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Article original

Production, convention and power:
Constructing the sound of an Early Music
orchestra
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Abstract

By explaining how an Early Music orchestra produces its sound, we can review Howard Becker's concept of a convention. An orchestra's sound depends on principles incorporated in things (musical instruments, scores) and bodies (musicians' techniques). A common set of principles about interpreting a piece of music — principles acquired well before any rehearsal — do not suffice for coordinating a group of musicians. As observations have shown, face-to-face interactions are decisive in this coordination. The conductor is not omniscient and does not impose his interpretation on musicians. Relations based on authority, being unstable, are redistributed among the conductor, soloist and first violin during rehearsals. Recognizing the importance of face-to-face interactions draws attention to the cogency of power relations, which, though omnipresent, are constantly reworked in the situation for producing an orchestra's sound.

Keywords: Music; Production; Power; Convention; Orchestra; Early Music; France

Although sociology has dwelled on production processes, its analyses has seldom focused on the results thereof. The means for organizing work or regulating labor relations have been studied (Reynaud *et al.* 1990, Lallement 1999). But studies devoted to concrete situations at the workplace have focused less on the results of production activities than on the cognitive operations performed during interactions (Borzeix and Conein 1994). Christian Heath and Paul Luff (1994) have partly explained how the London subway system is regu-

E-mail address: p.francois@cso.cnrs.fr (P. François).

lated; and Aaron Cicourel (1994), how medical diagnoses come out of a collective production process. Nonetheless, these analyses did not seek to explain the construction of products, as was the case in Bruno Latour and Steve Woolgar's (1988) study of how scientific facts are produced.

Herein,¹ I would like to describe the means used to produce the sound of an orchestra, specifically an Early Music orchestra.² The movement for reinterpreting Early Music has questioned the principles governing the production of a sound in traditional orchestras. These musicians advocate using the instruments for which composers wrote; and they try to rediscover the principles for interpreting a piece of music that applied when the piece was created. In other words, they have tried to work out a new convention for interpreting the music. Defined by Howard Becker (1988) as a set of rules for spontaneously coordinating a group of persons whose combined actions enter into the making of an artwork, the notion of a convention serves to explain the means used for a collective production process. My objective is, therefore, twofold:

- How is such a convention worked out? Without overlooking the importance of its principles being incorporated in objects and bodies, I shall focus on the negotiations that continually reinstitute the convention during the production process.
- By reconstituting the chain of interactions that lead to producing a collective sound, I shall be able to come back to the idea of a convention and formulate a few critical remarks about it.

1. The convention: Prior to the production process

1.1. Changing instruments, musicians' tools

The most noticeable change made by the Early Music revival is that the musicians use different tools. Abandoning modern instruments for older ones has been a decisive step in producing a new sound. Philippe Beaussant (1994, p. 16) contrasted the harpsichords built between the two World wars with copies of older models:

“At the time, people were used to the big, heavy machines in mahogany signed by Pleyel or Neupert, equipped with enough pedals, built like small pianos with an iron frame. A tiny, polished, elegant, antiquated sound came out of them in the likeness of what was imagined to be the artistry of Couperin and a few other masters wearing powdered wigs.”

The old harpsichords produce a totally different sound; this surprised Beaussant (1994, p. 17) as much as it attracted him:

“And then Dene Barnett showed me a little thing with a natural pine color, black keys for whole notes and white ones for sharps, a carved rosette, an ornamented frame, and so

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² On the Early Music movement's history, see Harry Haskell (1996) Translator's note: Early Music refers; in the music business, to Western music from the Middle Ages, Renaissance and Baroque period.

light that, in a minute, without needing to call a moving company, we could carry it ourselves in a car, like a table or armchair. Well, this small instrument, when Dene sat down at the keyboard to present it to us, produced a loud, hearty sound with rustic base notes, luscious, colorful, rich notes. I had never, neither in a concert nor on a record, heard anything like it.”

The instruments that Early musicians have decided to play are not always easily accessible. The models in museum collections since the early 19th century could not always be played; and major restoration work was necessary.

