



The pragmatics of conducting: Analyzing and interpreting conductors' expressive gestures

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Introduction

This paper presents some of the theoretical background and initial results of a large, ongoing project in cognition and conducting being carried out at Northwestern. Our primary interest lies in understanding the ways in which conductors and ensembles work together to deal with musical structure and produce musically expressive performances. We see part of this as research into musical *pragmatics*--with how musicians use bodily expression and sound to communicate with one another to produce effective frameworks for mutual musical expression. What is needed is some theory of pragmatics which allows the analysis of ensemble performance to be effectively understood. One such approach is provided by the work of the philosopher H. Paul Grice. Grice's proposals as to processes of *conversational implicature* have been fundamental to a substantial body of research into pragmatic processes in language and, in some cases, non-linguistic behavior. This paper applies Grice's work to the relationship between conductor and ensemble, showing how these principles apply to this seemingly-foreign domain and provide insights into many of the phenomena we notice in them.

Conductor/ensemble relationships reconsidered: initial considerations

Our starting point is that conductor-ensemble relationships are not adequately understood as a one-way path, where the conductor sends directions to the ensemble without interacting with the behavior of the musicians with whom s/he is working. Rather, the relationship between conductor and ensemble should be conceptualized as responsive and cooperative. The following quote from a prominent conductor supports such an approach:

"A conductor and an orchestra at work are a partnership. When the equality of partnership is in question, the orchestral musician will 'help' the conductor but...will NOT comply with the conductor's directions. ... Thanks to the musicians, the orchestra willingly supplies the missing ingredients for the conductor and shapes a performance well beyond the conductor's capabilities. Experiencing what she/he hears, the conductor believes she/he is responsible for the performance the orchestra creates." [Farberman 1993, p. xiii]

Interactive communicative processes of this kind are found in different kinds of situations; these include dialog, conversation, and negotiation, among others. A large number of approaches to the analysis and understanding of these kinds of interactive processes have been developed; it is beyond the scope of this paper to even outline these. However, two issues bear immediate mention: temporal relationships between participants and modality of communication between participants. Let us address these in turn.

One primary difference between conductor/ensemble interactions and typical dialog, conversation, or negotiation is found in the temporal and sequencing interactions between the participants. In conversation, participants most often interact by taking 'turns,' and concurrent verbalization with two persons is rare; in conductor/ensemble frameworks, 'both' participants are producing their outputs simultaneously under most circumstances. (There are other kinds of activities where these kinds of simultaneous interactions may be seen: dance, some kinds of sports--rowing, football, and others--and physical theatre come to mind. We lay these aside for the time being, despite their clear interest to the study of musical interactions.)

A second comparison with language is instructive. In conversation, both parties use verbalization as their typical means of interaction. In conductor/ensemble frameworks, the conductor contributes primarily by means of gesture, and the ensemble contributes primarily by means of sound. In fact, this two-modality interaction may even be an asset in coordinating synchronized activity. Our overall framework is one of a closely time-coupled feedback or contribution system in which each participant's output is closely monitored by the other, who in turn modifies his/her activity and who contributes this modified output back to the interaction.

Conducting and pragmatic analysis: what we can learn from studies in linguistics

Conductors produce a large number of physical gestures--facial expressions, hand motions, moves involving the entire torso--which we hypothesize are related to musical structure and musical expression in some way(s). The question is: how are these gestures to be interpreted? Our approach is to interpret conductors' gestures with frameworks derived from studies in linguistics. Therefore we will begin by looking at how researchers in linguistics have related gesture to language.

Physical activities of conductors

A conductor's visual output to the ensemble incorporates a number of interrelated but separate 'streams' of information. At this time we identify four streams (facial expression, handshape, hand movement, and torso placement and movement), but classify all of these as 'gesture' for simplicity. We are particularly interested in those gestures which conductors make which are not explicitly related to giving information about meter and tempo (that is, not related to 'keeping the beat'). This paper focuses on handshape and hand movement, specifically with the non-baton-holding hand (typically the left hand) and with facial expression.

