

Embodied Creativity in Bassoon Performance

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Summary: Today I present an analysis of instructional techniques in three masterclasses for the bassoon. The goal of this work is to conceptualize creativity in instrumental performance at the most basic level, the level of physical engagement in musical sound. The analytical work takes place from the point of view of embodied and situated cognition, and addresses questions like: How is creativity distributed over the body and instrument? How do master players identify objects of attention for their students? And, Where is the creative engagement in musical technique? The analysis presented here is an initial step toward unpacking the role of the body in musical thought and experience.

Introduction and background:

Over the last few decades, a growing number of researchers in cognitive science have shifted to an embodied and situated view of cognition (see Robbins & Aydede 2009; Johnson, 1990; Prinz & Barsalou, 2002; Kirsh, 2008, 2010; Noë, 2012). Recent efforts to apply aspects of this model of mind to music performance call this a move away from linear, “communication models” of music performance (see also Caleb McMurphy’s paper from this session) to models that explore *the negotiation of musical activity* (Kaastra, 2008). In the communication model, there is the idea that a composer creates music, the performer interprets music, and the audience appreciates music. Creativity is squarely in the domain of the composer. In the activity model, creative cognitive processes are employed in composition, in performance, in listening, and in dance.

To get there, some researchers in the philosophy of mind have defined a broader view of creativity, one which includes *exceptional* and *mundane* forms (Barsalou & Prinz, 2002). In both forms, creativity is *a process of connecting* concepts, ideas, and/or bodily processes in order to bring about new ways of understanding or experiencing something (Barsalou & Prinz, 2002; Johnson, 1990). In the case of music performance, we could say that creativity is a process of connecting musical materials in order to make the music *come alive*.

One conceptual support for this shift of perspective is the idea that musical symbols are *modal*, that is, perceptually based. What is a musical symbol? And, What does it mean for a musical symbol to be modal? Traditionally, musical symbols are described *as units of musical sound* (e.g. pitch classes, rhythmic units, chords). The labeling of musical units is generally assumed to be *amodal*. That is, the musical symbols are independent of the physical processes required to generate or perceive them. A=440 is not considered a perceptual phenomenon, for example. The frequency 440 Hz is a physical attribute of the pitch class “A”. A dot on the page that represents the pitch class “A” will likewise have a measurable temporal value.

The traditional view holds these measurable qualities of sound as the basis for music cognition. The idea is that we process *amodal* symbols in order to understand music and that our physical efforts at performance are an attempt to produce accurate sonic representations of these musical symbols. Music performance becomes a tireless effort at aiming for absolute sonic perfection. The set of ideas that I am working with in this presentation connect musical symbols (units of meaning in musical sound) to the physical processes of generating and perceiving them. The argument is that musical meaning is deeply situated in the perceptuo-motor processes of engagement in musical activity. A musical symbol in this view is more basic.

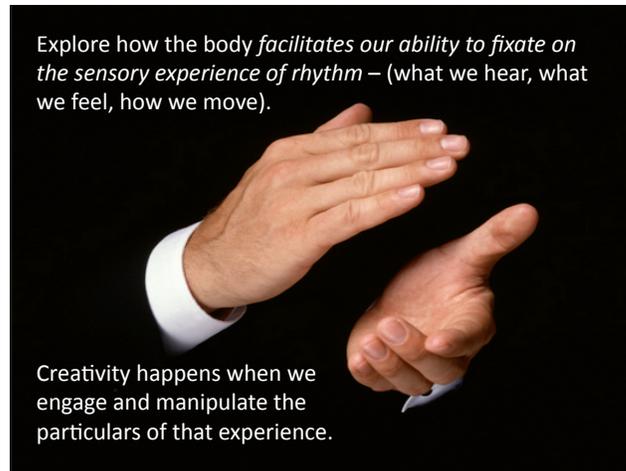
Music performance requires a very complex coordination of perceptuo-motor processes. In the case of bassoon, it involves tactile sensations in the lips, mouth, air-stream, fingers, hands, and arms. Performance draws on our sense of chronoception (the passing of time) and our sense of speed (kinesthesioception), our sense of orientation (proprioception), and our sense of pain (nociception), and of course, our senses of audition and vision. Many sensory systems are involved in bassoon playing. The perceptual inputs from these multi-modal systems offer up the *perceptual objects* from which our musical symbols are derived.