A few instruments, completely lost, had to be rebuilt from scratch. This was the case of the curved cornett, in between a woodwind and a brass, with finger holes like a woodwind but demanding a control over the breath typical of brass instruments. Unlike many other Early Music instruments, it has no modern equivalent. It was made using a gouging technique with a precision of a tenth of a millimeter on two pieces of wood glued together. In the mid-1970s, most cornettists were playing resin instruments made from a mold. A cornettist explained the gradual improvements in making this instrument (interview on 20 January 2000):

“There were musicians who had played the curved cornett, who were cornettists familiar with the instrument, and who had to practice this woodworking technique. They worked on the quality and sort of wood, on making the holes. It was a lot of work, for instance X, who raised questions about woodworking, who worked on its very conception in relation to more theoretical conceptions having to do, for example, with using the golden section to make instruments. All this was studied and put into practice, and I admire the result, which is concretely quite satisfying. But that went on for a good quarter century.”

1.2. New body techniques: Questions and controversies

As Becker (1988) has pointed out, instruments³ incorporate schemata from which a convention arises and make it necessary to learn body techniques⁴ that are better adapted for producing a sound on the instruments. The switch from a modern harpsichord to a copy of an old model led Anne to completely change how she played (interview on 3 June 1999):

“In the summer of 1970, there was an international harpsichord contest in Munich where I was enrolled. There were only instruments with pedals, and it was the first time there was a copy of an old harpsichord, made by Schütze. Leonhardt, who was on the jury, came to see me after the first round. He said, ‘You know, it would be a really good

³ Antoine Hennion (1993) has proposed taking objects as the starting point for reconstituting all “mediations” that came into play in this new world and allowed it to exist.

⁴ Studies (Escal 1991, Alford and Szanto 1995) devoted to learning, sometimes painfully, the body reflexes incorporated in a musician’s skills seem, even though they do not necessarily say so outright, directly connected to the analysis of body techniques which Marcel Mauss (1936) called for.

idea to play on the Schütze.’ I said, ‘But, Sir, I’ve never worked on an instrument like that. It’s impossible for me to adapt to it in 24 hours.’ ‘Yes you can, you should try.’ I wondered what that meant, if it was a threat of a penalty if I didn’t comply, or whatever. I took the risk with my Scarlatti sonatas, and obviously, everything went down the drain! The keys were of a different width, the reflexes were different, everything was different. It was an excellent introduction to old harpsichords, because I realized that the way to make it ring out was completely different. Back home, I made up my mind: it was necessary to play on the old harpsichords. There was no doubt about it.”

The research by a few musicians, which led to new techniques, has been quite controversial. Continental Europe split between two schools of Baroque violin. Sigiswald Kuijken’s violin technique, developed during his classes at the academy of music in La Haye, France, required relearning everything. A modern violinist plays the violin by wedging it under his chin and holding it to the side. He can hold the violin with his chin when his hand has to glide down the instrument’s neck. Kuijken’s research led him to come up with a different technique: the violin placed on the shoulder instead of wedged under the chin. As a consequence, when the violinist moves his hand down the neck, he can no longer hold the instrument with his chin. Furthermore, the violin bow used by Kuijken’s students necessitates a subtle control over movements, much more so than a modern bow. The sound is controlled completely through hand, not arm, movements. This technique has been controversial. In particular, Reinhardt Goebel, who founded in 1973 the *Musiqua Antiqua* in Cologne, proposed a noticeably different one, much closer to the playing of modern instruments. Violinists play without a chin rest on an instrument with strings made from catgut; they wedge the violin under the chin and use a traditional bow. This technique has major advantages: the violinist can play the instrument in a nervous, quite spectacular style and does not have to completely relearn how to play.

Regardless of how intense this controversy has been,⁵ the slow process of learning how to play old instruments has involved incorporating principles deduced from an interpretation of treatises and illustrations or borrowed from other musicians’ experiences. Body techniques have gradually been acquired that, when applied to the old instruments, make it possible to emit the stable, regular sound expected by other performers.

1.3. The written source and its realization in sound

The sound produced by an orchestra refers to a written source, the score.⁶ The original works of Early Music were seldom published. When they were, the publication was hardly satisfactory, at least to composers who try to apply the principles worked out during the 19th century for writing music. Early Music orchestras often rely on scores recomposed for

⁵ For a few keen exchanges on this topic, see Richard Kenyon (1988).