Categorization of types of gesture: 'Kendon's continuum'

The study of gesture's relationship to language is being pursued by a relatively small group of scholars. One of the foremost of these researchers is David McNeill, of the University of Chicago; his book **Hand and Mind** (1992) is a summary of years of investigation into the relationship of gesture and language to thought. One of the topics of the book is the way in which gestures can be categorized,. McNeill begins with what he calls 'Kendon's continuum' (after Kendon 1988). This involves placing gestures at some point along a line, represented by the following schema (McNeill 1993, p. 37):

Gesticulation > Language-like gestures > Pantomimes > Emblems > Sign languages

McNeill describes the traversal of this line, from left to right, as having certain characteristics: "(1) the obligatory presence of language declines; (2) the presence of language properties increases, and (3) idiosyncratic gestures are replaced by socially regulated signs" (ibid.). Thus, gestures may be categorized by their independence from spoken language, their independently-perceived linguistic properties, and the relative presence or absence of criteria of well-formedness for some gesture. Let us now proceed to consider the relationships between this framework for understanding gesture and speech and the connection between conductors' gestures and ensembles' musical sounds.

Kendon's continuum, conducting, and sign languages

Let us attempt to define where conductors' gestures may be placed on Kendon's continuum. It is easiest to begin with the right-hand side of the continuum: no analog between conductor gesture and sign languages exists. If there were such an analog, it would seem to involve gestures encoding all of the information contained in a piece of music, such as that found in a score. From these gestures, a 'reader' conversant with them would be able to play or transcribe the piece in a materially substantial fashion without further mediation. Even the use, by choral conductors, of Kodaly hand-signs for solfege syllables do not encode enough information to serve in this manner.

Conducting 'emblems'

As we move from right to left along Kendon's continuum, we need to consider if some conductors' gestures function as 'emblems.' These are gestures which have highly conventionalized, context-independent meanings, and which function as 'signs' but are not combined in grammatical ways to form larger linguistic structures. To what degree are expressive gestures of conductors interpreted by a system of conventional meanings? In other words, how many of the gestures have meanings which are relatively fixed, or lexicalized, and need little or no pragmatic apparatus for their interpretation? The answer is: relatively few. This corpus of gestures is composed of those moves which can be accurately interpreted in the absence of sound--for example, in a videotape with the sound turned off. A summary of these lexicalized gestures (termed 'emblems' in the speech/gesture literature--cf. McNeill, 1992 pp. 56ff) is given below.

- Crescendo: left hand raised, palm up
- Decrescendo (diminuendo): left hand lowered, palm down
- Cutoff (release): left (or right) hand makes a tight loop with a sudden ending
- Cue (for entrance of a part): eye contact with player(s) to be cued, then a pointing or downward-stroking motion.

However, these descriptions are subject to more localized difference, raising the question of standards of well-formedness for these emblems; in addition, the degree of change called for in dynamics requires interpretation. This will be considered in more detail in a subsequent section of this paper.

Pantomime and 'language-like gestures' in conducting

McNeill defines pantomime as depicting objects or actions, without the need for co-occurring speech (McNeill p. 37). Conducting treatises rarely mention behaviors which resemble pantomime, and when they do, it is with disdain. Consider the following (from Farberman, p. 27): "The Shakers shake the baton throughout a beat pattern or in the direction of individual players. They are especially addicted to prolonged shaking on holds. (Why don't the players reciprocate by shaking their instruments at the conductor?) The sound scatters as a result of the very wide vibrato employed by the observant orchestra, a direct result of the shaking baton." Other kinds of pantomime can be observed in conductors, especially mouthing the words of texts or pantomiming the bowing of stringed instruments; nevertheless, such behavior is largely unmentioned in treatises. Moving leftward along Kendon's continuum from pantomime, there seems to be no analog to the language-like gestures defined by McNeill, where a gesture fills a slot for a term in an otherwise auditory speech stream (for example, "the parents were all right, but the kids were [gesture]" (McNeill p. 37).

