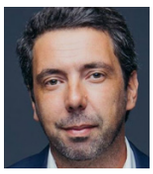
The Role of Movement and Gesture in Communicating Music Expressiveness to an Audience - An experiment on dynamics perception after a contemporary percussion performance.

O papel do gesto na comunicação da expressividade musical - uma experiência para a análise da percepção das dinâmicas durante uma performance de percussão contemporânea.



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ABSTRACT: Musical performative gestures are recognised by the majority of theoreticians as a critical factor of a musical performance. Gestures can be considered as operating features of a person's perception-action system. It presupposes significance of a meaning that involves more than just a physical movement. Movements can be subdivided into specific patterns and conceptualised. Dynamics are one of the most relevant expressive element in music and they are strongly related to the physical musical action - sound producing gestures. Used effectively, dynamics allow sustain narrative pertinence in a musical performance, communicating for example a particular emotional state or feeling. For this research, solo percussion contemporary music performance was in focus and an audience divided in between "visual and non visual" listeners was studied. From this perspective, observation over percussionists' playing manner and it´s audience provides the researcher an opportunity to understand dynamics perception through musicians' gestures in this particular repertoire. The quantitative research design divided in the experiment was chosen for the purpose of this study, which can be referred to as the description of the objective reality by using numbers in order to construct meaningful models reflecting various relationships between objects or phenomena. These numerical entities are not the reality itself, but a way of representing it. How does the percussive gesture influences the perception of musical dynamics by an audience?

RESUMO: Os gestos musicais inerentes à produção de som são reconhecidos por parte significativa dos teóricos como um fator crítico de uma performance musical. Os gestos, para além da funcionalidade, podem ser considerados recursos operacionais do sistema de percepção-ação de um individuo. Pressupõe, portanto, esta gestualidade a criação de um significado que envolve mais do que apenas um movimento físico. Os movimentos podem ser subdivididos em padrões específicos de conceptualização. A dinâmica é um dos elementos expressivos mais relevantes da música e está fortemente relacionada com a fiscalidade da ação musical. Usada de maneira eficaz, a dinâmica permite sustentar a pertinência narrativa de uma performance musical comunicando, por exemplo, um estado emocional geral ou sentimento específico. Neste estudo, a performance da música contemporânea de percussão solo esteve em foco e uma audiência dividida entre ouvintes "visuais" e "não visuais", foram analisados. Nesta perspectiva, a observação sobre a maneira de tocar do percussionista e o estudo da reação ao estimulo sonoro e sonoro/visual do público oferece ao autor uma oportunidade de entender a percepção da dinâmica. O desenho quantitativo da experiência foi escolhido para atingir os propósitos deste estudo, e que pode demonstrar uma realidade objetiva usando números para imitar modelos significativos que refletem as árias relações entre objetos ou fenómenos. Essas entidades numéricas não são a realidade em si, mas uma maneira de

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representá-la. Assim, procurou-se responder à pergunta de investigação: como pode o gesto percussivo influenciar a percepção da dinâmica musical de uma plateia?

KEYWORDS: percussion, dynamics, perception, music, audience

PALAVRAS CHAVE: percussão, dinâmicas, percepção, musica, plateia.

1. Introduction

Percussion music is a unique type of instrumental music allowing performers to tell stories with the help of gestures. When percussionists play percussion instruments, the audience may not only hear sounds, but also see musicians' body movements and facial expressions that help to transmit certain emotions (Mowitt, 2002). Overall, percussive music performance is extremely wide, and is accompanied by bright visual images provided by musicians themselves. From this perspective, observation over percussionists' playing manner provides an audience with an opportunity to understand a narrative ability of music through musicians' gestures.

Meeting the present-day demand for understanding music, the present study focuses on the analysis of percussion gestures' ability to transmit expression, including dynamics. To be more specific, this work will demonstrate how percussionists' body movements and facial expressions can be understood concerning the dynamics perception by the listeners.

Dynamics in music according to Matthias Thiemel can be defined as: The intensity of volume with which notes and sounds are expressed., Furthermore, the author explains that, In the 20th century dynamics came to be seen as one of the fundamental parameters of composition which function interdependently to create musical meaning and structure.