⁶ Like the equipment in a cockpit that helps economize on the pilot’s memory (Hutchins 1994), the score economizes on the musicians’ memory. Maurice Halbwachs (1939) has proposed a quite modern analysis of musicians’ collective memory.

them. A violist da gamba talked about how she drew up a score for Rameau's *Hippolyte et Aricie* for the Arts Florissants (interview on 3 June 1999):

“Pizzi had made a production, and for reasons I ignore, it wasn't possible to use the same soloists and the orchestra he had. I think it was at Aix. There was a new production at the Comic Opera, which had asked the Arts Florissants to choose the orchestra, singers and version. The first thing we did was to look at Pizzi's version, a version published by Durand. It was hideous, inaudible. [...] We said we agreed but we wanted to work from a version coherent with the sources. The Comic Opera accepted, and William Christie asked me to write the score. The scores were at the Opera. I went there, saw all three of them. There were separate parts, complete scores; and I made my own combination by taking into account our limitations. The limitations were, unfortunately, such that we had what nearly amounted to an imposed version. We managed to modify it a little, to have one a little more coherent. Major aesthetic choices had to be made. There were three versions, the first in 1733, the second in 1742 and the third in 1757. The question that could be asked was: why three different versions? It's interesting. There were pages without any annotations in the original version. We could see how the 1742 version had been made because things were struck out. There were annotations on the 1757 version. We kept one thing, took another, made collages, things like that. So we asked, 'Why? Why this? Why that?' I concluded that the 1742 version was made under restrictive conditions of I don't know what kind but that Rameau did not like. Rameau axed a lot of things, and you got the feeling that version was one he didn't like. When he went back to it in 1757, you felt that he had full freedom again and wanted to change things in relation to the first version. So we could see we had to choose between the first and third, and especially not the second. At that point, we said we'd better choose a single version, because that was in line with Rameau's idea — choose either all the first or else all the last version. It was easier to choose the first; but now and then, we had problems because parts were missing, so we completed it by taking parts. Once the version had been chosen, we copied it by hand.”

The score came out a long process of selection and compromises, a balancing of factors related to the stage production, the artistic director's wishes and the state of the archives.

With the score as a base, each musician produces a sound; the orchestra's sound comes out of the aggregated sound produced by all the musicians in it. The clarity of attacks, the homogeneity of timbres and phrasing, the precision of the rhythm, all this implies that musicians perfectly coordinate their actions. Incomplete scores are a further difficulty in Early Music. Since the early 19th century, a score indicates rather clearly what the composer wants to be heard. But for music from before Bach's death, the relation between the written source and the production of a sound is much more vague. Baroque music allowed more room for improvisation.

Musicians had the most room in performing the continuo, *i.e.*, the bass line underlying the piece and the harmonies built on it. The harmonies were indicated not by notes but by numbers that instrumentalists have to interpret and perform. Performers might choose to have a single instrument play the continuo, both the bass notes and the chords; or they might let a melodic instrument (such as a cello) play the bass notes and a harmonic instrument (such as a theorbo or harpsichord) the chords. They might choose to play a chord's

notes all at once or successively in arpeggios, which can take a wide variety of forms. William Christie described quite well how the instrumentalists who played the continuo in Lully's *Atys*⁷ gradually worked out a common sound (Labie 1989, p. 40):

“There was a basic problem: we had to attain a new, not yet defined sound. I could have worked out this continuo in the usual way, with a harpsichord. But I preferred having a very rich continuo for backing up, with all its force, Quinault's speech. Insofar as old texts had anything to say, this was what Lully had done at the time. So I took several instrumentalists, some of them with very strong personalities; but all of them understood that I wanted to attain an out-of-the-ordinary sound. That was my idea, everyone joined in. Not one but eleven musicians were looking for a collective solution for which I did not have any precise idea *a priori*.”

The continuo's sound came out of the aggregate sound of the musicians and cooperation among them. How did this happen?

2. Producing a collective sound: Coordinating, negotiating and reinstituting the convention

2.1. Coordinating individual actions

To explain how a convention facilitates coordination among persons producing an artwork, Becker (1988) has insisted that it proposes a range of already tested solutions known to all, to which everyone spontaneously refers.