So, how do we begin to identify perceptual objects in music? Some might suggest that musical training does that work for us. After all, the instrumentalists we are studying are all highly trained, steeped for decades in the tradition of Western Art Music. Are they not perceiving what they have been taught to perceive? My answer as a skilled bassoonist and cognitive scientist with a long-standing interest in this topic can only be “yes, with many qualifiers”. *It is not simply a matter of moving from units of analysis in music theory to units of understanding in music performance.* It is true that bassoonists play scales and arpeggios, rhythms, and articulations, and that those musical materials are culturally derived. Bassoonists with advanced degrees learn to play piano in order to better understand harmonic structure, and learn music theory to better analyze musical works. But when we examine how individuals are taught to play bassoon, we see an engagement of a more complex set of perceptual objects and processes than the more abstract concepts of music theory would allow. This more complex set is what we are working to reveal through this research.

Interactive exercise:

1. Alternate clapping your hands and snapping your fingers.
2. Notice the rhythm your body produces. Notice how you account for that rhythm. (e.g. Do you give it a meter? Are you imagining measures? Or not?)
3. Make changes to your performance of the clapping and snapping. For example, cup your hands; then slap your hands. Change the location of your finger snapping. Try clapping harder, then softer. Try clapping over a longer and shorter distance.

Notice what happens to your experience of the rhythm.



Even without changing the rhythmic values, you can dramatically alter your experience of the music in the rhythm. The music in the rhythm can be a posture, an attitude, a sense of pressure in the sound. It conveys something. It makes the rhythm come alive. I call the small changes that transform our experience of music, the *particulars* of clapping and snapping.

The particulars of performance expose perceptual objects for us.

Or, we can borrow Alva Noë's explanation for perceptual objects (2012, p. 23),

An object or quality is *perceptually* present (i.e. it is an object of perceptual consciousness) when the perceiver understands – in a practical, bodily way – that there obtains a physical, motorsensory relation between the perceiver and the object or quality satisfying two conditions:

Movement-dependence: Movements of the body manifestly control the character of the relation to the object or quality.

Object-dependence: Movement or other changes in the object manifestly control the character of the relation to the object or quality.

Noë means that we can have a perceptual experience of something, say, hearing something, but to hear an *object*, we have to be able to engage it, to pick it out from the wall of sound and work with it meaningfully. Expert musicians have many tools for “picking up objects” in musical experience. The physical aspects of performance on an instrument greatly influence *both* the nature of perceptual objects in music *and* the way those objects are engaged. Musicians accumulate many techniques for picking up musical objects – through practice and experimentation, guided by senior players and colleagues, over many years of training. Let us now examine some particulars of bassoon performance.

Sergio Azzolini and the Tel Aviv Soloists Ensemble

In this clip, Sergio stops the orchestra after a few bars and says, “Look what I do. [he plays his reed]. I’m not doing [he plays again]. Think about that and we try again.” Please listen to him give this tacit instruction.

url: <http://www.youtube.com/watch?v=qwk6tS3BS94>

Hear how the orchestra responds to his instruction – by playing more legato. He could have stopped and said, “Please play more legato”. But he chose a more inventive way to deliver his instruction. By blowing an uncomfortably long tone on his reed and leaning forward as he does it, Sergio gets the orchestra *to attend to the process of creating a legato sound* “as if blowing out just a bit longer than we feel comfortable doing.” He is saying, “lean into the phrase like I do”. This is a more complex construct than the term “legato” allows, and it produces a change in how the ensemble plays.

Today I present a point of view that draws out the creative processes of musical engagement in situations like these, where a master teacher guides skilled players to attend musically to aspects of their performance. This presentation is part of a larger project that examines how master teachers direct the attention of their students toward *aspects* in performance. We feel that this observational approach is better than asking instrumentalists to speak directly about their perceptual experience for some of the reasons mentioned above; that is, instrumentalists’ ideas about creative engagement in music making are very much influenced by their training. But we also recognize, following Schön (1990) that the teaching situation is where many of the real processes of engagement are likely to unfold.

We asked: How do master players identify objects of attention for their students?



A master teacher brings aspects of the performance into focus, demonstrating how to attend to and engage the particulars. We call this process, *reference fixing*.

