

On the use of Laban-Bartenieff techniques to describe ancillary gestures of clarinetists

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Clarinet Gesture Analysis

This report presents results from the application of Laban-Bartenieff movement principles to the analysis of expressive movements of eleven clarinet performers. Twelve standard performances of Stravinsky's second movement of the *Three Pieces for clarinet solo* are analyzed and performer movements are annotated using the software Anvil.

Our goal is to build up on previous studies on clarinet expressive movements (Wanderley, 2002; Wanderley, Vines, Middleton, McKay and Hatch 2005) that dealt with the analysis of motion capture data – typically, the movement of one marker placed at the clarinet bell – to a more holistic approach that takes the whole body into account.

Methodology

Data

The data consists of 12 videos of 11 clarinetists playing the second movement of Igor Stravinsky's *Three Pieces for clarinet solo*. Some of the participants also played the opening of the first movement of Johannes Brahms's First Sonata for clarinet and piano (for the purposes of this study without the piano). Participants included clarinetists from the Netherlands, France, Canada, and the United States, ranging in ability from first-year university to professional orchestral and freelancer musicians. Original collection of data involved playing the piece in three manners: standard, expressive and immobile. Performers were asked to perform each manner several times. Our observations generally used the second performance of the standard manner unless the performer requested that another performance be used.

The performances were videotaped using digital video cameras (Digital 8 and MiniDV). The view for seven of the performers was of the full body (provided by a Canon GL2 3-CCD MiniDV camera) and for four of the performers was from the mid-thigh up (Sony Digital 8 camera). The videos were taken mostly on the diagonal (on the performers left side and slightly to the front) or directly from the left side. Generally, performers were asked to wear plain clothing so that the movement would show up clearly against the background. Sound quality varied due to the method of recording and subsequent compression into Quicktime movies used in the analysis.

Movement Analysis

Previous research in clarinet gesture analysis tracked specific body parts or clarinet parts and their movement in space. For example, on viewing a video, the number of times the clarinet bell moved up and down was recorded. However, the clarinet bell moving up and down may be caused by many different types of movements. We chose to use *Laban-Bartenieff Movement Fundamentals* in to analyze the movements. The reason why we chose this method is because it describes the movement of the whole body and the relationship of all the body parts, rather than focusing on isolated points. This system was developed by dancers as a means of recording complex choreography and describing movement on paper. Because of this, the system is fundamentally well constructed to deal with artistic forms that occur in time such as music. This allowed us to describe the movement as it occurs in conjunction with the music being played.

To have a better understanding of the Laban-Bartenieff system, a certified practitioner was contracted to develop a movement analysis system derived from Laban-Bartenieff that was specifically tailored for observing musicians as well as to be used after limited training. Our training consisted of one two hour preparatory session, one three hour training session and one two hour follow up session that occurred after most of the analysis was done. Sessions included physical training in order to understand concepts and methodologies. For example, it included body warm-up using breathing and various movement sequences meant to aid concentration and the understanding of specific movement patterns to be described. Sessions also included preliminary observation of the videos.

Laban-Bartenieff Movement Fundamentals

Laban-Bartenieff Movement Fundamentals describes movement on many levels in order to come close to a rich and accurate description of not only where the movement takes place in the body and in space, but how the movement occurs. In order to do this there are three key assumptions:

1. The whole body is connected
2. All parts are in relation to one and other
3. A change in one part affects the whole

All three of these assumptions are linked through the idea that any movement in one part of the body will affect the whole body. As such, all parts of the Laban-Bartenieff system are inter-connected (Hackney, 2002). Just as a person's toe is still there, even if they are not visibly moving it, all parts of the Laban-Bartenieff system are potential in the mover at the same time. By observing one movement in several different ways, we can begin to observe the relationship between parts of the body and use of the body. The combination of the different observations will give a means of finding a complete description of a single movement.

Laban-Bartenieff Movement Fundamentals describes movement through the four inter-related categories of Space, Effort, Shape and Body. Within these categories, there are various attributes.

