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Developing reflection- in-musicking in creative practices

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Abstract

This article examines the development of reflection-in-musicking in a *Write an Opera* project at a Norwegian upper secondary school. As part of a PhD project, this case study focuses on a group of seven participants collaborating to create music for an opera with a professional composer facilitating the process. Interviews, observations and video-recordings make up the body of the empirical material. Theories of *musicking* (Small, 1998) and *reflection-in-action* (Schön, 1983, 1987), and a sociocultural perspective, have been central to understanding the creative practices examined in this study. Learning features found build on socially and culturally co-constructed repertoires of experience, knowledge and skills. Three modes of reflection-in-musicking are identified from the empirical data: aesthetic, artistic and structural.

Keywords: *creative practices, creative music making, reflection-in-action, musicking, facilitation*

Introduction

The sound of a single bass trombone breaks the silence. The instrument gleams in the light while the trombone player splits the tone in a multiphonic technique, slowly sliding up to a D with her voice while the instrument tone still lingers on a Bb. An electric bass, piano, synth, guitar and trumpet blend in; the drums quietly descend a roll on cymbals. White fabric flickers in the air above the orchestra, illuminated by scattering blue, green and red spotlights, visually resembling northern lights in a black sky. The open, lingering chords in the ensemble shift slowly

embellished by spread arpeggio movements in the treble octave on the grand piano, played in an improvised manner. The seven participants in the orchestra, who are also the creators of the musical material for this opera, maintain an intense focus on the music-making event. A girl in a white laboratory-coat approaches the stage, and along with the sound of the orchestra, engages in a speech about the Aurora borealis phenomenon.

Even though there has been increasing interest in compositional processes and products in music, as well as creative thinking and practice in music education, our knowledge about teaching and learning in composition is still limited (Barrett, 2006, p. 196; Smith & Kaschub, 2013). Further, there is a need for research about learning experiences in creative partnerships involving professional artists (Burnard & Swann, 2010). Recent research in music education shows that when pupils collaborate with peers and/or professional artists to create new musical material, the features of learning are based on socially constructed knowledge, dialogue and interaction (Barrett, 2006, 2014; Barrett et al., 2014; Partti, 2014; Gaunt & Westerlund, 2013; Muhonen, 2014; Partti & Westerlund, 2013; Sawyer, 2008; Wallerstedt, 2013; Wiggins, 2011). Examining these creative practices can provide important insights into the facilitation and learning processes involved.

The case study explored in the following is a project based on the *Write an Opera*-method in a Norwegian upper secondary school. This method has its roots back to the 1980's when interdisciplinary projects were developed at The Metropolitan Opera Guild in New York. Participants form an opera-company responsible for all parts of the dynamic and creative production of an opera (Fretheim, 2014). The empirical data for this study was generated through observations and interviews with a music composition group of seven pupils and a professional composer who facilitated the process. The music composition group was responsible for creating, arranging and playing in the orchestra in the project's newly established opera company. The purpose of this article is to explore features of learning processes in their creative practice. As the article will show, the study's findings implicate that learning took place in complex sets of relationships and actions/interactions, understood in the context of the concept *musicking* (Small, 1998) and *reflection-in-action* (Schön, 1983, 1987).

In this article, I begin by outlining a theoretical framework where creative practices are understood from a sociocultural perspective and examined through the concepts of musicking and reflection-in-action. Following this, I elaborate on three central modes of critical reflection-in-musicking in creative practices: aesthetic, artistic and structural. These modes are interwoven, but also build on distinctive learning features that are facilitated and supported in the creative practice. In the results section, I also examine the facilitator's role in relation to the learning features in these modes. Finally, reflection-in-musicking modes are discussed as complex and multifaceted forms of learning.

Learning through reflection-in-musicking in creative practices

The study draws on a sociocultural perspective (Bruner, 1990, 1996; Rogoff 1990; Vygotsky, 1978, 2004). From this perspective, the individual's learning is understood as embedded in social interaction and collaboration (Sawyer, 2008). Learning is neither a wholly subjective individual experience nor does it happen solely through social interaction, but is "a process of becoming a member of a sustained community of practice" (Lave, 1991, p. 65). By participating in such communities of practice, each participant develops and builds a personal inner musical library (Folkestad, 1996, 2012) that constitutes a repertoire from which to develop new musical material. Contemporary views of creative, collaborative practices challenge discourses of creativity as merely individual achievements (Burnard, 2012a, b, c; John-Steiner, 2000; Negus & Pickering, 2004) based on a traditional view of composition (Burnard, 2012a). A sociocultural approach to creativity can be understood as based on a non-dualist ontology where learning and development take place through participation in a community in cultural and historical contexts (Packer & Goicoechea, 2000).