2. Literature Review

Researches by Armontrout et al. (2009) and Schutz and Lipscomb (2007) demonstrated that visual information intentionally provided by musicians may create a certain illusion that determines audience's perception of musical performance. According to the researchers, live musical performance may lead to a naturally occurring audiovisual illusion provided by a musician's gestures (that occur in the process of playing) the visual information of which changes the perceived duration of simultaneous auditory information. However, they underlined that this illusion is controlled by the duration of musician's post- impact motion that influences the audience's perception of event duration (Armontrout et al., 2009). The intentional creation of this illusion can be explained by the musician's desire to strengthen the effect and audience's unforgettable impressions of his or her musical performance. Overall, non-verbal musical gestures are a part of human body language. This way, by gesticulating during performance, a musician communicates with the audience. According to the recent statistical data, "55% of the impact of human communication is attributable to body language"; besides, "over 65% of our communication is non-verbal" (Psaila, 2007, p. 1). All these facts demonstrate that the significance of bodily movements should not be underestimated.

By using gestures during musical performance, musicians provide the audience with conceptual and emotional messages (Psaila, 2007). Music-related ancillary bodily movements (mainly, gestures) are an essential part of communication between a performer of live music and the audience. The research evidence (provided by Kühl, n.d.; Nusseck & Wanderley, 2009; McNeill, n.d.; Psaila, 2007, etc.) suggested that the majority of musicians' gestures traced in

musical performance have special psychological and emotional effects on public. For example, McNeill (n.d.) applied a psycholinguistic approach to musical gestures in order to demonstrate in his article that a gesture is a communicative movement that becomes a representation of a sign language. According to the author, beats (sometimes called as "baton" by musicians) are musical gesticulations or speech-farmed gestures accompanied by rhythmical beating time by a hand; beats highlight important moments "signalling the temporal locus of something the speaker feels to be important with respect to the larger context" (McNeill, n.d., p. 4). Overall, musician's beats usually attract the audience's attention because they may echo human heart beats, reflect emotional and psychological states (for example, stress, excitement, expectation, etc.), and provide a musical composition with rhythmical harmony. Sometimes, a musical performance can be accompanied by a musician's expressive gestures.

Nusseck and Wanderley (2009) revealed that "expressive performer movements in musical performances represent implied levels of communication and can contain certain characteristics and meanings of embodied human expressivity" (p. 335). The authors suggested that sometimes, classic musicians intentionally use large body motions for exaggerating particular moments in musical phrases; this behaviour produces an expressive effect on audience causing it to make more emotionally coloured judgments about a musical performance (Nusseck & Wanderley, 2009). Meanings embodied in musical gestures form corresponding impressions of the audience experiencing a musical performance. For example, Kühl (n.d.) underlined that "gesture becomes the key to the understanding of musical meaning" (p. 1). In other words, musical gestures should be treated as physical expression of particular feelings (for example, love, sadness, etc.) and emotional states (such as joy, disappointment, etc.) that, in their turn, shape audience's impressions of musical performance.

Each music piece possesses a narrative or inner content that can be understood by the audience through music performance (Schnapp, 2011). Overall, to understand the concept of narrative in the context of music is a relatively complicated task. However, professional experiences of specialists on semiotics (the study of signs, sign processes, linguistic and non- linguistic sign systems) and narratology (the study of narrative, its structure and the ways affecting people's perception) help to elucidate the phenomenon of narrative in music (Fludernik, 2012). According to them, both language and music rely on their own signs, which serve the starting point for the creation of the content itself (Callaghan & McDonald, 2002).

Percussion music presents one of the bright areas that may help to reveal the concept of narrative in musical performance. Percussion music is created with the help of gestures commonly realised through performers' body movements and facial expressions (Halmrast, Guettler, Bader, & Godøy, 2009). This evidence implies that percussion music is characterised by obvious expressiveness. In other words, percussionists' music performance is accompanied by certain physical expressive gestures that, in their turn, generate an inner content of a performed musical composition. Depending on a chosen tonality, rhythm, and harmony as well as on the cultural context, this content may consist of particular messages and feelings that create listeners' overall impressions about a performed musical piece and musical performance in general (Ystad, Kronland-Martinet, & Jensen, 2009, p. 250). Understanding of a narrative embedded in a musical composition greatly depends on the audience's perception of a musician's performance (Lehmann, Sloboda, & Woody, 2007). Finally, awareness of percussionist's gestures and their influence on people's perception allows to identify the relationship between musician's body movements and audience's experience.