Space is the person's use of their body in the surrounding space. This includes whole body use, interaction with the environment, and personal space. Space includes a person's kinesphere, the area in which a person operates physically and psychologically. Physically, the kinesphere is defined by the area which a person can reach without taking a step. Psychologically, the kinesphere is defined by the space that falls under a person's sense of influence and ownership. Each person will have a characteristic way of operating in their kinesphere that is shown through their "body attitude in space." The body attitude is the overall use of the body. The four body attitudes in space are wall, ball, pin, screw. Each of the names are used for the specific image that it evokes, in that the person's body may look and function in some way that is like the name. Each is defined by specific use of space according to the vertical (up/down), horizontal (left/right), and sagittal (up/down and forward/back) planes. See the following table for the specific directions and planes of each body attitude.

Effort is the changing quality of the movement, or the manner with which a person uses their body. Effort is not located specifically to a particular body part or point in space, but rather as description of the energy invested in a movement or series of movements. Effort is determined by quality of flow, which is a description of the continuity of the movement that results from muscle tension and personal expressivity. Quality of flow is described on a continuum from free through even to bound effort. Free quality of flow is loose, unrestricted movement with low muscle tension often associated with expressivity that is open, released, and abandoned. In the middle of the continuum, even quality of flow is smooth and maintained with even muscle tension showing a balance between control and release both in the physical work and in the expression. On the other end of the continuum, bound quality of flow is held and highly controlled movement with high muscle tension often associated with expressivity that is controlled, careful, contained, and restrained. Even though the words "free" and "bound" can cause preliminary judgments on which quality of flow is preferable, various points on the continuum are appropriate for different tasks.

Shape is the constantly changing form a person's body makes in space and can be used to pinpoint detailed and complex body use. Shape is observed through shaping qualities, which detail the direction and plane through which the body is moving. The shaping qualities are fundamental extensions of the basic closing-opening action of breath. Just as breath can only occur in movement, the shaping qualities are only possible in constant motion. As in breath, the shaping qualities are divided into opening and closing actions. The opening-closing shaping quality pairs are rising-sinking, advancing-retreating, and widening-narrowing. While each shaping quality has a unique direction, each of the opening-closing pairs shares the same plane. See the following table for the direction and plane of each shaping quality. Especially helpful in observing musicians, shaping qualities pinpoint not only specific body use but also inner intent of the person, which appears frequently to be expressed simultaneously in sound and shaping qualities.

Body is the connectivity and organization of the whole body. Connectivity is maintaining support and moving from the core of the body, so that movement of the distal ends of the body is initiated and supported from the

core. Since the basic means of organization of the Body is through the core, one fundamental way of observing Body is to observe weight transfer, or shifts in the core. In order to transfer the weight of the core, the whole body must act together, in that each limb must compensate and react in order to initiate, shift, and support the new configuration of the body. However, the transfer of weight comes from the core first. While observations simply of a weight transfer may be sufficient, it is possible to indicate the direction in which the weight transfer occurs, ie. left, right, forward and backward.

Table 1. Definitions for movement observation of musicians.

| Laban Bartenieff Categories | Space | Effort | Shape | Body |
|---|--|--|--|---|
| Category definitions | The psychological and physical use of the body in the surrounding space | A description of the energy invested in a movement | A description of the constantly changing shape of the body | The connectivity and organization of the whole body |
| Specific attributes chosen for observation of musicians | Body attitude the use of space through the shape of the whole body according to the vertical, horizontal and sagittal planes | Quality of flow the continuity of the movement resulting from muscle tension and expressivity as placed on a continuum | Shaping qualities the direction and plane through which the body is moving as derived from the breath | Weight transfer a shift of the core of the body |
| Attribute observations | Wall characterized by use of the vertical and horizontal planes Ball sagittal plane Pin vertical plane Screw vertical, horizontal and sagittal planes | Free unrestricted movement with low muscle tension Even balanced movement showing control and release with smooth muscle tension Bound controlled and contained movement with high muscle tension | Rising upward through the vertical plane Sinking down, vertical Advancing forward, sagittal Retreating backward, sagittal Widening outward, horizontal Narrowing inward, horizontal | Left Right Forward Backward |

