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Original Research

Movement Quality and Music-Making Practice: On the Relationship between the Feldenkrais Method® and Musical Improvisation

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Abstract

When making music, quality of movement and musical outcome are closely connected. The quality of movement in improvisational play is different from that during the interpretation of composed works. The starting point for this study was that the physical sensations of improvising musicians resembled those reported by people who participated in Feldenkrais Method lessons. Musicians interpreting composed works, on the other hand, found it difficult to apply what they had learned in Feldenkrais Method lessons to their instrumental play. These observations led to the following research questions:

- Can we identify specific modes of action that are important for improvising music?
- Do musicians' improvisational modes of action and quality of movement mutually influence each other?
- Are certain modes of action that are beneficial to improvisational play cultivated through the Feldenkrais Method?

The research design used in this study is based on the qualitative heuristic approach with additional principles borrowed from artistic research. Methodological formats include research talks, introspection, and qualitative experiments. Furthermore, a model was developed that describes improvisation as '*autopoiesis*' in the present.

The research process yielded the following results:

- The 'autopoietic' system marks the conditions for improvisation. Besides the musician, communication with other players and the resulting music are also part of the process. The musician's perception brings all these elements together; mental issues like trying to avoid mistakes or control musical developments weaken the improvisational process.

- When comparing the improvisational mode of action with the Feldenkrais Method, it becomes apparent that the third research question posed above can be answered with yes: on a superordinate level, the Feldenkrais Method does indeed cultivate modes of action beneficial to improvisation. Criteria for an improvisational quality of movement can be deduced from the Feldenkrais Method.
- The variations of physical movement conducted in 49 experiments led to changes in improvisational technique. The subjects increasingly succeeded in discarding retrospection and prospection, and found new paths in the present.
- The finding that quality of movement and musical outcome always influence each other in general, even when interpreting composed works, should inspire efforts to incorporate basic principles of improvisation into the way students are taught to play an instrument, thus enriching the interpretation of classical music, in which control is frequently overemphasized.

Keywords
vocal and instrumental pedagogy, improvisation, Feldenkrais Method, quality of movement, modes of action, interpretation, qualitative research, experimental research, heuristic methods

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Introduction

This article is a summary of a longer, more detailed research report published under the same title in 2016.[1]

Basic Observations

This research project was carried out in the context of a classical western music education specializing in vocal and instrumental pedagogy, which places great emphasis on interpretation. [2] A considerable percentage of professional musicians experience problems concerning the musculoskeletal system.[3] As a preventive measure doctors specializing in the treatment of professional musicians recommend the supplementary use of somatic techniques. Practitioners of somatic learning methods specialize in working with musicians. While teaching Feldenkrais

[1] Eikmeier, Corinna (2010): Movement quality and music-making practice. On the relationship between Feldenkrais Method and musical improvisation. Fernwald: Musikautorenverlag Burkard Muth. An abridged version of this article: Improvising with an improvising body. In: Reinhard Gagel, Matthias Schwabe (eds.) (2016): Exploring improvisation - improvising research. Beiträge zur Exploration musikalischer Improvisation// Researching Improvisation - Researching by Improvisation. Essays About the Exploration of Musical Improvisation. Bielefeld: Transcript.

[2] A comparison to other musical cultures where learning has traditionally been through improvisation and oral transmission was not a topic of the research and therefore not addressed. The creative areas such as improvisation and composition are often integrated in instrumental and vocal pedagogy as a means to an end in order to better perform interpretations. See, among others, Busch, Barbara/Metzger, Barbara (2016): Contents of instrumental teaching. In: Grundwissen Instrumentalpädagogik. Ein Wegweiser für Studium und Beruf, pp. 232-253 and Ernst, Anselm (1991): Lehren und lernen im Instrumentalunterricht. A pedagogical handbook for practice. Mainz: Schott, chapter: 2 Learning fields and teaching contents, pp. 44-69.

[3] See overview of statistics in: Hildebrandt Horst (2002): Music Study and Health. Structure and effectiveness of a preventive teaching program (Zurich Music Studies, Vol. 1). Bern: et al: Lang, S. 16.

Method[4] at a music conservatory, I observed that many classically trained musicians were unable to apply their experiences from Feldenkrais Method lessons to their instrumental play. In Feldenkrais Method lessons, students explore an 'improvisational quality of movement'.[5] When practicing an instrument, changing rigidly rehearsed movement patterns seems difficult. People's descriptions of their physical sensations when improvising resemble those given after Feldenkrais lessons.[6] The same people tend to describe negative emotions concerning their physical movements while interpreting music. This cannot be solely due to playing technique, which differs only marginally when improvising and when interpreting music (playing the violin remains playing the violin). Obviously, the musicians' mindset, perception, way of listening, and willingness to fully engage in the present moment contribute to the way they feel about making music in each particular instance.

Questions

Many relevant medical publications on music physiology and treatments for musicians neglect to discuss the role of different approaches to making music.[7]

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[4] Ongoing course in group lessons, "Awareness through Movement®", and in individual lessons, "Functional Integration®", for students of all courses of study at the University of Music, Drama and Media, Hannover.

[5] The term does not exist in the literature on the Feldenkrais Method in this form. It was coined by the author in this research project through the analogy between the Feldenkrais Method and improvisation.

[6] Within the framework of the Dorothea Erxleben Fellowship, the author has already carried out a project on the subject of the Feldenkrais Method and improvisation from 2007-2009. In this context, improvising musicians were asked by means of a questionnaire about their body awareness when improvising and interpreting. From today's point of view, the questionnaire does not meet scientific standards. It only gave the author food for thought for the present project.

[7] U. a. Altenmüller, Eckard (2006): Neurological diseases in musicians. Heidelberg: Springer. Bastian, Hans G. (ed.) (1995): Preventing and avoiding diseases. Instrumental playing from a physiological, technical and curative pedagogical point of view [2nd Paderborn IBFF Symposium]. Mainz: Schott. Blum, Jochen (ed.) (1995): Medical problems in musicians. With a foreword by Sir Georg Solti. Stuttgart et al: Thieme.
Gellrich, Martin (1997): On the construction of motor schemata in instrumental playing. In: Mantel, Gerhard (ed.) (1998). unused potentials: ways to constructive practicing (= congress report 1997 of the Forschungsinstitut für Instrumental- und Gesangspädagogik e. V. in cooperation with the Hochschule für Musik und Darstellende Kunst Frankfurt am Main). Mainz: Schott. S. 131-151.
Hildebrandt, Horst (2002): Music study and health. Structure and effectiveness of a preventive teaching program (= Zurich Music Studies, Vol. 1). Bern et al: Lang.
Hildebrandt, Horst (2006): Practicing and health. Selected music physiological aspects of practicing and their special significance for everyday training and professional life. In: Mahlert, Ulrich (Ed.) (2006): Handbook of practicing. Fundamentals - methods - concepts. Wiesbaden et al: Breitkopf & Härtel, pp. 67-97.
Klein-Vogelbach, Susanne/Lahme, Albrecht/Spirgi-Gantert, Irene (2000): Musical instrument and posture. A challenge for musicians, music educators, therapists and physicians. Healthy and fit in everyday life as a musician. With a foreword by Natalia Gutman. Berlin et al: Springer.
Klöppel, Renate (1999): The health book for musicians. Anatomy, occupational diseases, prevention and therapy. Kassel: Bärenreiter.