The principles acquired by each musician prior to the work in common did, of course, facilitate coordination. Esther was a student of Sigiswald Kuijken in the early 1980s. Ten years later, she hesitated about working regularly with Philippe Herreweghe's Champs Élysées Orchestra on pieces from the Classic and Romantic repertoires. She did not feel comfortable in the group around Herreweghe, since too many violinists came from Goebel's school. She preferred playing this repertoire with her former professor, all of whose violinists shared the same principles of interpretation (interview of 11 March 1997):

“I said to myself, ‘I'm not going to play Haydn with Herreweghe, at a time when Sigiswald's doing it and when I can find the same violin [style] with him.’ Sigiswald only has Early Music violinists from his school. So right away, it's the same *C* sharp, the same attack. Right away, there's a Little Band sound, for sure. You might not like it, but everyone comes from the same mold.”

Activating the shared principles in a convention does not suffice for explaining how actions come to be perfectly coordinated. An *in situ* coordination is always needed too. Examining situations where coordination functions poorly provides convincing evidence

⁷ The Arts Florissants' performance of *Atys* in 1986–1987 led to recognition of the Early Music movement in France.

of this. Paul, a harpsichordist, often worked with Dutch musicians. Given his reputation, he was hired by Jordi Savall, a Spanish musician whose aesthetic sense differed significantly from his former employers'. Rehearsal was crucial for his actions to meet up to his musical director's expectations (interview on 14 June 1999):

"I learned a lot with Savall, because I was marked with the 'north Europe' label. Leonhardt, the Kuijkens, it was much the same world. When I started working with Savall, it was really a sort of musical negative in relation to what was being done in the north. You had to be supple, adapt fast, since Savall rehearses very little. You had to find a valid way for performing this repertoire with somewhat the same sources as starting point but a completely different result at the finishing line. That's where I learned the most, I think: when I had to become much more supple, do things that didn't please me at first and, especially, realize that everything was possible. A lot of things changed: temperament, playing habits. I even think you could make a rather interesting study by isolating a measure in Savall's music, listening to the same piece by Leonhardt and Kuijken and seeing what's different in the accent, the movement of the musical line. I said a negative. I think it's often the exact negative; you don't hold back from the same things. [...] I wasn't looking to be thrown off center like that. I think I suffered from it in the beginning. Later on, during the first rehearsal of any program we did, I always raised an eyebrow. It changed my habits so much that I was against a lot of things. Little by little, I saw where he wanted to go, and why it was justified. I always let myself follow."

In Paul's comments, a figure emerges whom we have not yet encountered but who plays a decisive role in coordinating musicians: the conductor.

Till the late 17th century, the first violin or the harpsichordist coordinated musicians; but this job gradually became much harder as compositions became more complex, too hard to leave up to a musician in the orchestra. Following a performance of Beethoven's *Fifth*, Ernst-Theodore Amadeus Hoffmann, a conductor, had this to say about conferring this role on a musician:⁸

"No instrument has parts that are hard to perform. But only an orchestra extremely sure of itself and well trained, stimulated by a single spirit, dares risk playing this symphony, because any passage, ever so slightly amiss, would irremediably spoil the whole. Continual alternations, the entrances of the strings and woodwinds, the chords isolated after a silence, all this requires the most extreme precision. This is why we advise a conductor not to be satisfied, as often happens, with playing the violin part louder than necessary. It's better for him to keep the orchestra permanently under his controlling eye and hand."

I observed the importance of the conductor's role in coordinating musicians during the rehearsals of a group working on late 17th-century French music (Charpentier's *Te Deum* and *Midnight Mass*). The conductor had definite gestures, and did not hesitate about using examples or making comparisons: "Do this *A* clear, light like the air, like Arvo Pärt." He

⁸ *Ecrits sur la musique*, p. 50 quoted in Liébert 1988, p. xli.

punctuated his advice with explanations: “In this whole gush of singing, we have to mark a few cadences. We’re going to mark one here: it’ll highlight this chord’s harmonic tension.” He often referred to jazz: about the *in te domine speravi*, “Obviously, as jazzy as possible”; or to the cellists, as he imitated a jazz bass player, “Swing more, ba-be-doo, ba-be-doo, ba-be-doo, New Orleans or something like it.” He directed everything, even the positive organ that replaced the orchestra as chorus. For full rehearsal, the first violinist did not intervene much, apart from a few words of advice about articulation or for clarifying certain ornamental figures or reminding such and such a section of the need for precision.