Overall, for the reason that understanding narrative of percussion gestures is significant, the present work focuses on the mentioned topic-related issues. The studies by Armontrout et al. (2009) and Schutz and Lipscomb (2007) demonstrated that visual information intentionally provided by musicians may create a certain illusion that determines audience's perception of musical expressiveness. According to the researchers, live musical performance may lead to a naturally occur-

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3. Research Procedure and Methodology

Specifics of the Dependent and Independent Variables.
The measurable aspect of the dependent variable considered during the experiment was the sensitivity of the perception of dynamic characteristics. The independent variable was the visual component – the the musical performance that was demonstrated to one group of listeners as accompanying the aural perception, whereas the other group being blindfolded, had to rely on the sounds of music exclusively. The hypothesis offered for testing was that the audience exposed to the full performance and, correspondingly, perceiving the pieces in progression by using two perception channels would respond to musical dynamic differently than the audience

whose only source of information incoming from the piece performed was the aural channel. Therefore, sensitivity of dynamic perception, being the influenced area, can be assigned the role of the dependent variable. The audience was offered two musical works. The first one was Sen VI by Toshio Hosokawa for Multipercussion, the other – Vox Sum Vitae by João Pedro Oliveira for Vibraphone. All participants were using a 10K potentiometer, which they were asked to use in order to report their perception of dynamics during a solo percussion performance. Sen VI is an unusual musical piece that can serve the purpose of this research quite effectively. The piece was written for solo percussion and one of its outstanding features is its strong links to the visual significance of gesture, which conditions the propriety of using this piece for the experimental research design addressing the importance of the visual component for listeners' perception of music. According to Tolentino (n.d.), Inspiration for these gestures comes from the art of Japanese calligraphy and the use of a significant, expressive gesture before each brush stroke.

During the piece, the performer activates vocal noises and uses only hands and soft mallets to play skin drums and a single crotale (p. 8). The opening pages of Sen VI encompass vast, graceful arm gestures drawing on the preparatory strokes of the Japanese calligraphy. The score written by Toshio Hosokawa harnesses tied and empty measures in order to demonstrate circular moves sometimes followed by an intense attack, and sometimes not by an attack, but a period of silence or a preparatory movement. It is the performer's decision ultimately how these gestures should be carried out (Tolentino, n.d.). There is claimed to be a relationship uniting the gestures executed by the performer and the physical impact tracing either "a disjointed attack, where the gesture ends before the attack is initiated; or an exaggerated attack, where an unnecessary large gesture is connected to and immediately precedes an attack" (Tolentino, n.d., p. 4). In case if the disjointed attack is used, the musician should incisively thwart the energy of movement that would otherwise reflect on the drum severing the preparatory movement from its subsequent impact. On the other hand, the disproportionate version presupposes that the performer should use the unnecessary accumulation of movement for a strong and individual attack. Therefore, Tolentino as a performer argued that the technique of gesture is equally important for the aesthetic effect of the performance of this piece as the score itself (Tolentino, n.d.).

Tolentino indicated in relation to this work: "In percussion performance, a performer executes an attack using the gesture he finds necessary to execute the sound. Sen VI pulls at the heart of this notion by asking us to control not only a sound and its precision, but also the mechanical direction of our motion leading up to that sound." (n.d., p. 4) The choice of a gesture during the performance of Sen VI might affect listeners in various ways. A linguistics student majoring in American Sign Language cited by Tolentino maintained that deaf people have a visual connection to sound. An individual with a strong link between the visual and aural channels of perception might associate the volume of the sound with the scale and size of the gesture accompanying it (Tolentino, n.d., p. 4). By way of using the example of hearing-impaired individuals the author suggested that "a preparatory motion that preserves momentum that lacks a resulting attack" might actually sound for that individual, if he or she watched a performance of Sen VI. The ability to "see" the sound might preserve the inspirational content of the piece for a person who cannot actually hear it. Another interesting hypothesis is that this person might have a more conventional music listening experience if this person was positioned closer to the area where drum vibrations are physically perceptible. Tolentino called this a "cognitive twist", since "normal-hearing listeners [are] perceptually limited by what they can in fact hear" (n.d., p. 4). Finally, Sen VI is criticised for what disapproving individuals call latent "inaccessibility" to all people, which can be viewed from a diametrically opposite standpoint. More specifically, Sen VI deserves close attention for an indication of a strong connection between movement, image, sound and the ultimate effect on the audience.