"Gesticulation" and conducting

The leftmost edge of Kendon's continuum includes gestures which are typically co-generated with speech, have no conventional meanings, and are highly dependent on context for their interpretation. Many of the 'expressive' gestures of conductors seem to fall into this category; there are relatively few standards of well-formedness at work. Rather, these kinds of gestures, which are the focus of McNeill's research efforts, "...are free to incorporate only the salient and relevant aspects of the context. Each gesture is created at the moment of speaking and highlights what is relevant..." (McNeill p. 41). These encompass some of the most interesting and least discussed of conductors' gestures.

Grice's Cooperative Principle and maxims: A theoretical approach to pragmatics

One highly influential theory of linguistic pragmatics was laid out by the philosopher H. Paul Grice. The fundamental components of Grice's theory were presented at Harvard in 1967 as the William James Lectures and published piecemeal over a number of years (especially Grice 1975, 1978; for a rather more readable discussion, see Levinson 1983, Ch. 3). These lectures deal with the gaps that occur in conversational interchange if it is understood only in terms of the logical syntax and semantics of the statements made by the participants. In order to show how people 'make sense' of conversations where logic alone would be insufficient, Grice describes what he calls the 'Cooperative Principle' (CP), which is

a generalized proposal for understanding how persons interact in rational ways. The CP states that one should behave so as to:

Make your contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged.

Grice then gives a set of four 'maxims,' some of which have submaxims, which elaborate on how this CP can be implemented. These are:

The maxim of Quality: try to make your contribution one that is true, specifically:

- (i) do not say that which you believe to be false
- (ii) do not say that for which you lack adequate evidence

The maxim of Quantity

- (i) make your contribution as informative as is required for the current purposes of the exchange
- (ii) do not make your contribution more informative than is required

The maxim of Relevance: make your contributions relevant

The maxim of Manner: be perspicuous, and specifically

- (i) avoid obscurity
- (ii) avoid ambiguity
- (iii) be brief
- (iv) be orderly

These provide the basis for Grice's analysis of how speakers can go beyond the actual words and forms of sentences they hear, by a process of *implication*. Implication allows one to make sense of interchanges such as the following:

Bill (standing next to an inoperative car): I'm all out of gas.

Al: There's a gas station just around the corner.

In logical terms, the second speaker's statement does not directly deal with the predicament posed by the first speaker, and in fact seems to be in violation of the maxim to 'be relevant,' but Bill can make use of his belief that both speakers are observing the CP, so he interprets Al's statement to be in fact relevant and is able to see thereby that the answer to his problem is to be found in the garage around the corner.

Applying Grice's pragmatic theory to conductor/ensemble situations

Grice's theory has been widely discussed in linguistic circles for years. To the best of our knowledge, only one attempt has been made to apply it to musical situations (in Lerdahl and Jackendoff 1983, pp. 309-311, to a very different purpose). It behooves us to consider the ways in which the CP and maxims might help us understand conductor/ensemble interactions.

Does the Cooperative Principle seem to 'fit' the ensemble performance situation?

First of all, does the CP itself seem to fit with the typical conductor/ensemble activity? It is clear that in most circumstances conductors and ensembles join their efforts willingly to create a unified musical

experience which is to be shared with listeners. Both parties have adequate reason to cooperate, to attempt to make their contributions appropriate and timely. So, along the lines of what Grice suggests, a basic approximation of the CP appears to be in force.

Can this theory of language behaviors be applied to nonlinguistic phenomena?

This is an excellent question which, fortunately, Grice himself goes out of his way to answer for us. He gives a number of examples of physical, cooperative activities (cooking together with another person, repairing a broken automobile, and others) in which the CP and maxims are at work. We therefore feel encouraged and justified in exploring another potential arena of application where people work together toward musical common goals.