Movement Annotation

Movement annotation of the videos was done using the software *Anvil 4.0*, which was first created for annotation of video and spoken language. Anvil was developed by Michael Kipp at the Graduate College for Cognitive Science, University of Saarland and the German Research Center for Artificial Intelligence. It is available at <http://www.dfki.de/~kipp/anvil>. Anvil is meant as a “research tool for analysis of digitized audio-video data.” (Kipp, 2003) The advantage of this annotation software is that the video can be viewed into Anvil directly, so that the annotation is linked in real time to the video with frame accuracy. It allowed us to precisely describe the movement in relationship to the music. This software can be rewritten to include any categories with any elements by writing an xml file, making it simple to adapt the software for annotation using the Laban-Bartenieff system. Because each element of the Laban-Bartenieff system shows on screen as a

different colour, it provides a quick visual tool to describe movement. Another useful aspect of this software is the ability to start anywhere and to control the speed of the movement to be isolated for description by clicking and dragging the mouse.

Viewing and Annotation Methodology

Each video was observed twice in its entirety. First, it was listened to without being viewed. After listening, we commented on the performance based on our experience as clarinet players. Second, the video was listened to while being viewed. After this observation, we made comments on music and movement – comments at this point were meant to be subjective rather than technical and included our opinion as musicians and our initial impressions of the relationship between the music and the performer’s movements.

Next, we observed the video using the system derived from Laban-Bartenieff Movement Fundamentals in the Anvil annotation software. The tracks and elements were labeled as follows:

| Track | Elements |
|--|---|
| Body attitude in space: space baseline | Wall, ball, pin, screw |
| Space: detail | Wall, ball, pin, screw |
| Effort/quality of flow: baseline | Free, bound, even |
| Effort/quality of flow: detail | Free, bound, even |
| Shape/shaping qualities | Rising, sinking, advancing, retreating, widening, narrowing |
| Body: weight transfer | Forward, back, left, right |
| Breathing | Inhale |
| Form | A, B, transition, A' |

The first six tracks and elements are from Laban-Bartenieff Movement Fundamentals (for a complete description, refer to (Campbell 2005)). The last two tracks and elements, breathing and form, are music technique and theory.

Each video was viewed according to the track we wanted to annotate. For the tracks with baseline, we viewed a larger section to determine the dominant element. For the tracks with detail, we viewed small sections of the videos to determine fluctuations in the baseline, often repeating many times in order to determine where exactly the element started and ended. Usually, the tracks ‘Body attitude in space: space baseline’ and ‘Space: detail’ as well as ‘Effort/quality of flow: baseline’ and ‘Effort/quality of flow: detail’ were observed and annotated consecutively. The movement observation and annotation was done mostly with no sound. For the tracks ‘Breathing’ and ‘Form,’ the annotation was done with sound.

After the annotation was completed, the certified Laban-Bartenieff practitioner verified our observations. In order to begin seeing patterns and comparing, we made a table of all information found on the annotations (see appendix 1).

We then observed the videos again going back to our comments on the listen-only and the listen and view observations and wrote a movement profile on each performer. The profile consists of comments on musical style and personality of the performer, comments on movement style as it links to the music and affects the observer, and Laban-Bartenieff movement description (see appendix 2).

Observations

Methodology

Observing the videos in these two stages gave us the possibility of examining how the performer's movements affected the observer's perception of the music. This way of proceeding showed us immediately that movements have an effect on the perception of the performance by the listener. In some cases, we personally preferred the listen-only version of a performance to listening and viewing that same performance, whereas in other cases, it was the opposite.

The following table is a summary of the impressions of the two listener-observers. The numbers in the columns are a tabulation of which condition (listen-only or listen and look) the observers preferred. If one or both of the observers found that their impressions remained the same for both conditions, this means that the observer liked or disliked it when listening only or when listening and watching.

| Performer | Listen-only | Listen and Look | Same impression for both conditions |
|------------------|-------------|-----------------|-------------------------------------|
| 1. Performer 1 | | | 2 |
| 2. Performer 2 | | | 2 |
| 3. Performer 3 | 1 | | 1 |
| 4. Performer 4 | | | 2 |
| 5. Performer 5 | 2 | | |
| 6. Performer 6 | 1 | 1 | |
| 7. Performer 7 | | 2 | |
| 8. Performer 8 | | | 2 |
| 9. Performer 9 | | | 2 |
| 10. Performer 10 | 2 | | |
| 11. Performer 11 | 1 | ? | ? |

1. Distracting Movements

All the people we preferred in the listen-only category showed movements that were distracting in some way, either affecting their sound or their presence. For example, performer 10 shows large and fast scooping movements that create distortion in his sound. This is possibly due to the relationship of the moving instrument in the surrounding space (Wanderley, Depalle and Warusfel, 1999). Performer 6 showed a distinctly nervous performance through wiping his hands on his pants, shallow breathing and quick weight transfer forward and back throughout the performance. While the interpretation of the piece was standard and his facility on the instrument was good, his presence on stage was distracting.