For this research project, differences in the subjects' approach and musical practice, as well as idiosyncrasies in their improvisational play were considered relevant from the beginning. This made improvisation a vital part of the study. Improvisation requires skills or modes of action that are equally important for any other type of music-making practice, but indispensable for improvisation. In this study, I defined the term 'improvisational mode of action' as a mode of action that can also be applied when interpreting composed works. My initial observations led to the following central research questions:

- What specific modes of action are important for improvisation?
- How do these modes of action interrelate with movement quality in music-making?

Questions concerning the Feldenkrais Method:

- What improvisational modes of action are implicitly addressed through the Feldenkrais Method?
- What comparisons can be made between learning strategies employed in the Feldenkrais Method and improvisational modes of action?

The Research Process

Due to their extremely high complexity, neither improvisation nor the Feldenkrais Method can be examined to a satisfactory degree simply by using scientific or quantitative measurement methods. The research design for this study was developed in an improvisational manner throughout the research process. The research methodology used is based on principles borrowed from qualitative heuristics, which I have described in the following section. Variations on this basic methodological approach also used in this study were: research interviews, introspection, and, most importantly, the 'qualitative experiment'.

Qualitative Heuristics

"Discovery is the process of replacing or expanding on what we know by adding something new

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Puls, Hartmut (2000): Experiences from body work with music students. Prophylaxis as a teaching subject at the Hochschule für Musik "Hanns Eisler" Berlin. Üben & Musizieren, 17th Jg. No. 5, pp. 27-33.
Schnack, Gerd (2000): Health strategies in music making - Exercises for prevention and therapy of playing injuries. Munich et al: Urban & Fischer.
Schnack, Gerd (2010): Preparing fertile ground. On the implementation of musician health in higher education. Üben & Musizieren, 27th Jg. No. 1, pp. 22-27.
Spahn, Claudia (2011): Musician's medicine. Diagnosis, therapy, and prevention of musician-specific diseases. With the collaboration of Jochen Blum. Stuttgart: Schattauer.
Wagner, Christoph (1995): Physiological and pathophysiological foundations of music making. In: Blum, Jochen (ed.). Medical problems in musicians. With a preface by Sir Georg Solti. Stuttgart/New York: Thieme, pp. 2-29.

– basically, it is change."[8] Children's way of discovering the world makes them living examples of heuristic research. They look at everyday facts and explore them for their own understanding. "Once again, it becomes apparent that the intellectual activity of the researcher and inventor is not essentially different from that of the common man. The latter does it by instinct, the scientist turns it into method."[9] Heuristic or discovery research with qualitative methods is based on a methodology[10] developed at the University of Hamburg and applied in many fields. The research process is "conceived as a form of dialog, as applied dialectics."[11]

The basic rules of qualitative heuristics

The method of qualitative heuristics follows the basic rules listed below.

Rule 1: "Researchers should be open to new concepts and change their preconceptions if they are contradicted by the data available."[12]

When executing a research project, this rule means a researcher needs to be flexible and be prepared to change their line of enquiry if their findings are not as expected. External factors like funding and timelines can inconveniently stand in the way of unexpected findings. This can be mentally challenging for the researchers involved. Hypotheses made by the researchers at the outset may change throughout the research process.[13] Also, researchers must be open to unexpected new findings. As early as 1905, Ernst Mach noted that "We must not shrink back from unfamiliar conceptions if they rest on secure foundations. For the possibility of encountering fundamentally new facts has not only existed in earlier stages of research, it continues to exist and has never ceased to exist for a single day."[14] He notes that coincidences often make incongruities between ideas and facts visible and palpable, and that it is exactly this process that often leads to the solution of our problems.[15] Finally, it should be noted that any effort to engage in research and conduct experiments would not make sense if the researcher already knew the result of the experiments in advance.[16] Researchers must be open to

[8] Kleining, Gerhard (2001): Openness as a characteristic of exploratory research. In: Hoock, Claudia/Böhm, Jan M. (eds.). Methodology of qualitative social research (= Kontrapunkt, Vol. 1). Münster: Kontrapunkt, pp. 27-36 (= http://da ta.onb.ac.at/rec/AC06230553), pp. 27 f.
[9] Mach Ernst (1968) [Reprographic reprint of 1926]: Erkenntnis und Irrtum. Sketches on the Psychology of Research. Darmstadt: Wissenschaftliche Buchgesellschaft, p. 261.
[10] See Kleining, Gerhard (1982): Umriss zu einer Methodologie qualitativer Sozialforschung. Kölner Zeitschrift für Soziologie und Sozialpsychologie, 34. Jg. Nr. 2, S. 224-253, S. 224 f.
[11] Kleining, Gerhard/Witt Harald (2000): Qualitative Heuristic Research as a Discovery Methodology for Psychology and the Social Sciences: Rediscovering the method of introspection as an example. Forum Qualitative Sozialforschung, 1. jg. no. 1, urn:nbn:en:0114-fqs0001136, accessed on 10. April 2014.
[12] Kleining (2000)
[13] See Mach (1968), p. 244.
[14] Mach (1968), p. 249.
[15] See Mach (1968), p. 252.
[16] See Frey Hans-Jost (2005): Attempt on the unforeseen. In: Fähndrich, Walter (ed.). 2007. improvisation 6 [13 papers; 6th International Conference on Improvisation, Lucerne 2005]. Winterthur: Amadeus, pp. 107-129, p. 115.

coincidences, relate them to their prior understanding, and derive the next steps from these new findings. This mindset can basically be described as an improvisational approach.[17] Rule 1 has some parallels to the Grounded Theory proposed by Glaser and Strauss (1967). It suggests a flexible use of research data so that, rather than setting down a preconceived hypothesis at the beginning of the research process, researchers let it emerge from the data as the process unfolds.[18]

Rule 2: "Flexible research object"[19]

This rule is closely related to Rule 1 and states that "The research object may change in the course of the study, and researchers should go along with the change."[20]

Rule 3: "Research data should show the research object from maximally structurally different perspectives."[21]

This means that the data should be examined from as many different perspectives as possible, thus expanding the content of the research object as much as possible. One example is variation in research methods or test subjects.