Analyzing Reference Fixing

1. **Aspect:** of the sound or performance
2. **Modalities:** verbal (V), gesture (G), play sound (P), tap/count (TC), show technique (S), touch (T), multi modal (MM)
3. **Referential directness:** direct, indirect, or oblique
4. **Method:** isolate an aspect, exaggerate or distort an aspect, emphasize technique, introduce mood or character,

When we analyze masterclasses, we use the concepts listed on the slide above to index what we see. We begin by identifying the *aspect* of the sound or performance that the teacher is addressing. An aspect can literally be anything that is addressed in the exercise. We ask, “What is the teacher addressing here?” We also look at *modalities* – how is the instruction given. Is it spoken, gestured, played, counted or tapped? Is it a demonstration of technique, or a combination of the above? *Referential directness* refers to how directly the teacher addresses the aspects and perceptual objects in play. Sometimes an aspect of performance cannot be addressed in any way other than through experimentation. For example, a teacher will make reference to something that is missing in order to perceive what is present differently, or refer to what is missing by directing attention to what is present in a different way. This kind of indirection needs to be accommodated if we are to recognize the way the *particulars of technique expose perceptual objects* in music performance. Finally, *method*: there are many ways to direct the attention of a student to an aspect of performance – by isolating it, exaggerating or distorting it, emphasizing technique or counting, introducing mood or character, and so on.

The following analysis will focus primarily on *referential directness* in three bassoon instructions by three master players, Sergio Azzolini, Frank Morelli, and Joost Boostdijk.

Frank Morelli with student, Joshua Firer, *Scheherazade*

url: <http://www.youtube.com/watch?v=jin8YcVLBWg>

Please watch Mr. Morelli’s lesson with Joshua Firer on YouTube.

Firer plays the excerpt for Scheherazade, and Morelli directs his attention to the consistency of tone color in the passage with the F#. Morelli plays the passage, pausing on the F# to draw Firer’s attention to the tone color. He then asks Firer to play just E, F#, G, and A and points out the tendency for the F# to be sharp, or stand

out from its context. He tells Firer, “don’t open the embouchure too much, *but think more open with the tongue* and I think you’ll focus it better.” Firer plays, and Morelli says, “Do you feel the difference?”



M: “Think more open with the tongue.”

M: “Do you feel the difference?”

These quotes underscore the need to take more of the perceptual system into account when analyzing the performance of music. The sound is not just the sound. It is a way of making the sound. The sensation of the music, the feeling of satisfaction in performing it with a consistent tone color is not just in the way it sounds. *It is in the way the sound links to the tactile sensations in the air-stream, embouchure, and mouth.*

Direct Reference Fixing

Aspect: consistency of tone color between notes

Referential directness: direct

Method: emphasizes internal tactile sensations (air stream/embouchure/vowel shape)

***Operational instruction:** “Neverending task of listening, analyzing, and adjusting to keep the sound in line”

Morelli directly addresses the consistency of tone color between the notes. Notice that Morelli corrects his discussion as he gives the lesson. He starts out by describing the pitch, and then changes his focus to tone color. The lesson is not

about the F# being sharp, but how it can be blended in with its melodic context. To blend the tone color, Morelli directs the Firer's attention to very subtle *particulars* of technique. He says that small adjustments to the shape at the back of the tongue, the balancing of effort between embouchure and vowel shape, are very subtle manipulations, "but important ones," and that to achieve a consistent tone color is a "never ending task of listening, analyzing, and adjusting to keep the sound in line."

We can represent his instruction this way:

Perceptual Object Structure

- Consistency in **tone colour** is achieved by *adjusting the balance* between the embouchure and the vowel shape. [Implicit in this instruction is the role of air speed.]
- The *air speed/embouchure/vowel shape* is a perceptuo-motor system organized to achieve certain outcomes.

It makes sense for a bassoonist to think of the air speed/embouchure/mouth shape as a system because these processes are linked in performance. If the air speed drops, the embouchure and mouth shape adjust to compensate. We can also talk about the subtle manipulations of this system as being the *particulars*, the *manipulanda*, of tone color on the bassoon. Seen this way, we can begin to understand how they are *operationally linked*, and I would suggest, how they form a major component of creative engagement in tone color on the bassoon. For Firer, the engagement of this perceptuo-motor system does not end with this lesson. As Morelli says, it is a "never ending task of listening, analyzing, and adjusting to keep the sound in line." Here we see an advanced student learning to engage this system as a regular aspect of his technique on the bassoon.

Joost Boostdijk, YouTube Symphony Masterclass, The Overture to the Marriage of Figaro

url: http://www.youtube.com/watch?v=ioMM0NuBG_w

Please listen to the first part of Joost Boostdijk's YouTube masterclass.

His lesson is very dense, and there are many things we might say about it. We will analyze the lesson as an example of oblique reference fixing. That is, fixing the reference of the student on aspects of performance that are not yet being played or understood and that will only come about through a process of engagement.