For some gesture can arguably speak louder that music itself (Tolentino, n.d., p. 4). Such an inherent connection between sound and gesture stressed by performers and researchers makes this piece a perfect instrument for the study of the effects of the visual component of the performance.

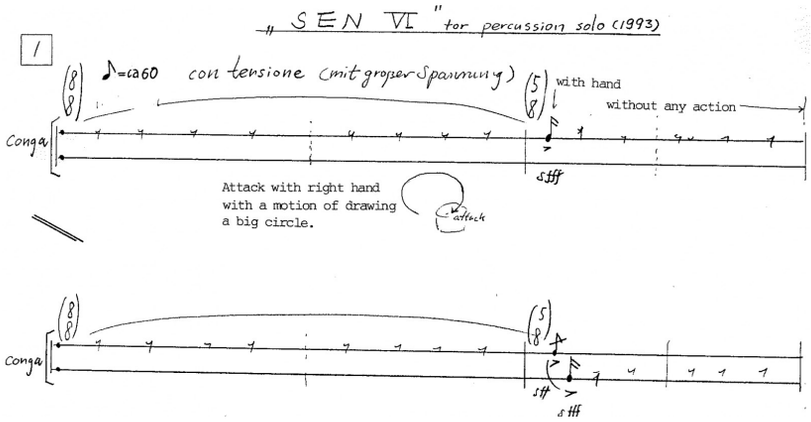


FIG. 1
Score excerpt of Sen VI by Toshio Hosokawa

The second piece used for the first experimental stage of the research is Vox Sum Vitae composed by João Pedro Oliveira. This composer is one of the most prominent modern composers of Portugal. He has an extensive education that involves such different arts as music (organ performance) and architecture, so his esthetical views are quite rich. His music is represented by varying genres: a chamber opera, a range of orchestral compositions, one Requiem, three string quartets, solo instrumental music pieces, as well as electroacoustic music. His experience and eclectic taste resulted in experimental music exploring the possibilities of interaction between electroacoustic and instrumental sounds, which draws equally on both sources (Babel Scores, 2013). The title of Oliveira's work Vox Sum Vitae (I am the voice of life) is an allusion to an inscription in a church bell located in Strasbourg.

The essence of the piece is described in the following way: "In one of my trips to Germany, on a Sunday morning I was woke suddenly with the sound of hundreds of church bells, announcing the early morning church service. This piece is a representation of that sound image. It intends to lead the listener in a trip where bell sounds are around him" (emphasised by the distribution of the loudspeakers in the room and the spatialization of the electronic sounds) (New York City Electroacoustic Music Festival, 2013, p. 31). The produced sounds and instrumental gestures carried out in the process of performance are blurred and melted in the electronics, which leads to an illusion that the vibraphone turns into a "carillon of infinite bells" (New York City Electroacoustic Music Festival, 2013, p. 31).

The blend of media used for the performance of this piece and its inherent strength seeking to imitate the power of a bell consonance through the utilization of contemporary technology also justifies the choice of this musical work for the study of the effect of the visual component on listening perception. While listening to the pieces the participants were asked to use their potentiometers to signal the dynamics of the music while solo percussion performance was in progress. Utilisation of a potentiometer proved a useful instrument for the establishment of one aspect of the visual modality in music perception. The dynamics of the reactions of the participants correlated with the pieces' progression in detail, which allowed the researcher to use empirical data and build models reflecting the relationship between the visual and audial modalities as linked to the perception of musical dynamics.

4. Data Collection and Processing

The collection of the data and transferring it into codifcable and comparable form that is useful for quantitative research requires utilisation of special software that is likely to simplify the data analysis and model construction stages. To this end, Laboratory Virtual Instrument Engineering Workbench (LabVIEW) software was employed at this stage of the study. LabVIEW is a method with a high standard productivity that is conditioned by a set of characteristics:

1) readability – the overall bulk of information obtained is easy to process and implement, a single computer can present a significant amount of the problem domain;
2) writability – designs developed by using the software are easily transferrable into the real world;
3) editability – the software gives an opportunity to edit the existing developments rather than create new ones, a range of templates is available to facilitate data collection;
4) reusability – once developed code may be reused for other projects;
5) understandability – the software provides a large toolkit for the visualization of the problem (Conway & Watts, 2003).