Rule 4: While Rule 3 expands the content, Rule 4 sets meaningful limits. The latter states: "The various data are analyzed for what they have in common."[22]

In this context, analogies also fall under this category. Aspects that cannot be integrated into the structure because they seem too far removed from the research questions in terms of content are placed outside the research area. The result follows the so-called 100% rule.[23] All data contribute to the result. All deviations in individual examples are taken into account, which may change the result. The maximum structural extension of the content (rule 3) becomes possible by changing methods. In this project, research interviews with experts, introspection, and qualitative experiments were used as methodological variations. Since the qualitative experiment was especially significant to the research process of this study, its most important basic principles are described below.

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[17] See Kurt Ronald (2011): Improvisation as a method of empirical social research. In: Schröer, Norbert/Bidlo, Oliver (Eds.). The discovery of the new. Qualitative social research as hermeneutic sociology of knowledge. Wiesbaden: VS Verlag, pp. 69-84, pp. 69 f.
[18] See Kleining (2001), p. 27 f.
[19] Kleining (2001), cited in: http://da ta.onb.ac.at/rec/AC06230553, accessed May 12, 2015.
[20] Kleining (2001).
[21] Kleining (2001).
[22] Kleining (2001).
[23] See Kleining, Gerhard (2007): Qualitative Heuristics. Survey analysis and reports. 3rd Berlin Method Meeting Qualitative Research, June 29-30, 2007.
http://www.berlinermethodentreffen.de/material/2007/Texte/Kleining.pdf, accessed April 25, 2015.

The Qualitative Experiment

> The research process is determined through dialog, as research subjects ask their research objects questions to be answered by the findings. In terms of the 'qualitative experiment', this means that the questions addressed to the object are transformed into experiments. The answers (in the form of experimental findings) and their analysis can lead to new questions and result in further experiments, and so on. This results in an adaptive research design, in which the analysis of the first available data set can already lead to an adaptation of the way data are collected.[24]

In a qualitative experiment, researchers ideally follow these steps:

1. Describing the object: This step is important because without an accurate description of the object, a qualitative experiment can hardly yield meaningful results about its structure;
2. Experimental intervention;
3. Describing the object after the intervention;
4. Drawing conclusions concerning its structure.[25]

Experimental intervention refers to changing a component of the object under investigation. In this study, the principle was applied by changing individual aspects of musicians' movements and observing the effects on their improvisations or improvisational mode of action.

Experimental techniques can be designed according to the following rules:

> Reduction - Attenuation: Essential characteristics of an item are identified by removing or attenuating its individual elements/functions and checking whether the item remains unchanged.
> Adjection - Intensification: Something is added to the object, its elements are intensified to explore its structure.
> Substitution: Object elements are replaced with others to explore their structural significance.
> Transformation: The object is transformed to explore its structure. Interesting transformations are negations (opposites, inversions, mirror images).[26]

The following section describes my research process for this study in more detail.

[24] Burkart, Thomas (2010) Qualitatives Experiment. In: Mey, Günter/Mruck, Katja (Eds.). Qualitative research in psychology. Wiesbaden: VS-Verlag, pp. 252-262, pp. 252 f.
[25] Mayring, Philipp (2002 [1990]): Introduction to qualitative social research. A guide to qualitative thinking. Weinheim: Beltz, p. 60.
[26] See Burkart (2010), p. 252 f.

Phase 1

My first step was to interview experts on improvisation. My theoretical sampling was based on the following considerations: The first research interview took place at a very early stage with a Feldenkrais Method colleague and professional musician who had previously done some of my exercises and had little improvisational experience. The second research interview was conducted as much as ten months later. Even before we started, the second interviewee said she saw certain analogies between the Feldenkrais Method and improvisation. She was also a Feldenkrais colleague and a professional musician with improvisation experience.

The evaluation of these two interviews made it seem more appropriate for my study to find people who did not view the topic from the perspective of a Feldenkrais Method professional. This was followed by two interviews with female music students who had gained several semesters of improvisation experience in a course called “Elementary Improvisation” and described significant changes in their music making practice during feedback sessions.

When selecting interviewees for Research Interview 5, I took two aspects into account:

1. I wanted to include a man’s opinion.
2. I was interested to hear what a highly experienced expert on improvisation had to say on the subject.

When choosing a person for Research Interview 6, I was motivated by expanding my spectrum of information by two further aspects:

1. This time, my interviewee played a lot of jazz.
2. Since there had been no wind player among the first five interviewees, when I interviewed him, I was hoping for hints on breathing.

After interviewing six professional musicians, I interviewed a violist who had started playing her instrument only recently as an adult, and improvised on it from the beginning. She had not undergone a traditional music education and, consequently, had not adopted any habits that might go along with it. This time I was curious to see whether this would add new aspects to my data set.

The opportunity for Research Interview 8 arose very spontaneously. My interviewee was a professional musician who had developed a special improvisation method. He told me informally that he often invited a Feldenkrais Practitioner to his seminars because in his opinion, the method was so conducive to improvisation. This provided me with an outside view of the Feldenkrais Method.

Interviewee 9 also saw an analogy between the Feldenkrais Method and improvisation. She had been trained by Moshe Feldenkrais himself and was combining Feldenkrais Method

interventions with improvisation tasks when teaching actors.

Research Interview 10 was a conversation during a car ride. My interviewee was a professional musician with a great deal of improvisational experience. She told me that firewalking had taught her some crucial skills needed in improvisation.

Rather than systematically following a rigid structure, I used the following topics as a rough guide and took each conversation partner on a custom-tailored tour of it.

1. Improvisation as a self-organizing process

Can performers actively control the outcome of an improvisation? By what means do they take control? Is there an inner attitude that allows them to relinquish control to the improvisational process? To what extent is this a desire or goal concerning one's inner attitude in improvisation? Systems theory and chaos research have proposed the phenomenon of strange attractors. These represent the final state of a dynamic process that has a fractal dimension. Does this phenomenon play a role in improvisation? If so, what influence does it have on improvisational modes of action? Is it perceived as a particular stimulus or challenge? Is there a need to control possible uncertainties through artistic intervention? Is there a physical equivalent? What significance does one's own expectation have in the course of an improvisation?