Oblique Reference Fixing

- **Practice Method**
 - (V) Ignore dynamics to start
 - (V, P) Begin with small chunks, (2 notes, then add one at a time)
 - (V) Practice slowly, with metronome
 - (V, P) Vary the rhythms
 - (MM) Later, add direction in the phrase
- **Explicit Aspects**
 - Dynamics
 - Tempo
 - Direction **
- **Implicit Aspects**
 - Finger motion, Finger order, Lightness of fingers, Smoothness of fingers

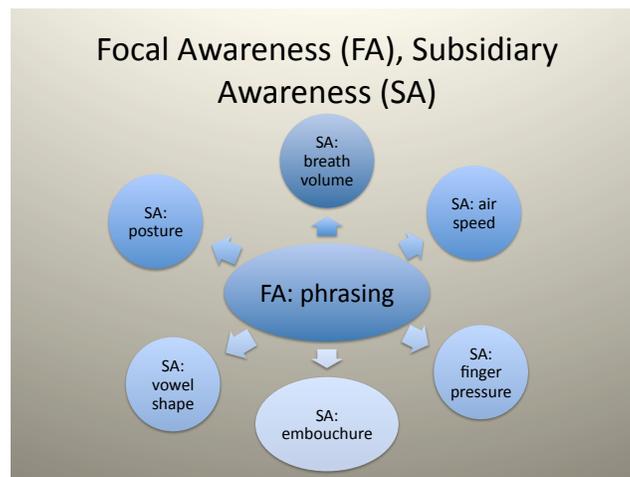
Boostdijk introduces the excerpt by telling the students that the aim for this passage is to “blend with the cello section”. He then suggests that the student “ignore dynamics and tempo” and proceed to learn the notes in chunks (a process that is sometimes called, woodshedding). Most bassoonists learning this excerpt will know all of the notes in the passage. However, the fingering combinations in this passage are awkward on the modern bassoon, so he suggests starting with only two notes, then adding one note at a time until the passage is generally under the fingers. Then he suggests using a metronome and gradually bringing it up to speed while varying the rhythms. When the passage is coming together, he suggests adding *direction* in the phrase.

The process of woodshedding can be viewed as a way of learning the music. On the surface there is not much to it. However, if we explore the implicit processes that are addressed through the exercise, we get a more detailed picture of the particulars involved in performing this passage. The process of woodshedding implicitly trains: finger motion (to deal with awkward combinations of notes), finger order (playing slowly reveals where notes can break, and which fingers need to be put down first), lightness of fingers (as speed increases, fingers should get lighter), and smoothness of fingers (varying the rhythms is meant to reduce the tendency for some fingers to be faster or heavier than others). These particulars are implicit in this instruction, though in a live lesson they may very well be addressed directly. Nevertheless, we can analyze the lesson in terms of the implicit processes it addresses as an example of the kind of analytical work we are doing in the larger set of data. More on that in a minute.

Multi modal reference fixing – “direction in the phrase”

- JB: “If you feel more comfortable and you’ve practiced with a metronome you can also start thinking about the phrasing so you don’t play to much:
- **badadadadum badadadadadadadadum** [he speaks this under tempo with emphasis on the main beats, while beating time with his right arm.]
- “But really go:
- badabadadum badabadababadabadabadadum” [he sings this evenly (still under tempo) while making two upward gestures with his right arm. The arm traces “the direction in the music”.]

In the section of his lesson portrayed on this slide, Boostdijk uses multimodal communication to demonstrate the complex idea of how *paying attention to the direction of the phrase will make the passage easier to play*. This is a very important turning point in our analysis, because it brings us to a set of concepts that help us understand *how multiple particulars are brought together to engage a single aspect in performance*.

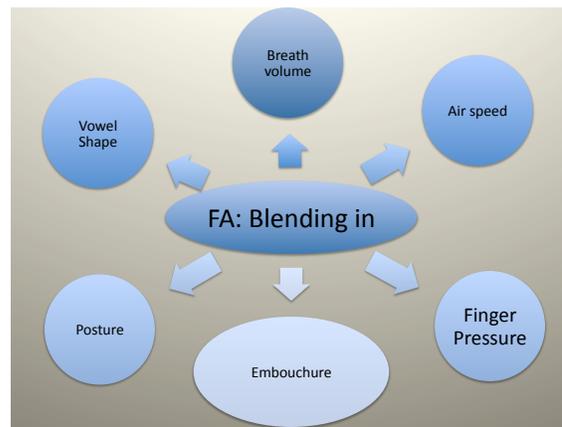


One way of looking at how this takes place is to use Polanyi’s (1967) idea of focal and subsidiary awareness. In this example, the idea of creating direction in the phrase re-structures the underlying processes, what we have been calling the *particulars*, of performance. Those particulars can include: tongue placement, embouchure, posture, breath volume, air speed, finger pressure, and other things as well. The passage becomes easier to play because a new target of focal awareness restructures the particulars of technique in a way that better supports the performance goal. A quote from Polanyi,