A dimension in the coordination process emerges that Becker’s description of the convention tends to overlook: power. During the 19th century, the conductor came to compel recognition from musicians, singers and composers as the supreme musical authority (Liébert 1988). Those familiar with the music world were struck by what Honoré de Balzac, like his contemporaries, called the “tyranny of the baton”. In 1841, the conductor was presented as a legitimate dictator:⁹

“And first of all, Sir, we are conductors. Within the limits set by regulations, we exercise an undisputed supremacy, because our power relies on a base that the highest institutions in politics lack: necessity.”

During the 19th century, the conductor incarnated absolute power. For Elias Canetti (1966, p. 421) too, this figure was the outstanding incarnation of power:

“His glance, as intense as possible, takes in the whole orchestra. Everyone feels he has been seen and, even more, heard. The instruments’ sounds are opinions and convictions to which he ever so closely pays attention. He is *omniscient*: whereas musicians only have their part in front of them, he has the whole score in his head or on his stand. He knows exactly what each is allowed at every instant. Keeping them all together under his supervision confers the prestige of being *omnipresent* on him. He is, we might say, in everyone’s head. He knows what everyone has to do, and he also knows what each one is doing. As the living source of law, he reigns on both sides of the moral world. With a wave of the hand, he indicates what is being done; and he prevents what is not to be done.”

This emergence of power relations in coordinating a group of musicians draws attention toward the often unequal interactions during this process. But should we take for granted the conductor’s omnipotence, which fascinated Canetti? In his description, the conductor is no longer a concrete individual in interaction with others but, instead, a logical operator, abstractly omnipotent. This dodges rather than answers questions about coordination. Under this description, power relations are unilateral: only the conductor has power over the musicians. Cooperative relations are inseparable from power relations, from situations where interactions are not balanced: “You enter into a power relation because you have to obtain cooperation from others in order to carry out a project” (Friedberg 1993, p. 125). In other words, power always involves an exchange, one that might be out of balance.

⁹ Louis Curmer, *Les Français peints par eux-mêmes*, vol. III, 1841, p. 284, quoted in Georges Liébert (1988, p. lxii).

Power relations are not unilateral; they represent an unstable equilibrium wherein the two parties' relative positions might shift during interactions. Given that power relations cannot be separated from coordination, we must, in the special case of an orchestra's work, obtain a better understanding of them than this description of the conductor as a demiurge. What underlies power relations in an orchestra's work? How do these relations enter into the process of coordinating this work?

2.2. Delegating authority and external coordination

The conductor is not omniscient: defining what is a satisfying interpretation comes out of negotiations among persons in the collective project. I observed this during an Early Music group's rehearsal of an opera from the stock repertoire. The first time, the mezzo, a specialist in this role, sang a famous aria while sitting back to the conductor's left. The conductor seemed satisfied with both the orchestra and singer. But she stood up and spoke under her breath to him for a rather long time, while pointing to passages in the score. She sat back down. The conductor addressed the orchestra: she (using her first name) "doesn't want us to slow down on the cadences, she wants us to maintain the initial rhythm very constantly up till the end, including the last cadence." By accepting the singer's intervention and relaying her proposals, the conductor was putting at stake the postulate of his omniscience. The second phase of work on this aria led him to temporarily yield authority. This time, the singer stood up, moved slightly to his left but still a little back of him. She sang by heart and gestured to signal the contours, punctuation and nuances she expected from the orchestra. The conductor beat time. He accompanied her while leaving her lead.

In this example, the delegation of authority was peaceful and negotiated. The singer first left the conductor in charge, then proposed her viewpoint, and finally took it upon herself to make the orchestra play what she wanted. As soon as the aria was over, the conductor reassumed his position. The causes for this shift of power went unstated. The conductor delegated his power to the singer, but the conditions underlying this delegation were not clearly formulated. During this phase of work, coordination came out of an unspoken, temporary compromise between persons who accepted to test an alternative solution.