Theories of the different evolving stages of the creative process, originally introduced by Wallas ([1926] 1945), have been discussed and developed further by many researchers in previous empirical studies (e.g., Bennett, 1976; 2005; Katz & Gardner, 2012; Lubart, 2000–2001). Burnard and Younker (2002) use stage theories and theories of creative thinking when they analyse students' compositional pathways. Webster (1987, 1990, 2009, 2012) discusses creativity as a process of creative thinking where convergent and divergent thinking develop the important skills of aptitude, conceptual understandings, craftsmanship, and aesthetic sensitivity. System theories in creativity have provided important insight into social and cultural factors with which the individual interacts, in relation to the particular domain they operate within (Csikszentmihalyi, 1999; Wiggins & Espeland, 2012). Further, creative processes have also been described as problem-solving (Burnard & Younker 2004; McAdams 2004; Wiggins, 1999). Central theories in arts education, many of which are anchored in the works of John Dewey ([1934] 2005), define aesthetic experience and sensitivity to artistic expression as core features of the development of creative knowledge and competence. When creative practices are viewed as expressions of experience and knowledge, the actual music produced (the musical discourse) can be a source for understanding the actions and interactions of young composers (Barrett, 1996, p. 43).

Swanwick's model of musical development in the form of a helix, developed in collaboration with Tillman, shows how the concepts of intuition and analysis apply to an understanding of musical knowledge (Swanwick, 1994). A distinction between *aesthetic* and *artistic* is found in their developmental model, where aesthetic understanding is connected to intuition, and artistic understanding to analysis. The dynamic relationship between artistic and aesthetic understanding generates knowledge, but it requires meaningful activities

with musical sounds (Swanwick, 1994). Artist and composer Kruse (2016) creates a similar model where he describes a dualism between “intuitive action” and “cognitive awareness” that leads to creative energy and action. He also points out that learners should develop the art of reflection (Kruse, 2016, p. 11). The composer Stravinsky (1959, p. 25), on the other hand, writes about intuition as *opposed* to conscious knowing, in line with a common sense perception of intuition often referred to as understanding “immediately, without the need for conscious reasoning or study” (Hornby, 1989, p. 660).

The complexity of social meanings when people take part in actions and relationships of *doing music*, for example singing, listening, playing, improvising and composing, is crucial for the examination of a musicking practice. Musicking, a concept developed by Small, stems from the verb *to music*, which describes an all-inclusive and dynamic participation in musical performance (Small, 1998, p. 9). Schön (1987, p. 28), conceptualises practice as reflection-in-action with a critical function, realising the knowledge, skills and experience engaged when working (Schön, 1983) and learning (Schön, 1987). Reflection-in-action describes the kind of processes often recognised as “intuitive” and formed by a characteristic “feel for it” (Schön, 1983, p. 55) that can occur when doing and thinking become complementary (p. 280). This study develops its theoretical scope from the idea that reflection *in* and *through* musicking is at the heart of learning in creative practices, in a conjoined concept of *reflection-in-musicking*. Following Small’s (1998) question: “What is really going on here?” (p. 17), the focus of this study is on human and sonic relationships. From this standpoint, the analysis of the empirical data in this case study leads to an understanding of reflection-in-musicking as *aesthetic* as well as *artistic* and *structural* modes of creative practice.

Case description

The pupils in this case study were 16–17 years old, and attended an upper secondary school study programme leading to a specialisation in music, dance or drama. They created a theme for the opera on the phenomenon *Aurora borealis* (Northern lights) and a parallel love story of the beautiful Aurora who was admired by the scientists Carl Størmer, Kristian Birkeland and Lars Vegard (developed as fictional characters in this opera, but based on three Norwegian scientists who made important contributions to today’s knowledge about the *Aurora borealis*). The participants formed a temporary opera company for the project, with several different groups responsible for everything from writing the libretto to stage design, PR and performing in the opera. I followed a music composition group consisting of seven pupils and a professional composer, who composed the music for the opera and functioned as musicians in the opera orchestra at the performance.