The maxims one by one: A close examination of implicature and conducting

In a short paper such as this one, we can only hope to lay out a few examples in which Grice's maxims are more specifically applied to the conductor/ensemble framework. Many others might be suggested as well. Let us take the maxims one by one and show how they apply to ensemble musicianship, mostly by quoting from conducting treatises. Some of the quotes may in fact be related to more than one of Grice's maxims.

The maxim of Quality (try to make your contribution one that is true)

"When a conductor faces an orchestra, she/he must know the score!" [Farberman, p. 174]

The maxim of Quantity (make your contribution as informative as necessary, and no more)

"Every gesture the conductor makes should say something to the players." [Rudolf p. 240]

"All necessary musical information can be delivered by the baton. If special musical refinements are addressed verbally, instructions should be delivered in precise **musical** terms. ... Do not pontificate." [Farberman p. 174]

"do not let your gestures become too involved or confusion will result." [Rudolf p. 248]

The maxim of Relevance (make your contributions relevant)

"The genuinely inspired musical leader concentrates upon meeting the demands of the music and of the orchestra; he has no time or energy for superficial gestures having only audience appeal." [Rudolf p. 240]

The maxim of Manner (be perspicuous, and specifically avoid obscurity, avoid ambiguity, be brief, and be orderly)

"The two extremes to be avoided are shyness and exhibitionism." [Rudolf p. 240]

"...the conductor's...technique...may be defined as a highly individualized craft to evoke specific responses on the part of the players with the most effective gestures..." [Rudolf p. 314]

"When and how to use the left hand are matters of individual taste, but it should always tell the orchestra something essential. If the conductor uses the left hand continually, the players will ignore it." [Rudolf p. 243]

A deeper look: examining the criteria for implicature to take place

As Grice states his framework, there are a number of conditions which must be met for implicature to happen: *cancellability*, *nondetachability*, *calculability*, and *nonconventionality*. Let us take these conditions one by one and compare them to the conductor/ensemble framework. Only one musical case

per condition will be mentioned; in general, many parallel cases exist as well.

1) The implicature must be *able to be canceled* by the addition of information that undercuts the implicature or makes it clear that a speaker is 'opting out' of the CP.

- What kind of additional information might cause an implicature from conductor expression to be canceled? a variety of examples might be adduced. Take, for example, co-occurring gestures which undercut the implied intent of some conductor gesture: a hand cue to enter is given at the appropriate time for a certain performer awaiting a cue, but the conductor's gaze is directed elsewhere. The implication that the waiting performer should come in is undercut, causing at the least confusion and, in more extreme cases, some considerable degrees of ensemble chaos.
- A quote from Farberman is in order here: "Many beginning conductors are guilty of indicating pulse with their head. It is a **disruptive gesture that disarms** the baton of authority by supplying an **alternative** beat...A head pulse, or beat, most likely will **not correspond** with the baton beat. Thus, at the the point of attack, the conductor offers the orchestra a choice of **two pulses**. Most often the result is a weak, imprecise orchestral entrance." [Farberman p. 8, emphasis in the original]

2) The inference in the implicature must inhere in the semantics of the statements themselves and not just their surface forms (Grice's is '*nondetachability*'). The use of synonyms in place of the exact words of an utterance should not undermine the implicature.

- With regard to nondetachability, the application to conductor/ensemble interaction seems more problematic, as the semantics of the various gestures themselves are often unclear.
- Again, from Farberman: "Is there a correct physical [i.e. conductor's gestural] response to a musical problem? A single 'correct' musical/physical solution to a musical problem **does not exist**. ... It is a given that any two conductors confronted with the same musical problems will view them differently and devise distinct musical, thus physical, solutions. Even conductors who could agree fully on the musical meaning of a score would produce dissimilar results because of their individual motor and muscular skills and unique body structures. ... Conductors must think of stroke choices just as string players think of bowing possibilities, there are generally several solutions for most problems. **In theory any baton stroke can be used for any solution, so ALL strokes may be 'correct.'** But in practice, the 'correctness' of the stroke depends on who chooses what stroke and when, and how and to what effect it is used." [Farberman p. 178, emphasis in the original]

3) Implicatures must be *calculable*; that is, given some unclear communication, one must be able to construct a chain of explanation, using what is given in the gestures, and the CP and maxims, to show how a reasonable interpretation preserving the CP is to be made.

