change. The observation of a complex production system from the inside, using an emic approach and the resulting detachment caused by the fact that I was not there every day,³² allowed me to meet and cross-reference my personal point of view as a participant observer with that of the social actors involved. This fact has certainly influenced me and my privileged informant, causing me a certain amount of ‘turmoil.’ Thanks to the induction of a non-asymmetric relationship (see Cefaï 2003, 567) between Lorenzo and me – in which there is no dominant position nor even specific advantages – my research inside the factory has already produced visible results for *Voci Armoniche* and other productive realities in the MIDROC. In a first step, the common aim was to trace new routes for reed production in order to improve not only ongoing productive processes but also the quality of reeds which guarantees a better sound to the musicians. In a second step, the project concerned the ideation of new types of reeds.

The efforts focused on these axes: to recognise, describe and analyse the craft production process and the oral transmission process of knowledge and *savoir-faire*; to give value to each production phase; to recognise specific skills in craftsmen and encourage the acknowledgement of the former; to research and develop new types of reeds; to carry out research and developments within the field of production, including the introduction of new technologies and computerised control processes; to manage serial production, even though it is connected with some craftsman processes.

At the centre of such reflections, the accurate study of craftsmen’s *savoir-faire*, as well as oral transmission processes of knowledge and *savoir-faire*, occupy a prime position. And this is, not only for applied research purposes (the effects of which will first be visible both in terms of production and that of manufactured products), but also as regards fundamental scientific research. Furthermore, in this way I suppose that through the analysis of the dynamics that sees opposing *savoir-faire incorporés* and *savoirs-faire algorithmisés* (Barel 1977) new work processes will be promoted and new working processes could progress, whose effects might be visible inside and outside the factory.

³² Several research sessions have been carried out over the years; no session has ever exceeded five days.

Finally, I believe that participant observation in fieldwork, following an appropriate emic approach toward the analysed objects, is a good approach to use in the social and human sciences, whose implications can also be considered for application purposes. In the specific case of ethnomusicology, as well as of organology, I think that the field of applied research, in addition to verifying the information gained about certain study objects, can represent a useful and interesting opportunity to start new fields of investigation, as far as concerns the methodological and epistemological levels.

Ultimately, I believe that the application of an interdisciplinary methodology, with a transcultural approach towards the objects described above, can enhance complex analyses of comparative studies concerning musical instrument production as well as music making.

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³³ [not discussed].