Two methods of coordination were used. The conductor explained the principles for interpreting the piece; and the singer, while she was singing, gesticulated to signal what she expected of the musicians. Her intervention went beyond the comments made to the conductor. The problem was not just cadences or a constant rhythm. The singer recomposed the aria's phrasing by taking the conductor's place. Further examples will dwell on these two methods of coordination: the verbal explanation of the principles of interpretation is relayed (and often much more...) by a body language for coordinating musicians as they perform.

2.3. Internal coordination?

During the rehearsal already described, power relations were still pyramidal. The singer held her power thanks to the conductor; coordinating the orchestra laid beyond her. A third party's intervention regulated the conditions of coordination. The following example more clearly illustrates the instability of relations based on authority and the organic nature of coordination.

An ensemble made up of a chamber orchestra and chorus, a group of seven musicians and eight singers, was rehearsing an Italian mass. The conductor, whose direction was rather curt but quite clear, followed up on the chorus down to the tiniest detail, even directing the grace notes; but he hardly bothered with the orchestra. At the beginning of the piece, the first violin signaled the start by accenting his phrasing and exaggerating the downward movement of his arm holding the violin. The other musicians followed, either by copying his phrasing and movements (as did the person next to him who could not see him) or else by riveting their eyes on him and thus making him the conductor. Each musician followed the beat and the first violin's gesticulations.

A body language was used to coordinate actions but without the conditions underlying this coordination or the meaning of the gestures used being formulated outright. Having a long experience of working together, the musicians were familiar with the first violin's gestures. The actual coordination of their actions activated *in situ* this shared body language, based on movements and breathing. Signals were sent back and forth, as the musicians showed each other where they were, what they were doing and what they understood about each other's actions. Gradually, any differences in attacks or phrasing lessened or vanished, erased by a communication through body language during the performance itself. In this case, body techniques cannot be separated from production and communication techniques.¹⁰

Interventions by the chorus or a singer modified this equilibrium. The conductor took back over. Still not bothering much with the orchestra, he used the first violin as a relay toward the other instrumentalists. The soloists' recitatives presented an in-between situation. The conductor intervened now and then, on a problem of beat or dynamics or a *subito* nuance. But coordination came out of the attention that the instrumentalists playing the continuo paid to the singer, whom they followed with their eyes and hands. This orchestra was operating like a chamber music ensemble. The shifts of authority between the conductor, first violin and soloist were made as if taken for granted, as the ensemble itself changed: an orchestra plus a chorus and then a soloist. In this case, coordination, though much more organic than in the first example, still did not involve equal relations. The conductor, first violin and soloist played decisive roles. Not all musicians counted equally when defining how to attack notes or shape the phrasing.

Regardless of how unstable they might be, power relations are not distributed randomly to anyone as interactions evolve. Authority is negotiated by persons endowed with specific resources prior to the situation where they enter into interaction. As Friedberg (1993, p. 124) has said, "Power is not a simple exercise; it is in structures that exist prior to the space of action." Furthermore, the parties involved in interactions spontaneously accept shifts in authority patterns. The delegation and resumption of authority follow a negotiated order — an order that, negotiated prior to the situation, the parties involved in production accept and implement.¹¹ Of course, depending on the persons involved, the method of coordination and, therefore, the pattern of authority relations will change.

¹⁰ Alfred Schütz (1984) has underscored the importance of body signals during the performance of a piece of music.

¹¹ I am borrowing the idea of a negotiated order from A. Strauss *et al.* (1963) and J.M. Corbin and A. Strauss (1993). For an application to an orchestra's work, in particular to the conductor's role, see Robert Faulkner (1973).

2.4. Bypassing the conductor

In the previous examples, the conductor delegated his authority to persons better placed than himself for coordinating musicians' actions. In some cases, the authority of soloists or the leaders of sections in the orchestra cannot be interpreted as a delegation of authority. Instead, it comes from bypassing the conductor's authority.