Many of the people that we preferred in the listen-only version showed large movements including performers 3, 10, 5, and 11. In general, possibly because we are musicians and clarinetists who are studying gesture, we found that this diverted attention from the music, and so we tended to prefer the listen-only version of these performances. However, there were several other performers who showed large movements that did not distract from the performance, and so were listed in the preference for listening and looking or had the same impression for both conditions. This may be because the type of movement they were doing was in conjunction with their musical intention, or because the movements did not correspond to the movement expectation of the viewers. An example of this is performer 4, who gives a performance that is mature and well-thought out. Our impression of her performance was that she was telling a story with different characters. Her way of moving both complimented and enhanced her musical interpretation. Physically, she tends to do weight transfer in all directions often occurring between musical phrases. The observers' perception of this is that she is creating a dialogue between characters. For example, she will play one phrase with her weight shifted to the left, take a quick step to the right and answer with the next phrase.

2. Contrast in character and movement between sections A and B

When learning music, musicians usually spend most of their time making musical decisions rather than focusing on movement. As such, most of the movements that are seen (aside from those necessary to play the instrument) must be as a result of the musical decisions that have been made. Because of this, if a performer is choosing to play different sections of the same piece in a different character, this should result in different kinds of movement. We found evidence both supporting this hypothesis and refuting it.

In support of this hypothesis, Performer 9 displays a change in the type of movement he uses in section A and section B. In section A, he shows a fluid use of rising and sinking shaping qualities that are continuous but not repetitive as it changes according to the musical phrase. In section B, his movement distinctly changes. There are several moments musically that are repetitive and strongly rhythmic. At these points, Performer 9 represents this musical character exactly in his movements with a repetitive and rhythmic bounce. Performer 2 also shows a change in movement between sections A and B. This performer differentiates the sections by a change in quality of flow. While her quality of flow baseline is even, in B section she shows a free quality of flow.

Refuting this hypothesis, there were several performers who showed the same type of movement throughout the entire piece, regardless of the change in character between sections A and B which led us to observations 3 and 4.

3. Movement phrasing

Several performers show distinct series of movements that are linked to the breath. Performer 5 does the same series of movements every time she takes a breath and plays the phrase. She starts by inhaling and with the exhale crouches into a ball. This is immediately followed by the string of shaping qualities advancing, rising, retreating, which cycles into the next phrase by taking a breath and sinking into another ball. This is a series of movements that she uses throughout the piece regardless of change in character or phrase length. Since this is a very clear sequence for her that is rarely altered, we hypothesize that this same series of movements may be observed in a performance of another piece. Performer 10 shows another series of movements in another manner. Rather than showing the same movement phrase that occurred for the duration of each musical phrase, Performer 10 does a series of movements at the end of the phrase frequently on a sustained note. Throughout the phrase, he shows variations in movements but as soon as he arrives at the end of a phrase, he does a large scooping gesture. This regular sequence of shaping qualities is advancing while rising and widening, ending with a retreat and sink. As he is rising and widening, he will often shift his weight dramatically to one side, returning to centre on the retreat and sink. In combination with his gesture, he often holds the sustained note much longer than the printed value.

4. Constant repetitive movements

Some, but not all, performers exhibit constant, repetitive movements throughout the entire performance that are not necessarily linked to the musical phrasing. We hypothesize that these movements are habitual but may show slight variations in timing and amplitude depending on musical content. As an example, Performer 6 displays a constant weight transfer forward and back in a way that is not directly linked with the music. The weight transfer is more or less rhythmical with variations in the rocking rhythm depending on when he wants to emphasize something musically like a certain note or phrase. After the emphasis he continues the constant weight transfer. Another example is Performer 3. He shows a constant repetitive up and down movement in the upper body. On a body level, this performer's overall body attitude in space is divided in an upper-lower body split with a fixed wall in the lower body and ball in the upper. Using mostly bound effort of flow, the combination of the locked pelvis with the large carving movements going in and out of a ball shape results in the large, repetitive up and down flourishes. These flourishes also appear to be rhythmical with slight variations in timing and amplitude based on musical content, as with performer 6.