2. Perception

What kind of awareness do we need to keep track of the emerging artwork and our own actions in the present moment? What constitutes concentration when improvising? Are there certain areas in which improvising musicians need to pay extra attention? Do they pay more attention to their own actions and state of mind, or to the musical events unfolding around them? What are the characteristics of a musician's inner attitude when improvising?

3. Dealing with habits

Are musicians aware of their habits? What habits seem useful? In what cases can habits become obstacles? How can we work with habits in a meaningful and constructive way – how can we outsmart them?

4. Movement quality in improvisation

What connection is there between impulses coming from the body and musical ideas? How does people's basic improvisational attitude affect the quality of their movements?

Examples: Is the body ready to move? Do movements start from absolute stillness, or from a specific neutral position? Does the body feel heavy or light? Does the musician find it easy to shift her weight while playing her instrument? Can the musician change the quality and tempo of his movements at will whenever he chooses to? Is this related to his musical expression? Does

the player make active use of muscle tension? Is the way she uses muscle tension appropriate to the quality of her musical expression? How flexible is the player in his breathing? Is his breathing connected to what happens musically?

As a result of my research interviews, I came up with the term ‘improvisational mode of action’ and defined it for further use.[27]

It turned out that my interviewees could only make very general statements about the connection between their improvisational behavior and their movement sensations. Movements are not planned but simply executed – yet they work surprisingly well.

Phase 2

Drawing an analogy between the Feldenkrais Method and improvisation led to the definition of the term ‘improvisational quality of movement’, and it was demonstrated that in the Feldenkrais Method, improvisational skills are practiced on a meta-level.

Phase 3

In a third step, improvisation and movement were combined in so-called qualitative experiments using a total of 16 different experimental arrangements. The experimental interventions concerned individual aspects of movement. The qualitative experiment, like other qualitative research approaches, deliberately avoids randomized, controlled conditions.[28] This made it possible to make intuitive decisions concerning interventions and modify them in individual cases. Phase 1 of the experiments involved a free improvisation. In most cases, players did not prepare for this by taking a Feldenkrais Method lesson. After this part I decided, based on participants’ interests and my curiosity, which of the 16 experimental setups would serve as a starting point. The changes were introduced in the form of movement coordination tasks. These changes could then be observed in participants' improvisations. The evaluation of the experiments clearly showed the limitations of language. Individuals were often so involved in their play that they were unable to express themselves verbally. At this point, I incorporated aspects of artistic research. Audio recordings of the experiments were used as data and became part of the research itself.[29]

The Researcher’s Role

The role of the researcher must be carefully reflected upon. My motivation to carry out this project arose from personal experience in the field. Due to my prior knowledge and personal involvement, it seemed difficult to remain objective. This made me decide to consciously

[27] Siehe die Ausführungen in Abschnitt 5.
[28] See Burkart (2010) S. 252-262.
[29] See on principles of artistic research Klein, Julian (2010): What is artistic research? In: Stock, Günter (ed.). Science meets art. Berlin: Akademie-Verlag, pp. 25-28.

assume different perspectives and reflect upon my experience: I documented the experiments I conducted in a diary,[30] I participated in them at eye level with the subjects, I intentionally evaluated some of the data after a certain amount of time had passed, and I took account of the implicit influence of my artistic and pedagogical activities that indirectly shaped the documentation process of the project.

Phase 1: The improvisational mode of action

Based on the data gathered in ten research interviews, I developed the following definition of the term ‘improvisational mode of action’:

The improvisational mode of action, here described in the context of purposely chosen situations in musical improvisation processes, differs from conventional modes of action in the following ways: the action does not pursue a predetermined goal. Of course, improvising musicians have the goal of playing good quality music. As they aim for this, however, they willingly risk that the result is open-ended and place the emphasis on the development process instead. For an improvisational process to emerge, musicians need situations that challenge them to take creative action. They then start looking for a solution as they start playing. Constraints are helpful challenges. They can be intentionally set or arise from the improvisation process itself. During the improvisation process a constant interplay ensues between initial and follow-up actions.[31] An initial action must be played openly enough for a follow-up action to ensue. There are various strategies and questions to stimulate follow-up actions that can address communication in the ensemble, the musical material, and the way it is processed, as well as modification, or interruption. As I have learned in conversations after improvisations, these questions are present on participants’ minds. When improvising, however, decisions must be made in an instant. An improvisation is an entity that constantly changes and leaves no room for expansive reflections or creative breaks. The ‘magic moments’ in improvisation are those in which musicians and music merge so perfectly that the unpredictability of the improvisation surprises the players themselves. Intuitive action can lead to a tremendous sense of clarity when impulses for action are implemented without hesitation.

For this to happen, players need a neutral attitude that enables them to initiate action at any point in time. Then, no reflection separates the player and the execution of an impulse. Structures and logics immanent to music also shape the improvisation process, and participants’ actions take turns with these factors in taking the lead to produce musical results. From this scenario, a concept of action emerges that exists between reason and intuition and is difficult to categorize. To effectively explore my central research question, I will therefore leave it

[30] The introspection diary can be viewed in its entirety at research.corinna-eikmeier.de.
[31] On the definition of initial and subsequent actions, see Bertram, Georg W. (2010): Improvisation and normativity. In: Bormann, Hans-Friedrich/Brandstetter, Gabriele/Matzke, Annemarie (Eds.) Paradoxes of the unpredictable. Art - media - practice. Bielefeld: Transcript, pp. 21-40, p. 23.

as it is, including all these facets."[32]

Approaching the music

In musical improvisation, the principles governing music play a central role. As this study did not favor any particular style of music, I decided to elucidate the general criteria of musical principles.