LabVIEW is supported by a wide range of toolboxes designed for specialized applications which are essentially compact collections of code that are specific to the application. Using these code templates is useful and practical because they help save a significant amount of development time. Among these toolboxes is the signal processing toolkit, which is applied to digital filter design and time-frequency analysis. Sound and vibration toolset maintains audio measurement, sound level assessment, transient analysis, and frequency response. State diagram toolkit provides a basic tool set utilized for interactive development and state machines implementation (Gupta & John, 2010). This software allows the researcher to select experimental parameters for the control of instruments used in this experimental research. Therefore, the LabVIEW instrument sets developed as templates modifiable to apply to varying types of data ensures the simplicity of operation, neatness and the possibility of transformation of the obtained measurements into a visual model reflecting the dependency of the listeners' perception on the absence or presence of the experimental stimulus. Also, LabVIEW instruments are helpful for the task of drawing tendencies in the variances of the perception of dynamics in either of the groups.

Since the data used in this experiment is quantitative, the relationships established as a result can be presented in the graphical form that would reflect the variances and dependencies characterising the correlation of the aspects of the dependent and independent variables defined for this research. Graphical presentation of quantitative data may take the form of a graph or a diagram constructed by using the resources of Microsoft Excel or a similar software option.

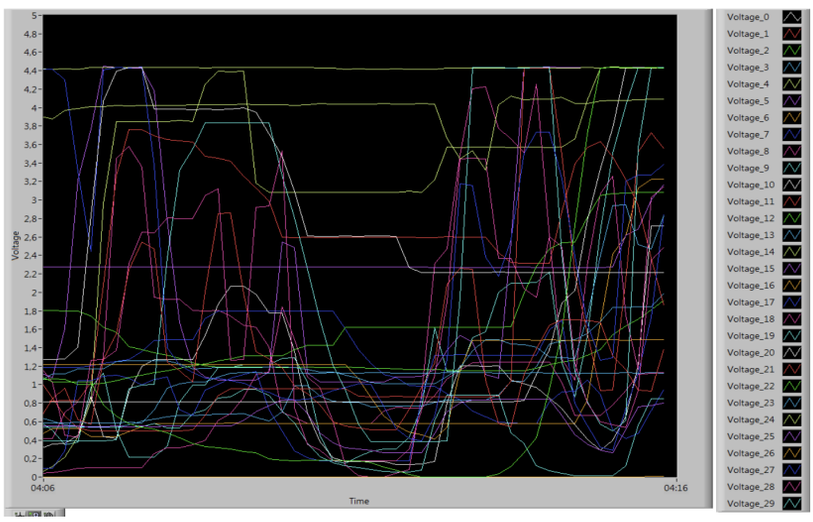
4.1. Significance of the Data

The data obtained at this stage of the research appeared to be illustrative of the trends characterizing the abovementioned relationships. It also indicated that the choice of the sample consisting of 30 people was representative, as the measured variances allowed the researcher to establish illustrative trends, as the visual and blind listening audiences demonstrated different levels of music perception sensitivity. Moreover, the study gave an opportunity to register minor aspects of this dependency that served as additional confirmation to the hypothesis. The specific aspects of the experiment results will be discussed in the corresponding section. The data obtained from the first experimental context provided the researcher with a sufficiently objective model. It reflected the relationship between the chosen variables viewed from one perspective and estimated on the basis of one characteristic. The sample size, professional data analysis software tools, and an adequate duration were the aspects that stipulated the validity of the obtained results. The experiment was directed at the investigation of dynamics perception among participants. To distinguish between the ways in which people perceive a percussion performance only with their ears and with visual cues, the group of 30 music students at Escola Profissional de Musica de Espinho was divided into two equal groups of 15 participants, and one group was exposed to blind listening to the musical performance (with their eyes covered), while the other one could listen to, and watch the percussion performance.