During one rehearsal, the first violin settled problems in the violin section. During a rest or in the middle of a phrase, he turned around and said, "Clear!", and ostensibly played what he wanted. He played louder while imitating with his arms what he wanted. Then, he showed he was listening by barely playing. He nodded approval and started playing again while turning toward the conductor. Or he sometimes signaled his disagreement with the other violinists by no longer playing, turning toward them and saying, "No" with a disapproving nod. The violins went on playing, and he played for half a measure, stopped once more, and nodded "no" once again. He thus managed the equilibrium inside his section. He reacted while playing, without stopping the orchestra and without any perceptible conflict of authority with the conductor. The intention was not to make up for the conductor's shortcomings but, instead, to correct on the spot any lack of precision or anything amiss among the violinists.

In this case of coordination, two poles of power developed without rivalry. The conductor did not let up during the first violin's interventions. He left him act without meddling in this authority, which added onto his own without replacing it. Power relations could become more diversified and complicated, as the leaders of sections negotiated in order to bypass the conductor and make up for a lack of precision, as in the following example.

The violoncellists were punctuating a phrase with sixteenth notes being played by the violins. The cellists and violinists were gradually slowing down. The first time through, the conductor did not step in to maintain a regular beat. During the next break decided by the conductor, the first violin immediately spoke up, while the conductor was present. He addressed the first cellist opposite him, "Cellists, move ahead here. Don't pay attention to us. It's up to us to follow you. Otherwise, everybody's waiting, and the piece slows down." The first cellist replied, "Agreed. We'll move ahead, but you're going to suffer. It's no problem for us." The first violin sat down satisfied. The exchange was over, and the conductor had not spoken up. The first violin's intervention was aimed at maintaining a constant rhythm; and the strings were able to clarify matters by bypassing the conductor. All this occurred within a hierarchy that existed prior to interactions. The leaders of the two sections negotiated the conditions for coordination.

In this series of interactions, we notice the two methods of coordination already pointed out. Coordination was not at all instantaneous. It relied on principles clearly formulated prior to the situation itself. These principles differed from what each group had spontaneously adopted at the start. In this case however, coordination could occur only during the action itself, as each section listened to, and looked at, the other. For the two groups' total sound to be satisfactory, each group had to define its sound as a function of what the other one was emitting.

The power relations underlying the conditions of coordination are, therefore, much more complex than suggested by the figure of the conductor as a demiurge. A last example will illustrate this ongoing repatterning of power relations during the production process.

The violins were playing a strong rhythmic accompaniment that started on an upbeat (an eighth rest, an eighth note, three quarter notes // an eighth rest, an eighth note, three quarter notes). They were unable to stick together or attack the notes with the required tension. Once again, the conductor did not intervene, and his gestures alone did not suffice for signaling the precise starting point, nor for making the violins play tensely. The first violin turned toward his section and, without stopping the orchestra, said, "Whistle!" For his part, he snorted ostensibly during the eighth rest while raising his arm, and breathed out while lowering his violin during the eighth note. He then signaled each quarter note with an arm movement. He expected the violinists to do the same thing; but they did not, and the result was still too imprecise. He started again, more deliberately, "Whistle, I don't hear you whistling!" Gradually, the snorting spread throughout the section; and arms moved in parallel to the first violin's but less emphatically. The starting point became clearer, then precise and homogeneous, marked with the rhythm of snorting. The accents on the quarter notes were also clearer, stronger, edgier. The group gradually produced a homogeneous, precise sound without the conductor, even though the first violin's reaction had drawn the latter's attention to the string section. The conductor even helped the first violinist out. When the other violinists were reluctant to whistle and snort in time, he said "Go ahead! Whistle!" But he still beat time in the same way. His intervention followed on the first violin's; he did not try to intervene in any other way.