Both of these performers also performed a piece by Brahms and showed similar repetitive movements even if the Brahms and Stravinsky pieces are substantially different. For both, their rhythm appeared to be slower but still very apparent. The body rhythm of both of these performers doesn't necessarily line up with the musical rhythm of the piece.

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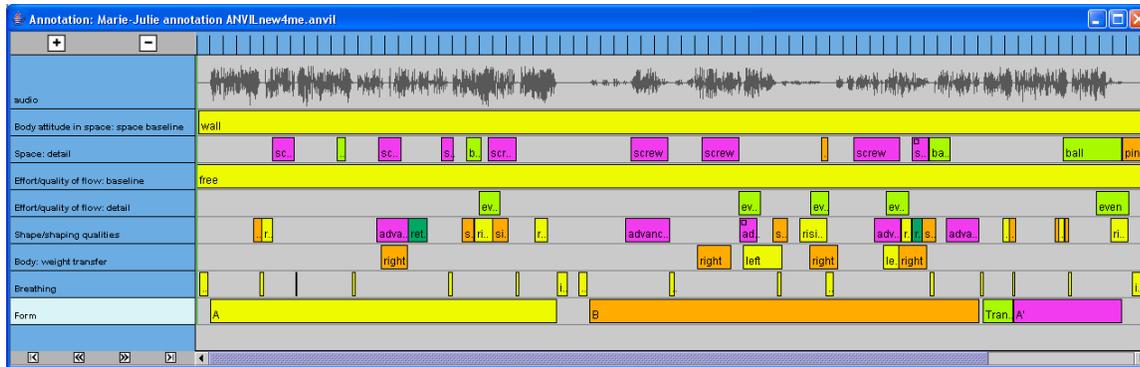
Appendix 1. Movement annotation summary tables

| Name | Performer 1 | Performer 2 | Performer 3a | Performer 3b | Performer 4 | Performer 5 |
|---|--|--|--|------------------------------------|--|--|
| Body attitude in space: baseline | Wall | Pin | Wall lower body, ball upper body, clarinet pin | Wall lower body, ball upper body | Wall | Pin, wall in arms |
| Space detail | Lots of screws, a few balls and pins | Balls, screws | 1 pin spot | | Mix of screw, pin, ball | Many balls, a few screws |
| Effort/quality of flow: baseline | Free | Even | Bound | Bound | Even | Bound upper body, even lower body |
| Effort/quality of flow detail | A few even spots | 3 extended free spots | | A few even spots | A few free spots | Occasional even upper body |
| Shape/Shaping qualities | Rising, sinking, advancing, retreating | Rising, sinking, advancing, retreating | A few rising and sinking, 1 advancing | A few rising and sinking only | Rising, sinking, advancing, retreating | Lots – a mix of rising, sinking, advancing, retreating |
| Body: weight transfer | A few right-left | A few right-left | Constant right-left | Constant right-left | Back, forward, right, left | Many forward-back |
| Breathing (how many per section) | A=6 B=5 Transition=1 A'=2 | A=7 B=5 Transition=1 A'=2 | A=6 B=6 Transition=1 A'=2 | A=6 B=6 Transition=1 A'=2 | A=6 B=5 Transition=1 A'=2 | A=6 B=8 Transition=0 A'=2 |