- One might make the case that syncopation provides a good example of a musical context which shows how calculable implicatures might be made. This example is a little more involved than a simple quote but is, we hope, illuminating.
- In **The Grammar of Conducting**, Max Rudolf discusses syncopation in the following way: "*Syncopated passages without accents* require no special beat. The gestures must be very definite and the rhythm steady. You must beat, so to speak, between the notes, not on them. ... *Syncopated notes with accents* are indicated on the preceding beat, which is staccato. The sharpness of the beat increases with the degree of the accent. In contrast with an ordinary accent, which is on the count, this staccato beat is not prepared. The beat itself is the preparation for the syncopated note that comes after the count. Again, never beat the syncopation, beat the rhythm!" [Rudolf, 1949, pp. 207-208]
- What is the player to make of this situation? normally the increased emphasis on the beat would indicate that the note on the beat would receive an accent. However, in in this case there may be no note initiated on the beat itself (the example given in the Rudolf text, from Stravinsky's *L'Oiseau de Feu*, has only tremolos on the beat, giving no overt sense of rhythm). The chain of reasoning by the players might run something like this: (1) The conductor is telling us to accent. (2) However, there is no note to accent at the place s/he is indicating [causing the player to wonder if the maxim of

Relevance--or possibly that of Quality--is being violated]. (3) This conductor knows what s/he is doing, so the indicated 'accents' must have something to do with our musical purpose [the player is preferring to believe that the CP is still in force and that the maxims of Relevance and Quality are somehow still being preserved]. (4) Therefore, it makes most sense to infer that the accents are simply displaced from the nominally-indicated metric position, and should be applied to the intervening notes that are on the normally-unaccented positions [since to show accents on those positions would require indicating twice as many beats as the conductor is currently giving us, and that would be a violation of the maxim of Quantity, by giving more information than is really necessary, since the conductor knows we can make the appropriate implicature to arrive at the correct interpretation ."]

4) The meanings understood in implicature are *nonconventional*--that is, they are not part of the conventional meanings of the words themselves (not part of the literal meanings of the words, but derived from them through the CP and maxims).

Only gestures which are fully lexicalized would have meanings so governed by convention that they needed no contextual interpretation; the discussion of dynamic change to follow in the next section will explicate this further.

Two test cases for pragmatics and conducting

Having assembled all this theoretical machinery, it is time to apply it to musical situations and see what results. The method we use employs videotapes of conductors in a variety of manners. In a paper, of course, this method is difficult to convey. Interested readers may contact us for the actual examples used and more detailed analysis of the examples. In the following we look at processes of implicature in two cases: interpreting a dynamic-change gesture and interpreting a pantomime gesture.

Case 1: Dynamic alterations and implicature

Gestural patterns indicating changes in dynamics are a mainstay of the conductor's art. Commonplace as they are, there are a few interesting pragmatic issues surrounding the communication of dynamic changes between conductor and ensemble. One of these seems to be related to what Levinson, following Gazdar, calls *scalar implicature* (Levinson pp. 132-136; Gazdar 1979). Briefly put, the idea is this: when someone says "John wasted some of his money at the casino," the implicature is that John did not waste ALL of his money at the casino, even though in a strict logical sense that could be true as well. Or, if say "John has three children," one might reasonably interpret the sentence as "John has three children and no more," when in fact if John had eleven children, the statement that he has three children is still true. Given some ordered scale of terms, such as <none, few, some, many, all>, to state one of these terms implicates "this level and no more" of that to which the term is being applied, by means of the maxim of Quantity. Such inferences are the stuff of which scalar implicatures are made.