The instrument with which respondents could report their perception of musical dynamics was the 10K potentiometer that students held in their hands and "drew" the dynamics by navigating the rotation control button reflecting the intensity of their perceptions. The potentiometer

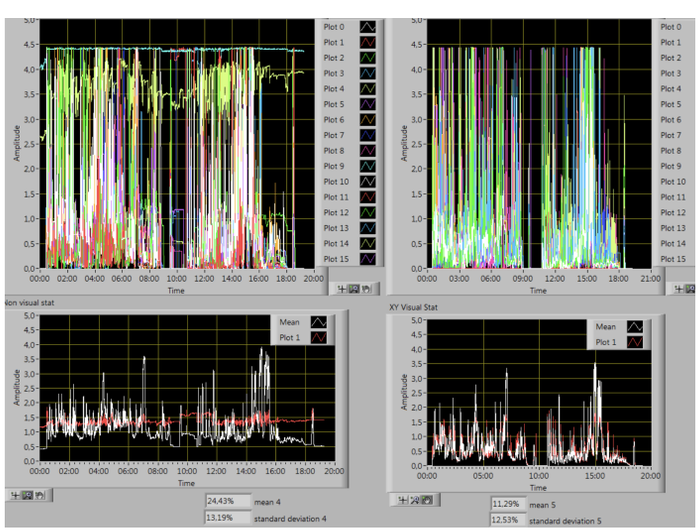
was equipped with relief surface on its scale so that respondents did not have to look at it to navigate it, and were able to move the button even with their eyes covered. The respondents were presented with two musical performances – Sen IV by Hoshio Hosokawa for Multipercussion, and the Vox Sum Vitae by Joao Oliveira for Vibraphone. During the performance, they had an opportunity to manipulate the button on the potentiometer to reflect their perceptions of music's dynamics. The preliminary testing results may be seen in Figure 2.

FIG. 2
Preliminary Testing for Perception of Musical Dynamics



As one can see from Fig. 2, all participants revealed differing extents of understanding the musical dynamics, and some participants displayed a low ability of distinguishing the twists and changes in dynamics of the percussion performance. The majority of respondents nevertheless exhibited a more or less similar tendency of musical dynamics' assessment, which proves that the experiment may yield highly positive results, and may inform the present research with fruitful findings. The comparative testing results from two groups of respondents may be viewed - Figure 3.

FIG. 3
Dynamics Testing Results



As it comes from Figure 4, both groups displayed a relatively high level of dynamics' perception, and the majority of respondents managed to provide a sensitive image of musical dynamics in progress. However, some tendencies still stand out from the comparative analysis of the ways in which blind and non-blind groups perceived the musical dynamics. First, it is evident that the blind listening group demonstrated a much more sensitive perception of musical dynamics – the diagram of blind group's reaction to the changes in dynamics, and the presence

of numerous varied peaks and plateaus reveals the fact that blind listeners managed to grasp a much larger group of musical changes and variances. Moreover, a much higher level of musical perception's sharpness may be seen in the moments of silence while the non-blind group seeing the pause in the percussionist's movements moved the potentiometer button to the zero indicator, the blind group's participants still sensed the dynamics of music and preferred not to choose the zero level, indicating certain levels of musical dynamics. It is thus possible to infer that the blind group did not indicate a zero level of activity as they reacted to the resonances and remaining sounds more sharply than the visual listeners did, most probably because of their inability to see the absence of movements and activity from the side of the percussionist.

Speaking about the visually enhanced group of listeners, the researchers noted that visual listening was accompanied with an ability to react to the percussionist's gesture before it was executed, which was reflected in the diagram – some fragments of musical dynamics were indicated by visual listeners before they actually occurred, which means that visual listeners perceive the dynamics present in music more with their eyes than with ears. Moreover, such observations imply that there is a tendency to rely on visual cues more predominantly throughout the process of listening to percussion performance, which is usually less melodic than other types of instruments can be. Therefore, the gestures performed by the percussionist are a vital component of the whole complex of musical performance's perception, speaking about those who are able to view and hear the performance simultaneously.

Finally, it is necessary to admit that another difference between blind and non-blind groups is the constancy of standard deviation among the participants of both groups. The researchers analysing the potentiometer output found out that the standard deviation was more constant for the blind listening group, which means that blind listening was much more homogeneous in terms of musical perception among participants. This fact suggests that in case viewers have an opportunity to interpret the musical performance through dual channels, that is, sight and hearing, they may involve a much wider spectrum of criteria into their personal analysis of perceptions and impressions from the performance. Hence, those who only hear the performance have a much more objective and sensitive perception thereof, simply because they have only one available channel for the analysis of input data. Those who see and hear the performance have a wider range of opportunities for interpretation, and they may employ additional factors such as their opinion about the appearance of percussionist, his or her emotional involvement, etc. in their judgments about musical dynamics. Thus, such extraneous variables may affect the ways in which participants perceive the performance, ultimately bringing about a much higher level of results' diversity. Percussionist's gestures have proven to have a tremendous impact on the musical perception of the audience, but there is an obvious need to confirm the findings by means of conducting additional testing.