The musical principles used by musicians in improvisation place a stronger emphasis on tension – both between individual notes and within larger formal developments – than those at play when interpreting composed works. Both Jacoby (1984) and Celibidache (2008) emphasize the tension between notes and sounds, the invisible, the hidden messages between the lines. Heinrich Jacoby describes the analyzable aspects of music as architecture, while he refers to the developments of tension between sounds as energetic movements. To him, sounds are not yet music. They can become music if energy flows through them.[33] In his lecture "On Musical Phenomenology", Sergiu Celibidache agrees with him, noting that “it takes more than the simple existence of a sound to make music”. "Music is not something. Something can become music under certain unique conditions. And this 'something' is sound. So: sound is not music; sound can become music."[34] Improvising musicians develop music from the message "between the lines," since they cannot fall back on a set architecture devised by the composer, while musicians playing composed works must sense the music within the existing structures of each piece. The currents of energetic progression are always headed a certain way, marking principles that are present in all music, regardless of style. Within the framework of these principles, improvising musicians can play with listeners’ expectations and change the course of tension throughout the music. Through emergence, improvisation produces new structures,[35] which is particularly evident at turning points or conclusions. For these structures to emerge, the players immerse themselves in “magic moments”.[36] They connect so strongly with the music that they themselves are surprised by the results of emergence. It takes a lot of strength to counteract emerging structures and act completely individually.[37]

Deciding whether to opt for completely isolated play as an extreme form of intervention, follow the organic developments of the music, or disturb it at certain points, is a question of aesthetics.

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[32] From Eikmeier (2016), p. 101.
[33] See Jacoby, Heinrich (1984): Beyond "musical" and "unmusical". Die Befreiung der schöpferischen Kräfte dargestellt am Beispiel der Musik. Ed. by Sophie Ludwig. Hamburg: Christians, S. 55.
[34] Celibidache, Sergiu (2008 [2001]): On Musical Phenomenology. A Lecture and Other Materials (Celibidachiana. An Edition of the Sergiu Celibidache Foundation, ed. by Patrick Lang and Mark Mast: Werke und Schriften, vol. 1). Augsburg: Wißner, p. 10.
[35] See Gagel, Reinhard (2010): Improvisation as social art. Reflections on the artistic and didactic handling of improvisational creativity. Mainz: Schott.
[36] This term is taken from a research interview. The interlocutor uses it throughout the conversation to describe her actions in the present.
[37] I have tried in many attempts to get improvisation groups to play completely individually. The need to play together, especially in a common meter, seems so strong that it is impossible to resist it.

All these options are different ways of changing the way tension develops throughout the music, or emphasizing the aspect of unpredictability in improvisation.

Communication in improvisation

As soon as we leave the area of solo improvisation and more than one musician is involved, the ensemble's communication becomes a vital element. The participants communicate nonverbally or agree on certain forms of communication in advance to map out and control the logic of the music together. While 'classical' composers create their own works individually, an ensemble improvisation is always created through communication, and in context. In a way, an ensemble of improvising musicians can be compared to a living organism that changes and organizes itself. It is marked by a process-oriented approach that develops through improvising, but also through rehearsing and discussing the quality of musical output. Improvising in fixed groups can be beneficial because it gives members an opportunity to take time and experiment with different approaches. By the same token, it can also have negative effects, because always playing with the same people facilitates the involuntary establishment of stereotypical mechanisms and fixed roles.

For an improvisation ensemble to remain flexible like a living organism, its members must be able to work with different forms of organization.[38] Important factors in this context are the distribution of roles, clarity when it comes to ways of leading and following, forms of individual play, and collective development. Only if these aspects are in tune can an ensemble truly merge into a group and meet the demands of the music at each given moment without having to talk about it.

The importance of perception

No man ever steps in the same river twice. – Heraclitus

Each sensory impression in the context of improvisation is unique. In auditory perception, the same is true for daily life and spoken language: each sound is unique and can be heard only once.

The basic tuning ("recording device")[39] can be used for other dimensions of perception, too. Only if a sensory impression touches a musician's soul, however, can it become an effective component of his improvisational play. If a sound impression is distorted by preconception, this can be a major obstacle to improvisation.

Only a true impulse enables nonverbal communication. A true impulse is one implemented immediately, without hesitation. A sensory impression that is truly felt transforms into an impulse as, rather than remaining external, it actually touches another player. This gives it the same

[38] See on the various organizational forms of an improvisation ensemble Eikmeier (2016), pp. 120-124.
[39] See Jacoby (1984), pp. 64-67.

honest immediacy as if it was the player's own internal impulse. Senders and recipients of impulses, sound impressions, energetic processions, and the connection between players all merge into one. Authentic perception in the present moment is the glue that makes all the components involved in improvisation stick together. At the same time, it is also the driving force of the creative development process in improvisation.

Improvisation as 'autopoiesis' in the present moment – a model

In the following, based on the elements discussed above, improvisation will be defined as a self-evolving process tied to the present moment. The term 'autopoiesis' is used metaphorically and put in quotation marks throughout, because adopting the term directly from the neurobiologists Humberto Maturana and Francisco Varela would not meet scientific standards.

Instead, the following simplified definition serves as a foundation of the model described below.

An 'autopoietic' system produces itself out of itself as long as it has access to sufficient nourishment. It must have boundaries and be distinguishable from other systems. It consists of different components clearly distinguishable from each other that constantly influence each other and depend on each other. The system allows substances to pass through its boundaries for the purpose of metabolism. It can be affected by 'perturbations' from the outside, by which it may be attacked and destroyed.

Since this model has a lot in common with the improvisation process, the aspects described above will be applied to it and summarized. Last but not least, since the red thread running through the previous explanations has been the connection of the improvisational mode of action to the present moment, this aspect will receive additional attention in the following section.

Frameworks of improvisation

A specific type of situation is determined. Possible examples are: a concert, a rehearsal, or a teaching situation. It is clarified whether the improvisation is to be based on concepts or instructions.[40]

The following components are interconnected and have an impact on the artistic development process of improvisation:

- the musician (including her instrument or voice) that has consciously chosen improvisation as an art form
- the music and its inherent principles (independent of style)
- the other players in the ensemble, if it is not a solo improvisation

[40] The clarification of the framework conditions was important for the experiments of this project. In reality they are not always clarified before an improvisation.

- the performance venue, if it is incorporated in the improvisation process.

Indirect components of improvisation

- the presence of an audience
- unplanned sounds intruding from the outside and integrated into the improvisation by the players (such as birds chirping or an intrusive cell phone ringing). Such acoustic inspirations are considered part of the improvisation only if they are taken in and developed by the players – not simply because they exist.
- Perturbations
  Just like an organism in nature, improvisation as 'autopoiesis' is also at the mercy of disturbances and dangers. Disturbances – such as trying to avoid errors, planning and controlling things, being afraid of difficulties, or wanting to repeat a successful experience – mentally remove players from the present moment. Wanting to reproduce a sense of achievement takes them to the past. Error prevention and technical control take them to the future.
- Perception as glue
  The authentic perception of the present moment holds together the components of improvisation like glue. Any disturbance weakens a player's perception and makes him less able to relate to the moment with what he does.
- The present moment as a habitat
  In the present moment, all components of improvisation are connected. Only this environment allows the unpredictable to emerge. Only something that is unique to a specific moment can be unpredictable. Under such conditions, improvisation becomes a game without an external purpose. Time, then, belongs to the improvisational process alone.[41]

Phase 2: The improvisational quality of movement

The topics used in my qualitative experiments were developed based on the following criteria for optimum movement. Above all, the question of how players can constantly be ready to start moving or change the way they are moving at any given moment is interesting for improvisational action.