| Name | Performer 6 | Performer 7 | Performer 8 | Performer 9 | Performer 10 | Performer 11 |
|---|--|---|------------------------------------|------------------------------------|------------------------------------|---|
| Body attitude in space: baseline | Pin | pin | Pin lower, twisted ball upper | Balanced wall-pin | Pin to stand, ball to play | Pin |
| Space detail | 1 ball, 1 screw | Balls, screws | Lots of balls, a few screws | Some balls | Lots of balls, a few screws | Ball fluctuations in upper body |
| Effort/quality of flow: baseline | Even | Free | Bound | Free | Even | Bound |
| Effort/quality of flow detail | | A few even spots | Free spots at a few breaths | Even fluctuations | With free hands and bound neck | Bound lower body with even fluctuations |
| Shape/Shaping Qualities | Lots of advancing & retreating, a few rising and sinking | Lots – a mix of rising, sinking, advancing, retreating, narrowing | Advance & retreat only | Mostly rising-sinking | Everything | Rising, sinking, advancing |
| Body: weight transfer | Constant forward-back | Almost none – one right-left at the end | A few right-left | 2 left-right | Many right-left | 2 right, 1 left |
| Breathing (how many per section) | A=7 B=7 Transition=0 A'=2 | A=8 B=7 Transition=1 A'=2 | A=4 B=6 Transition=1 A'=1 | A=7 B=7 Transition=1 A'=3 | A=8 B=6 Transition=1 A'=2 | A=7 B=8 Transition=1 A'=2 |

Appendix 2. Movement annotations and Movement profiles.

Performer 1



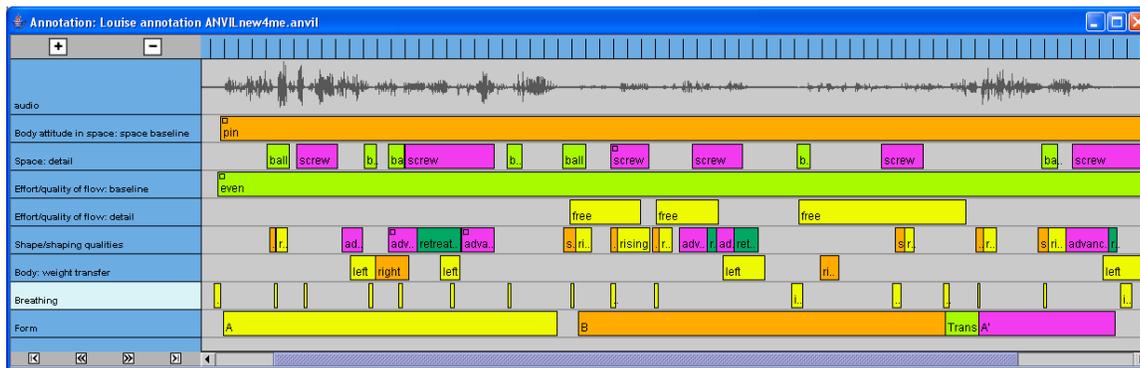
Musical comments: A strong interpretation that shows musical conviction and energy. Good characterizations but could use more contrast between sections.

Overall physical comments: Performer 1 is centered, poised for action and carries through physically with what she wants to accomplish musically.

Movement analysis: On a body level, Performer 1's body attitude is a wall and uses several screws and a few balls and pins. Her effort of flow is free with a few even spots. She uses a wide variety of shaping qualities and a few right-left weight transfers.

Links to hypothesis: Performer 1's flexibility as a musician is easily seen in the flexibility and variety with which she uses her body. As a performer, her musical intent is very clear. For this performer, the movements that she makes are in accord with her musical intent as so support what she is doing expressively. As such, she is an example of someone whose movements are not distracting or repetitive.

Performer 2



Musical comments: Energetic, straight-forward performance that could be more extroverted in expression. Overall physical comments: She looks centered physically and grounded in her approach to performing, which gives a sense of reassurance to the listener.

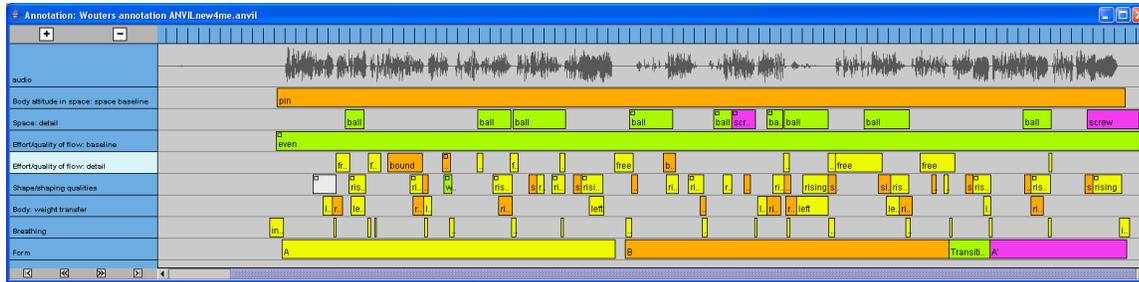
Movement analysis: On a body level, Performer 2's body attitude is a pin with fluctuations into many extended screws and a few brief balls. She is fairly bound in arms and upper torso. In general, her effort of flow is even throughout with three longer free spots. Performer 2 shows a variety of shaping qualities and a few left-right weight transfers. Often leading from her head, Performer 2 shows flexion throughout the full spinal pattern.