5. Results

Since the experiment dealt primarily with understanding of respondents' perception of percussion music's dynamics, which was measured by means of manipulating the potentiometer by both the blind and visual listening groups, one can assume that the results obtained from this experiment indicate the level of sensitivity to rhythmic variations, twists, and changes by both groups. The experiment resulted in understanding that blind listeners revealed a much higher level of sensitivity towards music's dynamics reflected in the changes, peaks, and plateaus registered more accurately and more diversely by the respondents. The present observation may be explained through the lens of Boros and Toops' (1996) idea that despite the fact that gestures and visual information provide an opportunity for listeners to perceive music idiosyncratically, reduction of musical perception to visual and aural cues only leads to emptiness in music. Opposite to the commonplace opinion that visual cues provide the richness of listening experience, the authors indicated that in fact, visual cues may distract the listeners from per-

ceiving music only, in its pure form. Miclaus (2011) agreed with the researchers in this aspect by assessing the visual component in music as destructive, and by assuming that inclusion of visual cues distorts the listeners' perception of music, adding the unnecessary details that may distract the audience from crucial musical elements and aspects. In addition, the findings from the experiment related to the blind listening group imply the need to refer to the findings of Thompson et al. (2005) who indicated that listeners with professional musical schooling tend to rely more on visual cues for affective meaning.

Though the researchers attributed a large extent of confidence in the need to use visual cues, it is notable that they emphasized the importance of the latter for the affective meaning, which is emotion and not dynamics. Therefore, it is logical to assume that in case visual cues are regarded as more helpful for communication of emotion, more objective and unchangeable aspects of a musical performance such as dynamics can be perceived better and more sensitively without visual cues, that is, by the visual listening group.

The ideas of Schutz and Kubovy (2006) are also relevant in this regard, as the authors found out that the length of percussionists' gesture does not influence the duration of a note, which enables the blind listening group to assess the performance's dynamics much more objectively that the visual group can. Such difference stems from the visual perception of gestures' variation, which may make the visual group falsely assume that different gestures may produce musical sounds of varying dynamics, which is reflected in the diagram of visual group's potentiometer indicators. In this situation, the blind listening group unable to see the variation of percussionists' movements is in a much better position regarding production of the objective assessment of the performance's dynamics. However, at the same time, the visual listening group revealed an interesting tendency of anticipating certain elements of music dynamics because of the ability to see the visual cues provided by the performer.

The present findings can be proven by the fact that the visual listening group's participants registered the changes in musical dynamics before they actually occurred, which is consistent with the research of Blades (1992), Dahl et al. (2009), Kalani (2008), and Kühl (n. d.) claiming that percussionists' gestures help to visualize music for the audience and other musicians. Moreover, Bresin and Dahl (2003) stated that percussionists usually make certain movements not only to produce sound, but also to prepare for it. Consequently, people familiar with the peculiarities of percussion music can be knowledgeable about such preparations, and can anticipate and register the changes in musical dynamics before they actually take place because they know what certain gestures mean.

6. Conclusions

The difference in visual and blind listening groups' perception of the musical performance may be partly explained by the findings of Ryan (2007) about the musical narrative representing a story, which is an image with certain spatial, temporal, mental, and pragmatic components. In this context, the musical performance (if one follows the logic of Barthes (1981)) possesses the feature of textuality, which is the interplay or weaving of codes. These statements, coupled with the observation of Leman (2008) about music representing a polysemantic unit making sense of several codes simultaneously provides an additional understanding of the reasons for which the participants of blind and visual listening groups manage to hear the percussion performance differently.

To understand the ability of anticipating musical dynamics by visual listeners, one should refer to the findings of Clarke (2002) who claimed that musical gestures are a construction of signification in music. Signification is the creation of meaning, which, in case it is coupled with the ideas of Ryan (2007), Barthes (1981), and Leman (2008), provides an image of music as a

narrative, a story with its own plot and development of action. If such an analogy is drawn, a musical performance may be perceived as text, and reading a text always involves anticipating the further actions of characters.

The listeners' anticipation may come true or be false, but in any case, visual perception of a performance involves thinking in advance about the musical twists, changes, peaks, and silence, while blind listening still involves the factual perception of music dynamics only after it has been produced by percussionists with the help of certain movements.

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