We can make a connection to interpreting conductors' gestures regarding changes in dynamics within the same framework. Our ordered scale of dynamic levels might be <pp, p, mp, mf, f, ff>. Given a starting dynamic level, under most circumstances a conductor's crescendo or decrescendo gesture can be interpreted to mean that the ensemble should move from the current dynamic level to the next higher or lower level, on the same basis as that used for the scalar implicatures just described. However, this is a matter of inference. Max Rudolf observes, disapprovingly, that "Many players have a tendency to play loudly at once when they see 'cresc.' and softly when their parts indicate 'descresc.' or 'dimin.' (Rudolf, p. 60)." This indicates that, to his mind, such players are behaving improperly, when in fact a subito forte or subito piano would be one not-forbidden interpretation of the dynamic indication. How can this be? Probably to Rudolf, the crescendo or decrescendo indicator is a scalar indicator, from which the implicature is something like "from our current level, say mf, make a decrescendo, which implies mp, and not more change than that." The player giving a more abrupt change in the dynamics is, literally and logically, not wrong--but has failed to produce an appropriate implicature.

For testing this implicature we used a videotape of a conductor leading an orchestra in a passage by

Mozart. At one point a decrescendo is desired, and the conductor uses the typical palm-down gesture to indicate this. At this point in the soundtrack for the video, two different versions were produced. One was the original audio as recorded by the orchestra, and the other was a modified version where the decrescendo was more in the nature of a *subito piano*. A group of 8 musicians experienced in ensemble playing was shown both versions and asked which one most closely reflected the conductor's intentions, and why. All of the musicians remarked that both were possible interpretations but that the less-marked version (the original) was preferable. When asked to give the reasons for their choice, most gave as their reason that the motion made implied a modest decrease in volume but not a sudden one, lending support to the notion of scalar implicature as experienced in musical performance.

Case 2: 'Overacting' and implicature

Conducting treatises make many comments on how much guidance a conductor should give an ensemble, usually to the effect that one should be economical, to the point, and specific in gesture and word (Farberman, Chapter 27, and Rudolf, Chapter 31, are typical examples). One might see these as specific applications of the maxims of Quantity and Manner. In fact, many of the behaviors which musicians specifically dislike in conductors can be traced to conductors' violations of these maxims, in the general domain of 'overacting.' Let us consider one such case from one of our videos.

In this instance, the conductor is mouthing the words to the music (a large choral/orchestral work of Mozart). This kind of gesture falls under the category of 'pantomime,' as it mimics the actions of the chorus. In this instance the maxim of Relevance is being observed as far as the chorus goes, but this is not the case with the orchestra. One might predict, then, that orchestra members would respond more negatively than chorus members, because of their somewhat differing interpretations of Relevance. However, even for the chorus, another maxim might be violated here: Quantity. Mouthing the words to the chorus is almost always unnecessary (and universally derided by teachers of conducting, although one sees this behavior even with very prominent conductors); it violates the injunction to make contributions no more informative than necessary. There may be a related phenomenon at work as well; there is research which indicates that speakers have a tendency to gesture, but not listeners. When two participants in a conversation trade roles, the one who had been speaking typically stops gesturing, only to resume again when s/he adopts the role of speaker again. Thus, for a conductor to constantly engage in large amounts of gesturing, over and above that which is necessary, might be interpreted as not sharing responsibility adequately with the orchestra.

To test these implicatures, we played this videotape for the same group of ensemble musicians and asked them to describe their reaction to the conductor. As predicted by the violation of the maxims of Quantity and Relevance, all members of the group indicated their dislike for the conductor's mouthing of the words. When asked why they disliked this, there were two answers: the first was that for the singers it was unnecessary, and for the instrumentalists it was unrelated to their parts.

Concluding remarks

The ways in which linguistic theories related to study of gesture co-occurring with speech and to the interpretation of incomplete or uncertain parts of dialog have been shown to have relevance to understanding the ways in which conductors and ensembles communicate with each other. This paper has focused on only a few aspects of this, with many other dimensions left for a more extensive discussion. Our view is that the theories and methods developed in linguistics have much to offer the study of musical behaviors, especially with regard to interactions between musicians.

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