The participants in the music composition group applied for their positions in the opera company either as musicians or composers, originally set up as two conjoined groups

in the beginning of the process. Four of the pupils in the music composition group and the professional composer are referred to specifically in this article. *Robert* played the electric bass and was the appointed leader of the music composition group. *Linn* played the trumpet and originally only wanted to play in the orchestra, not compose the music for the opera. *Maria* played the piano, and *Markus* was the appointed orchestra conductor. They had all received instrument training, but explained in the interviews that they had little formal experience with composition, although several had tried composing either alone or in collaboration with a band. *Philip* was the professional composer facilitating their work.

The project venue was situated in the upper secondary school, which had a relatively new building for the music, dance and drama programme. Early in the process, the entire opera company worked in a spacious 'black box', while the music composition group I followed occupied a band room. This room had a drum set, sound equipment such as amplifiers and loudspeakers, electric keyboards, an upright piano, a grand piano, a large white board, and smaller group rooms available close by. The project period was intensive and lasted for eight days with workshops, usually starting with a warm-up at 8:15 am and the day ending at 5 pm. This period culminated in a public performance in the evening of the eighth day of the project period and a second performance early in the morning of the ninth day for teachers and fellow pupils at the school.

Collecting and analysing empirical data for the study

This research was designed as an open, inquiry-based case study (Stake, 1995, 2013), and the data was collected primarily through interviews and video-recorded observations from the intensive eight-day project period and the final performance on the ninth day. A focus group consisting of four pupils from the music composition group I was following were interviewed twice as a group, and twice individually. The interviews, which could be called a kind of reflection-*on*-action situation, were conducted during and after the creative process. The professional composer was interviewed four times: before, during, and right after the project period ended. In addition, I conducted a follow-up interview with the composer a year and a half later. The study is developed within the frame set by the ethical committees of Norwegian universities and university colleges: The Data Protection Official for Research (NSD). All participants have been anonymised and given fictitious names due to ethical considerations.

The analysis developed from the empirical data rather than from a predetermined theoretical focus, which can be described as an inductive process (Strauss & Corbin, 1998). I began by examining the development of musical material and how contributions from the participants supported the process. Analytical tools were derived from previous studies of creative processes (Hickey & Webster, 2001; Rhodes 1961; Wallas, [1926] 1945). The

video-recordings made it possible to examine the material retrospectively. This way, it was possible to identify episodes which showed choices and development consequential for the final performance. Through a dialectic and continuous reading and re-reading of the transcribed interviews and observation notes, I carried out a thematic analysis (Braun & Clarke, 2006).

The shaping of categories and identification of patterns in the material emerged on many different levels in the analysis process, with features of learning and reflection in focus. In particular, one utterance from an interview with the professional composer inspired definitions for the final categories in the analysis process:

Philip: ... it's about seeing, or using your intuition, to say *this* can work, do they think it can work? What are we going to do with this? Is it good enough? 'Yes, it is good enough', or 'No, it isn't'. What can get better? So, you use your sense, or the aesthetic or artistic or structural or ... *evaluation* in the project.

As the composer mentions, there seems to be a kind of competence displayed in these practices built on 'intuition', 'seeing'; a 'sense' leading to a critical evaluation of the musical material under development. Three keywords can be seen as central at the end of this quote: aesthetic, artistic and structural. Re-reading the material and attempting to conceptualise these terms led to a revision of the theoretical frame of the project. Further development of the analysis was based on an emerging understanding of the aesthetic, artistic and structural as modes of reflection-in-musicking in creative practices. The second aim of this article is to understand and discuss this 'sense' or 'intuition' the composer describes as important in relation to the features of learning in reflective musicking practices.

Three modes of reflection-in-musicking

An excerpt from an interview with Maria, one of the pupil participants, shows how the three modes of reflection derived from the keywords in the quotation from Philip above are found to integrate fluently in musicking interactions in the project. Maria emphasised how collaborating in creating the musical material had a positive impact on how the ideas of the group could be initiated and developed:

Maria: There is, sort of, other things you think about; when you play alone it is just you and the piano that counts, but when you play with people, [...] that's not what counts at all. What counts then is just to come up with good ideas and sort of build it right and do what makes the music itself become good, not necessarily in a challenging way, but that the music and everything becomes combined in a way. That's the most important part.