Links to hypothesis: Similar to performer 1, this performer does not show distracting or repetitive movements. Her movements support her musical idea of the piece. Further, the way this performer moves is confident and so makes the listener feel comfortable and able to listen to the piece rather than drawing attention to the performer.

Movements analysis: On a body level, his space baseline is a wall which fluctuates in a ball and occasionally pin. His effort of flow is free throughout. He uses almost exclusively sink and rise shaping qualities in a continuous string and very little weight shift.

Links to hypothesis: He doesn't have habitual ways of moving although he shows repetition in his shaping qualities. The main difference between this performer and the other performers who show repetitive movements is that this performer is not locked in to specific patterns. Rather he's very flexible in his body use and changes frequently according to the demands of the music. Although it is difficult to see in his annotation, on observing the video, performer 9 shows a drastic change of character between sections A and B. While in A he shows more fluid movements, in B he bounces rhythmically in a way that accentuates the phrasing.

Performer 10



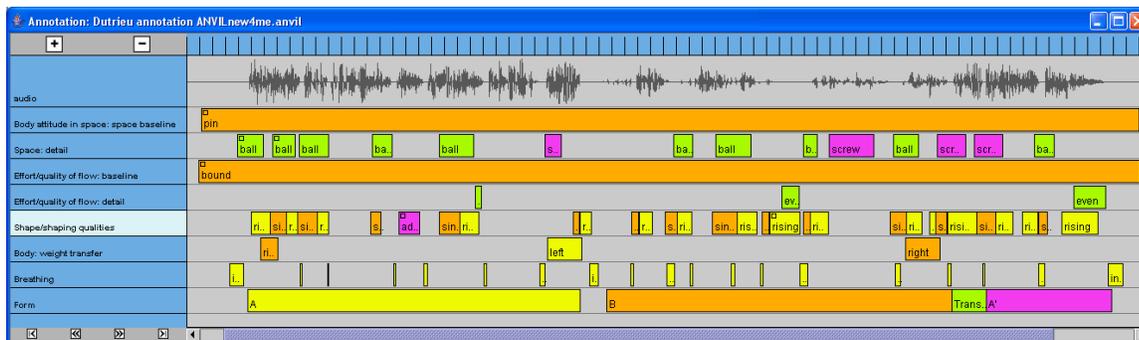
Musical comments: Performer 10 has a very unique and personal way of playing this piece with well-defined characters. He takes enormous liberties with the time and rhythm, which are synchronized with large scooping gestures. While technically accomplished, Performer 10 regularly begins technical passages slower, speeds up, and finishes slower.

Overall physical comments: He has a tight and unflexible way of moving that is extremely distracting.

Movement analysis: On the body level, Performer 10 is a pin with a large amount of ball shapes. His effort of flow is even with fluctuations into both free and bound. Overall, he plays with free hands and bound neck. The bound neck may be a potential source of the scooping gestures. Performer 10 uses a large range of shaping qualities and left-right weight transfers that result in the large repetitive scooping gesture. This regular sequence is advancing while rising and widening, ending with a retreat and sink. As he is rising and widening, he will often shift his weight dramatically to one side, returning to centre on the retreat and sink. Often this gesture is done at the end of a phrase on a long held note.

Link to hypothesis: Performer 10 shows constant repetitive movements that are related to movement phrasing rather than a regular pulsation. He always finishes a musical phrase the same way as described in movement analysis. At the same time as being distracting for the listener, his way of moving his restricting his interpretation as his movements rather than his music determine how long he holds the notes at the end of the phrase.

Performer 11



Musical comments: A good standard performance that shows his own personal style of playing. Good technique, light sound with a lyrical approach.

Overall physical comments: Performer 11 has a very fluid way of moving that physically aids him in realizing his musical intention.