Readiness to move is favored by an initial position from which as many movements as possible can be executed without preparation. For example, someone sitting on the front edge of a chair is ready for action if they can stand up without needing additional actions. If their feet are under the chair or stretched out, however, they have to make an additional movement before they can get up. For them, getting up requires two steps because their starting position cannot be left in only one move.

[41] See Eikmeier (2016), pp. 167-180.

Neutral position

The principle of the neutral position can be applied to the position of the entire body, or to that of individual body parts. From a neutral position, movements and actions can be made immediately, and in any direction. This is because, "In a neutral state, we are largely indifferent and motivated neither in one direction nor the other."[42] Moreover, body weight can be shifted in whatever way. "Any movement learned in a way that a preparatory re-arrangement must precede it to perform it means, the system is badly organized."[43] The advantage of a neutral position is that it enables players to make considerably more different movements without preparation.

Dynamic balance

Feldenkrais emphasizes that dynamic balance is always preferable to static balance.[44] He concludes that there cannot be only one correct posture. Rather, what makes a posture good is that any action can be performed from it at any moment without effort.[45] Furthermore, a posture is "good if it can regain its balance after a major disturbance."[46]

In relation to the research questions of this project, the following sub-questions emerged, which were addressed experimentally:

Are dynamic positions preferred, especially when improvising?

Does a musician's instrumental play change when assuming even more dynamic positions or keeping his or her position artificially stable?

Motor and telescope

> Every correct action begins with a movement of the pelvic bone, which shifts to move spine and head into the new position, without interfering with the head's range of movement. Control of the head and pelvis are therefore indispensable to any correct action, and neither can be given precedence: Both must be properly directed if a correct action is to occur. In some actions, the head's position may be more striking and expressive, it may even be the vital component, but without proper control of the pelvis it

[42] Feldenkrais, Moshe (1989): The Strong Self. Instructions for spontaneity. Frankfurt am Main: Insel, S. 242.
[43] Feldenkrais (1989).
[44] Feldenkrais, Moshe (2010): Höheres Judo. Groundwork. Berkeley/Kalifornien: North Atlantic Books. S. 22.
[45] See, among others, Feldenkrais, Moshe (1985): The discovery of the self-evident. Translated from the American by Franz Wurm. Frankfurt am Main: Insel, p. 86 and Feldenkrais, Moshe (1994): The path to the mature self. Phenomena of human behavior. Paderborn: Junfermann, p. 128.
[46] Feldenkrais (1985), p. 74.

could not be accomplished.[47]

It was the question of where movement begins, or from where it is controlled, that inspired me to use experiments in the next part of the project.[48]

The ability to continuously make slight neck movements is vital for both humans and animals to react to their environment. Animals in the jungle constantly move their heads, enabling them to react immediately if danger strikes.[49] Humans need a mobile neck for the same purpose but also, a fixed head would make it impossible to explore our environment.[50]

In musical improvisation, contact with the external world is of vital importance. Perception takes place in the present moment, and ideally, the improviser responds immediately to her sensory impressions. This leads to the question of whether an exploratory, improvisational mode of action has a positive effect on the mobility of the eyes and the neck muscles. This question was addressed experimentally.

Breathing

It is not unusual for the subject of breathing to become the main focus of a Feldenkrais Method lesson. Strictly speaking, however, breathing is always part of the lesson because rather than simply being one of many components, it is often the decisive factor that determines movement quality. Therefore, breathing can be used to check whether movements and actions are coherent.

Excessive concentration, effort, fixation on a specific goal, or lack of interest in the quality of the path interfere with free, unimpaired breathing. Conversely, every improvement in movement quality has a positive impact on breathing. It is part of a musician's professional experience that breathing is not simply enjoyed or taken for granted, but constitutes an essential driving force of expression.[51] Wolfgang Rüdiger describes this connection as follows:

Conscious breathing in tune with the music draws attention to the body, sensitizes it, and

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[47] Feldenkrais (1989), p. 191.
[48] See Eikmeier 2015 'Movement quality and music-making practice'. for data documentation of these experiments. Available at forschung.corinna-eikmeier.de, im Onlinebereich die Versuchsanordnungen 9-11
[49] See Feldenkrais, Moshe (1990): The Feldenkrais Method in action: a holistic theory of movement. Translated from the American by Thomas Kirschner. Paderborn: Junfermann, p. 54 f.
[50] See Feldenkrais, Moshe (2007): Feldenkrais® Professional Training Program. Amherst Massachusetts, Woche 1 Jahr 1, 9-13 Juni 1980. Paris: International Feldenkrais Federation S. 20.
[51] Langer-Rühl, Hilde/Muhar, Franz/Coblenzer, Horst (1970): Diaphragmatic dynamics in breathing, singing and making music [film]. Vienna: Austrian Federal Institute for Scientific Film.
Langer-Rühl, Hilde/Muhar, Franz (1980): Atemführung und Körperhaltung beim Musizieren [Film]. Vienna: Austrian Federal Institute for Scientific Film.
Rüdiger, Wolfgang (1995): The musical breath. Breath training and expression in music. With texts by Heinz Holliger and Nicolaus A. Huber. Aarau: Nepomuk.

> intensifies the emotional expression that goes into the production of single notes, initial chords, musical gestures, and large-scale developments of musical tension. In this way, musical and physical, physical and musical aspects intertwine.[52]

He regards breathing as an

> … integral bridge between body and music and a musical phenomenon in which the principles and parameters of musical design, such as tension and release, tempo, meter, rhythm, dynamics, phrasing, articulation, and timbre are reflected in a meaningful way. This makes music the best method to 'find one's breath' both in an artistic and in a physical sense.[53]

Essentially, he describes the "fundamental contribution" of breathing "to the fusion of physical, mental, and artistic expressive content in musical performance."[54]

In this sense, breathing supports:

- oneness of instrument and player
- identification between man and music
- unity within the musical work (synthesis in coherent interpretation)
- sensory oneness of performers and listeners
- oneness of body and soul[55]

Reversibility

In addition to breathing, Moshe Feldenkrais names reversibility as a key component of optimum movement. This means that the movement can be stopped and reversed at any time. Reversibility also implies that it should be possible to switch from one movement to another at any given moment.