Coordination completely repatterned authority relations inside this production group. Although the conductor followed up on the first violin's intervention, this pattern came out of a negotiated order that was temporary. The next phase of work led to a new pattern. This repatterning of relations of authority is not fully without cause however. It closely depends on the positions of the persons in interactions (in this case, the conductor and first violin). Furthermore, it is not at all linear or calm. Negotiations, though tacit or peaceful in some cases, might also lead to clashes. Following a halting start, the first violin, fidgeting in his chair, asked the conductor what he was taking as a reference. Visibly upset, the conductor raised his voice and replied, "My reference is quite simple: watch me!" Likewise, when the conductor's assistant said the orchestra was playing too loud and covering up the soloists, the first violin told him outright, "I played a little loud because..."; but the conductor cut him off without looking at him. He told his assistant, "He's the one who directs the orchestra, you know." The first violin tried to explain again; but once again, the conductor cut him off. Grounded as it is in power relations, coordination sets off conflicts that cannot be blamed on things not working right in the production process. Conflicts are consubstantial with this process.

3. Conclusion

To reconstitute the chain of interactions that, from the making of instruments to musicians' playing together, lead to the production of an Early Music orchestra's sound, a deep time frame must be used. An orchestra's sound depends on conventional principles incorporated in both things (instruments and scores) and musicians' body techniques. The interactions necessary for this slow incorporation are especially visible in the case discussed herein, since interpreting a piece of Early Music raises questions about traditional principles of interpretation. These musicians have thus been led to make new objects and devise

new techniques of interpretation. This provides a vantage point for observing how a convention's principles are defined and incorporated.

As in most production processes, specialized know-how is used to facilitate communication and interactions. The shared principles of interpretation do not suffice for properly adjusting actions in the work situation itself. If this situation is taken to be merely a place where parties activate sedimented principles in order to produce actions fully coordinated with each other, then the idea of a convention is reduced to being a logical operator for converting the past into the present. As Pierre-Michel Menger (1997) has shown, this analytical framework for converting the past is unable to account for dynamic phenomena, the future always being contained in the present, itself determined by the past. Menger has also shown that this abandonment of dynamics and of uncertainty leads to forgetting interaction itself. If coordination depends solely on activating shared principles incorporated earlier in the production process, the situation where interactions take place becomes negligible. This avoids all the difficulties that might crop up when focus switches from an individual to a collective implementation of the convention. By sticking to this framework, the question of production in the strict sense of the word vanishes: the only question remaining has to do with the origin of the shared principles.

Given what I have observed however, face-to-face interactions during an orchestra's work are a decisive factor in coordinating musicians' actions and, consequently, in aggregating a satisfying collective sound out of the sounds produced by each musician. At this point, we come across one of the major issues raised in studies of "situated action" and "distributed cognition". The work situation offers reference marks that make possible and condition, sometimes decisively, coordination among persons.¹² Communication among musicians relies on a wide range of resources. The principles of interpretation can be redefined or renegotiated during phases in the production process. In the course of action, musicians use a variety of body techniques for signaling to colleagues what they are going to do and what they understand about what the others are doing. In the orchestra's work, production techniques cannot be separated from communication techniques. The latter, indispensable if coordinated actions are to produce a satisfying sound, are acquired by musicians through a group effort. For this reason in particular, Early Music ensembles have relatively stable members. According to ten years of records from Arts Florissants' archives (François 2000), half the musicians come back from year to year, and 50% of engagements are concentrated on 25% of the musicians.

Power relations have turned out to lie at the center of this analysis of coordination in face-to-face situations. Far from power being concentrated in a single person (the conductor), coordination involves ongoing negotiations, sometimes tacit and peaceful, sometimes contentious, that constantly redistribute authority inside the work group. This redistribution is not at all random however. It depends on the relative positions of the musicians involved, in particular the conductor, soloists and leaders of sections in the orchestra. As François Chazel (1983) has shown, exercising power depends on structures of domination that distribute resources unequally but that, without blocking the relative positions of the persons interacting, help provide a framework for them.

This case study has been the occasion to review the idea of a convention as defined by Becker (1988). Two aspects that he has left in the shadows have turned out to be very

¹² Esther Gonzalez-Martinez (2000) has cited a good example in the case of opera singers.

important: face-to-face relations in coordination and power relations in the work situation. The means of incorporation in things and bodies underlie the constancy and thus the efficiency of the convention. But the convention must be perpetually reinstated during the production process through negotiations between persons and relations where power is omnipresent. By following the chain of interactions leading to the production of a collective sound, we can modify the idea of a convention by forcing it to account simultaneously for aspects — incorporation, face-to-face interactions, cooperation and power — that most analyses set at odds.

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