Movement analysis: On a body level, Performer 11 is a pin that often shapes into a ball in the upper body with a few screws towards the end. His effort of flow is split between the upper and lower body with the lower body being bound with even fluctuations and the upper being even with free fluctuations. Performer 11 almost exclusively uses chains of rising and sinking shaping qualities throughout this performance with very little weight transfer. He breathes very often.

Link to hypothesis: Performer 11 doesn't have a distracting way of moving. His movements seems very natural and comfortable and allows him to achieve what he want musically.

Appendix 3 - Suggestions for videotaping of new data

The conditions of each videotaping should be the same for every performer.

1. Clothing of performer

Clothing should be plain and not a dark colour. The reason for this is that it is extremely difficult to see details in movement when the performer is wearing black.

2. Background

The background should be plain if possible and a light colour. The most important thing is that there is a clear contrast between the performer and the background so that observation is easier and more efficient.

3. Camera angle

Valerie Dean's suggestions are as follows:

If there is only one camera, then the angle should be diagonal- ie. from the side and slightly to the front of the performer. This will facilitate viewing in three dimensions as well as giving a more clear view of the face of the performer. This would give the option of observing how they are looking at the music and some technical aspects of clarinet playing including embouchure, clarinet angle, and breathing.

If there is the option for more than one camera, three cameras are ideal. One camera would be the same as above. The second camera would be at the same angle, but a close-up of the upper body half. The third camera would be almost directly from the front with a tight close-up on the face in order to view the performer's eyes.

Our suggestions:

If there are three cameras, the tight close up on the face may not be necessary, as the second camera would show sufficient detail of the face to make observations of the eyes.

The third camera could instead be used for a full body shot directly from the side. This can simplify viewing because it highlights the use of the spine and certain shaping qualities (rising and sinking especially) as well as eliminates viewing of side-to-side weight shift. However, on its own this view is not enough for a complete movement profile.

4. Camera view

Full body – A full body shot is absolutely necessary. Full body includes not only all of the extremities, but also with sufficient space surrounding the body in order to see the body movement in space. Especially considering how much some performers walk around the stage, this may mean a very wide camera shot.

Face – If possible, a face shot would be useful to see the performer's use of their eyes and expression when performing. The use of the eyes affects the entire rest of the body, and so could provide valuable insight into their movement use.

5. Instructions

Through the course of observing these videos, we came to realize that the instructions given to the performers were not the same and potentially contradictory. For example, some performers were told to play more expressively while others were told to move more expressively. As we deal with expression in sound, these two things are fundamentally different. Too often, we think that someone who plays expressively is going to move more. However, this is not true for everyone. As a musician, playing expressively does not necessarily mean playing with more movement because our means of expression is sound. As our primary

consideration is sound, there may not be much conscious consideration of the movement. One of the performers (me-that's Performer 2) who was told to move expressively felt extremely uncomfortable in the expressive condition. It felt like an imposed movement condition on top of the performance that took the focus away from the music. If the performer had been told to play more expressively with a focus on the expressiveness of the music, this would have been a normal and frequent request of a musician. The movement may change as a result of this request or instruction, but it is a byproduct of the request rather than a primary goal of the request.

If the goal is to see how our movements are linked to expressiveness, then the performer should be asked to play more expressively rather than move more expressively because the movements are a reaction to playing expressively. If we want to observe the link, it is important that we have the same instructions with the same words for everyone.

As musicians, our goal is to play expressively. As such, a standard performance is hopefully expressive. We would prefer the use of exaggerated in place of expressive as the condition that is more than standard. Our suggestions for instructions of a similar experiment are as follows:

We would like you to play the second movement of Stravinsky's Three Pieces in three different conditions.

1. Standard – this refers to your regular interpretation of the piece as you would play it in a concert.
2. Deadpan – this refers to playing exactly what is printed in the score but with no expression (Davidson, 1993).
3. Exaggerated – this refers to an overstated version of your interpretation of the piece.

We will ask you to play this series of performances three times with a break as you need it in between each performance. Before you start playing, please wait for the technician to signal you. Then stand still for three seconds, after which you can play according to the given condition.

In the event that a performer asks for clarification, the technician should never talk about movement. All of these conditions refer to a manipulation of the musical expression.