Reversibility is another vital component of the improvisational mode of action. It is only possible in the case of optimum movements.

To check whether a movement is reversible, it must be executed very slowly. Feldenkrais points out that reversibility is not so much a matter of understanding, but one of experience.[56]

> Reversibility is a feature of all correct actions, even sleep. People who are well coordinated and mature – like many of those who do what they love for a living – can fall

[52] Rüdiger, Wolfgang (2007): The Musical Body. An exercise and pleasure book for players, listeners and teachers. Mainz: Schott, p. 15.
[53] Rüdiger, Wolfgang (2007), p. 15.
[54] Rüdiger (1995), p. 161.
[55] See Rüdiger (1995), p. 161 f.
[56] See Feldenkrais (1989), p. 217.

> asleep whenever they want and wake up whenever they need to. Healthy animals and humans do not mind being woken up because they can effortlessly stop and start sleeping any time they want. The ability to stop an action, a process, restart it, reverse it, or drop it altogether is one of the most important markers of right action and right posture.[57]

A movement can be reversed only if it is performed with minimum effort. In the case of movements, reversibility corresponds to a dynamic or unstable equilibrium. No energy input from the outside is required to execute the movement.[58]

Relevance to the research question: Reversibility is a central component of the improvisational mode of action. While it is impossible to reverse an improvisation, it is possible for participants to adopt a neutral, reversible basic position enabling them to react seamlessly to the conditions of the present moment. Such a body- and mindset benefits from the ability to stop and drop or reverse an action at any given moment, which, according to Moshe Feldenkrais, is an inherent characteristic of reversibility.

Movement quality as a component of the improvisational mode of action

I have formulated a provisional definition of movement quality, the central feature of my research question, based on the criteria described by Moshe Feldenkrais. The improvising musician, who maintains a constant connection to the music, his fellow players and, of course, himself, must convert everything that arises in his mind into a highly differentiated form of movement. Unfortunately, the characteristic of reversibility cannot be experimentally verified in music making. As soon as a musician slows down her movement sufficiently for experimental evaluation, the action itself changes and digresses too much from the original action to be examined. What we can examine in this context, however, is whether a musician perceives her action as reversible or not. Also, we can observe or artificially change the factors enabling reversibility (dynamic balance, control of the pelvis and head, breathing). Musicians perceive the reversal of a movement as effortless if they manage to avoid superfluous muscular activity. In the world of optimum movement, players are spontaneous in their movements and ready to join the ‘autopoietic’ process of improvisation.

The connection between player, music, fellow players, and improvisational process is a highly intense and challenging experience. This led to the question whether, in the face of this challenge, the requirements of optimum movement for improvisation can be met. Taking into account that the spontaneous behavior associated with improvisational thinking and responding is easier if the body is always ready to move, that when improvising, the players’ movements become one with the music, and that the way an ensemble merges so completely in the improvisation process that movements are automatically integrated into the group process, I

[57] Feldenkrais (1989), p. 159.
[58] See Feldenkrais (1989), p. 244.

thought it a good idea to take a closer look at the musicians' movements as they improvised together. This in turn led to the exploration of movement quality in relation to the other components of improvisation through qualitative experiments.

Analogy between the Feldenkrais Method and the improvisational mode of action

- The activity is marked by an explorative spirit.
- The situation requires creative problem solving.
- To make progress, participants must be free of judgment.
- The quality of one's actions is more important than the goal.
- Authentic perception is the foundation of all processes.
- Sensitivity to minor differences enables quality.
- Critically examining one's habits is important so that one's actions and learning process can address the present situation.
- Accepting limitations is the prerequisite for a creative process within each given framework.
- The problem with language within creative processes is that the present cannot be captured by it. Language either reproduces previous thoughts or refers to the past from a distance. This often leads to generalizing statements that do not accurately reflect the present situation.
- 'Mistakes' should be perceived with a neutral mindset so they can become new impulses.
- Mental blocks caused by fear, error avoidance, planning, and solely cognitive thought processes obstruct participants' connection to the present moment.
- Actions can relate best to the present moment if they are reversible, meaning that they can be stopped, taken back, or transformed into other actions.
- Readiness to move in any direction at any given moment enables decisions in the present moment and their immediate transformation into action.
- Organic learning must never be controlled from the outside. It is extremely susceptible to disturbances and are interrupted every time the learners' connection with the present moment is broken – this connection is what allows them to operate without the fetters of specific targets.

Phase 3: From the qualitative laboratory[59]

In the qualitative laboratory, aspects of improvisational movement quality were contrasted and compared with the improvisational mode of action. I created four fictional lab rooms under the

[59] In the qualitative laboratory, 49 experiments with 16 experimental setups took place, which were divided into four thematic blocks, so-called laboratory rooms.

following headings:[60]

1. Muscle tension
2. Dynamic balance
3. Impulses
4. Breathing

In the following, I will present one example of my experimental work for each laboratory.

Lab room 1

Experimental arrangement - beetle/boat: The subject was to observe an imaginary beetle or boat on the horizon while moving head and eyes steadily. He was to continue this movement regardless of musical expression.

Example: The test subject was a twelve-year-old boy. Being unable to express himself verbally, the sole conveyor of what happened was his music.

Listening to the recording makes it clear how movement and musical expression merged into one. The resulting piece resembles a slow funeral march. In my experiments, I frequently observed this synchronization of expression and movement. In the free improvisation following the initial task, the subject used experimental timbres much more boldly than before.[61] The courage to try new things was another thing I observed in all my experimental arrangements.

Lab room 2

Experimental setup - dynamic and stable equilibrium: The experimental arrangement in this lab room was comparatively simple. Subjects were asked to change their regular playing position and improvise freely in this new position.