“We have seen that tacit knowledge dwells in our awareness of particulars while bearing on an entity which the particulars jointly

constitute. In order to share this indwelling, the pupil must presume that a teaching which appears meaningless to start with has in fact a meaning which can be discovered by hitting on the same kind of indwelling as the teacher is practicing.” (Polanyi 1967, p. 61).

An important point needs to be made here to connect this very technical discussion to our larger topic on creativity. That is, a performer still contains the particulars of technique in subsidiary awareness. They may no longer be focal – after learning to manipulate them masterfully, they may recede into the background, but they never completely disappear. They become a part of what I call a performer’s *operational awareness* and this plays a very important role in creative engagement in music.



Notice how the particulars are re-structured with a different target of focal awareness – *blending with the cello section*. This is not a subtle shift in awareness. In performance, it is everything. Shifting from an awareness of an internal process (direction in the phrase) to an awareness of an external process (blending with the cello section) is a very important component of instrumental technique. Those of us who play in large ensembles know this is a “mental muscle” we develop in rehearsal and performance. The ability to perceive and become a part of the group requires a good deal of mental energy and it becomes its own layer of performance. We begin thinking as an ensemble through the development of this mental muscle. And here we see how this shift in awareness re-structures the very fabric of our own technique.

The simple visualization presented above does not adequately characterize the complexity of this system. Creativity in ensemble performance can move up from aspects in subsidiary awareness to new targets of focal awareness. And it can go out from a target of focal awareness, into some or all of the particulars. If a player takes a very mentally focused breath for example, the group will notice and can respond in kind. One could suggest that implicit cues often contain the mental focus and energy of the ensemble. These cues may seem subtle, but they make a performance come alive. Or not.

When we speak about creativity in music performance, we often mean “the ability to make a passage come alive” or, in terms from cognitive science, the ability to connect and re-present material in novel or interesting ways. When an in-breath serves up musical material the pulse, character, dynamics, or other aspect becomes a target of focal awareness.

Referential Directness

The three lessons we examined today can be analyzed as having three different levels of directness. Azzolini’s tacit instruction to the orchestra was *indirect*. By playing the expressive goal, he indirectly restructured the focal/subsidiary awareness of the orchestra to “leaning into the phrase” as he does. Morelli’s lesson directly engages the particulars of tone colour in the Scheherazade passage. By talking about vowel shape and tone colour, playing the passage, and getting the student to feel the difference, he directly trains aspects in subsidiary awareness. Boostdijk’s lesson can be analyzed as having an oblique relation to training up several aspects of finger technique. By giving practice instructions for woodshedding, he teaches a student how to train their own system without mentioning the implicit process at all. It is entirely possible that a person could learn to master the excerpt without ever directly attending to their fingers. Simply performing the exercise can bring that mastery about.

It is important to note that I am not talking about teaching styles. Each of the bassoonists is likely to engage a wide variety of multimodal techniques when they train their students. Boostdijk for example, addresses the particulars of finger motion in a later part of the masterclass for the YouTube symphony. To learn a good legato, he suggests attending to the fingers, to *stroke* the tone holes rather than *hitting* them – which might be a better use of fingers for faster material. It is also very important to remember that these teachers never suggest that once a technique is learned, it is simply a matter of reproducing the movements. Morelli, and others in the larger set of masterclass data, remind students that *technique is operational, not fixed*.

Creativity vs “just technique”?

- Technique is not fixed. It is *operational*; that is, responsive to context and the state of the activity.
- Technique is the engagement in the manipulanda of music (which are deeply embodied).
- Creativity happens when our bodies facilitate our sensory engagement in the particulars of performance.

While the bassoonists may (in the case of Azzolini) or may not view these teachings as particularly creative, I think we can see how the processes of attention and

awareness, the processes of engagement they address are at the very heart of what it means to be creatively engaged in the manipulanda of music. What we have done in this work, and what I continue to do in my larger analysis of instrumental masterclasses, is to shift the idea of creativity in music performance from the idea of individual expression to a more subtle process of tacit engagement, tacit creativity if you will. The discussion here is by no means complete. In fact, it is only the very beginning of a much larger attempt to understand embodied creativity in music performance. Thank you.

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