Example: Immediate ‘magic moments’ occurred strikingly often in this laboratory space. Apparently, due to the changed position, subjects’ readiness to react without delay increased, helping them create sudden inflection points in individual sequences and sudden conclusions. No thought processes seemed to stand between action, reaction, and the unpredictability of magic moments. The subject in this example was my oldest participant. At the time of the experiment she was 83 years old and very energetic. In this example, she sat on a chair with one butt cheek. Her improvisation clearly showed a tendency towards sudden phrasal inflections and conclusions. I observed this phenomenon particularly often in lab room 2. In addition, the subject described a feeling she had not expected or foreseen:

[60] The selection of topics has emerged from the findings of the criteria for improvisational movement quality.
[61] See experiment 12 phase 4 and 5. audio examples: E12 phase 4 and E12 phase 5 under http://forschung.corinna-eikmeier.de

> This was the first time I could feel my heartbeat. [...] this probably led me towards certain places I love on my Cello. I love certain parts of the sound they produce. This feels very special and exciting. […] Emotionally, I was closer to these parts of my Cello. The sound parts. The sound parts, that I love the most.[62]

Lab room 3

Experimental arrangement - the engine: In this series of experiments, subjects were asked to choose certain body parts from which they controlled their movements. Sometimes we asked them to choose proximal parts like pelvis, belly button or lumbar spine. In other cases, they were asked to choose distal body parts that were more difficult to access – like an earlobe or a little toe.

The musical task was as follows: Impulses for musical actions were to be derived from the subjects' particular sense of the chosen body part and the resulting range of movements.

Example: This time, the subject was a professional opera singer. She had no previous experience in improvisation. At the beginning of the experiment, she expressed feeling nervous and stressed about improvising. In the two-hour experiment that followed, step by step she discovered her improvisational skills. The experiments conducted in this lab room were part of the discovery process. One particular improvisation, for example, was examined in detail. The subject was asked to derive all impulses from her belly button. She realized that, usually, she took several steps to prepare for singing. In this case, she unexpectedly felt that the singing just took care of itself. She was surprised to effortlessly succeed when tackling a technical challenge she had not anticipated seconds before. Moreover, she did not need to exert herself; instead, she felt the power of her voice without the effort to produce it. In the audio example, we can hear how effortlessly she sang long, drawn out notes.[63]

This example shows the following aspect of the relationship between physical sensation and improvisation: the task directs the perception to a physical sensation. This reinforces the action taking place in the present moment. The singer digressed from her habit of controlling her technique, which allowed her to be fully present and expressive in her music making.

Lab room 4

Experimental arrangement - paradoxical breathing: This experimental arrangement was based on the well-known Feldenkrais Method lesson of "Paradoxical Breathing", in which the breathing movements of the lower abdomen and the chest are explored as a rocking motion independent of breathing.

Example: At the time of the experiment, the subject had an overuse injury (tennis elbow). She

[62] See experiment 24 phase 2, audio sample E24 phase 2 at http://forschung.corinna-eikmeier.de
[63] See experiment 1 phase 3 audio sample E1 phase 3.4 under http://forschung.corinna-eikmeier.de

settled into the experimental arrangement with plenty of time. The rocking motion between abdomen and chest felt very foreign to her at first, and in the beginning, she could only perform it very slowly. As the experiment went on, however, she became increasingly interested in finding the correct movement. After spending more than an hour without her cello, experimenting instead with this motion and her voice, she could hardly stop herself trying the movement again and again.

After a short break, I suggested that she use the movement while playing her cello. Then I asked her to use her voice too, and, for the time being, leave artistic ambition aside. Several wild, powerful episodes emerged. The subject, initially cautious because of the pain in her elbow, allowed more and more power to flow through her. As she became fully engaged in the experiment, her elbow no longer hurt. She verbalized her sensation saying:

> I feel like I'm on drugs. (laughter) Plus, it was nice to see that my body remembered how to play the cello. I've been feeling so strained by this injury, and whenever I've been playing the cello, I felt off. But the flow and power I just experienced here brought me back to a point where I could remember what I'm capable of.[64]

Her implicit knowledge allowed her to play without fearing her injury. She no longer needed the excessive control she had built up as a mechanism to protect herself. The strength she suddenly discovered that allowed her to improvise wildly and loudly clearly had nothing to do with muscular effort – with her injury, no such thing would have been possible at the time.

Results: Overview

My evaluation of all 49 qualitative experiments, four of which I just presented as examples, revealed that reinforcing individual aspects of improvisational movement quality made certain features of the improvisational mode of action stronger. Where subjects could not produce coherent verbal data to convey the changes, auditory samples were included in the evaluation process instead. Subjects displayed major differences between their initial improvisations and the style and expression that marked their artistic performances later in the experimental process.

In summary, I observed the following tendencies:

The boundaries between players, music, and communication among ensemble players merged. This led to the state of 'dissolution' that improvising musicians often describe in general reflections, and that they experienced more strongly during these experiments. Control has no place in a system that works best when its individual components 'dissolve'.

In a state of 'dissolution', players are immediately ready for action. This was demonstrated by

[64] See experiment 26 under http://forschung.corinna-eikmeier.de

the fact that impulses were immediately implemented into the music that was being created.

These undelayed, immediate actions yielded many unexpected turning points, while beat and rhythm remained highly precise.

As for musical parameters, a differentiated approach could be observed, especially in the case of secondary parameters such as timbre, articulation and/or agogics.

Where the respective improvisations provided the necessary challenges, familiar musical vocabulary was frequently expanded by new timbres and playing techniques.

Leading melodious elements became increasingly self-sufficient. The synchronization of movement tasks with each respective mood and tempo of the music created homophony between expression and movement quality.

Polyphony between music and movement was a challenge that gave players more freedom as the experiment unfolded.

Due to the sometimes unfamiliar and confusing experimental arrangements, they could no longer control their playing technique ‘properly’. Often, it was precisely this loss of control that had a positive effect on their playing technique.

Biography

Dr. Corinna Eikmeier studied Violoncello, Contemporary Music, and Improvisation and is a trained Feldenkrais Method practitioner (Feldenkrais Method education in Vienna: 1992-1995).

She is part of several interdisciplinary projects and teaches the Feldenkrais Method and Improvisation at Hannover University of Music, Drama, and Media. From 2017 to 2018, she was Visiting Professor for Music Education at Brandenburg University of Technology in Cottbus-Senftenberg.

As a Dorothea Erxleben scholar, she worked on a project on the Feldenkrais Method and improvisation and developed improvisation exercises based on the principles of the Feldenkrais Method. The results of her work were published under the title: *Ungewohnte Positionen. Ein praktischer Beitrag zu Anwendung der Feldenkrais-Methode in der musikalischen Improvisation* (Unusual positions. A practical contribution to applying the Feldenkrais Method to musical improvisation.) She continued this research as a Ph.D. student. The title of her dissertation is: *Bewegungsqualität und Musizierpraxis. Zum Verhältnis von Feldenkrais-Methode und musikalischer Improvisation* (Movement quality and musical practice. On the relationship between the Feldenkrais Method and musical improvisation). For more information, visit her

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