The social and musical relationships described by Maria illustrate how situated learning in this case can be understood as (i) *aesthetic* reflection-in-musicking: to come up with ‘good ideas’, and build it ‘right’, so it ‘becomes good’; (ii) *artistic* reflection-in-musicking: about producing the sounds, ‘play with people’ and ‘do what makes the music itself become good’; and (iii) *structural* reflection-in-musicking: ‘building’ and ‘combining’ ‘the music and everything’.

In the following, I elaborate on these three modes of reflection-in-musicking from the analysis of the empirical data. First, I give an example of how we can understand the *aesthetic* mode involving perception, interpretation and the expansion of a personal repertoire. Second, I focus on the *artistic* mode, producing sound and understanding how to use different cultural and compositional tools in the production of musical material. Third, I describe the *structural* mode, examining how the participants gain a micro- and meta-perspective on the musical material. Finally, I include a section focusing on the facilitator’s role in developing these three reflection-in-musicking modes.

Developing aesthetic reflection-in-musicking

The participants perceived and interpreted qualities in aesthetic experiences relating to the creative practices they were going through. They used their aesthetical sensitivity, understanding and judgement when they developed, tested and revised ideas for the opera. As Kruse (2016, p. 29) writes, aesthetic dimensions of experience are contextually dependent and based on learned standards. Perception, experience and interpretation are, in this article, understood as resources that comprise a socioculturally constructed personal inner musical library (Folkestad, 1996, 2012). How did Maria and the other pupil participants know what could be ‘good’ and ‘right’ for this particular context?

Two examples from the data are used to illustrate the development of the mode of aesthetic reflection-in-musicking. The first example describes a situation from the observations where the professional composer Philip played an excerpt of the prelude from *Das Rheingold* by Wagner. Initiating the task, he proposed an aim for the listening activity:

Philip: Not because [the new opera] is going to be written like this, or that this is meant to be an example of how it *should* sound, but it is more about: listen to the structure here. Listen to how it breaks up, more like: What does it mean? What is the mood, what kind of situation are we in? ... Try to close your eyes and picture the situation the music describes.

The musicking relationship Philip addressed was *personal* in terms of what the pupils were asked to do — close their eyes and experience the music individually. At the same time, a co-creative ‘schema’ for interpretation was established, describing certain qualities such as a particular mood and situation, that could be perceived and interpreted in the listening

experience. Establishing such musicking relationships could make the aesthetic experience more meaningful, for example, by imagining possible moods and situations expressed through different compositional and structural tools in the music.

The second example is collected from the end of one of the early music composition group sessions while the group was packing up. A pupil from the group who played the bass trombone, practiced a multiphonic technique by sliding a vocal tone up and down parallel to playing on her instrument. Philip and Robert discovered her playing and stopped to listen attentively. In a session later in the week, Philip asked the trombone player to demonstrate the technique for the rest of the group. As she started, he followed her tones on the piano by accompanying her playing, creating layers of arpeggio chords that complemented the sound of the trombone. Then he encouraged the pupils to create similar, open improvisatory soundscapes, which resembled central features and compositional techniques used in *Das Rheingold*. The result of this process was the *Northern lights music*-theme, described in the introductory vignette of this article.

In these two examples, the pupils used aesthetic reflection-in-musicking to build a shared 'sense' of quality concerning what they considered as appropriate, or 'right' and 'good' for the musical material they were working with. The aesthetic reflection-in-musicking in creative musicking, therefore, seemed to develop from an expanding array of aesthetic knowledge and experience which, in a learning context, can help the participants perceive, recognise, create and appreciate new contributions suitable for the emerging musicking process.

Developing artistic reflection-in-musicking

Artistic reflection-in-musicking was based on the collaborative *production* of musical material, closely intertwined with, and interdependent on, the mode of aesthetic reflection-in-musicking. Learning artistic reflection-in-musicking was also about appropriating cultural tools (Bruner, 1996; Vygotsky, 1978). For instance, when Philip introduced new compositional strategies to the group, such as modal and natural scales, tempo changes, and musical expression in relation to the musical material under development, he encouraged the pupils to try these tools on their instruments. Sound experimentation and what could be described as "stop and think" reflection (Schön, 1984) in the development of the music were not only addressed, but also comprised the foundation for the continuation of musicking relationships in jam sessions. "Stop and think" reflection may help the participants "become aware of the on-line experimentation and reflection in which they have been engaging and the tacit assumptions and strategies they have been employing" (Schön, 1984, p. 8).

An example of how the artistic reflection-in-musicking mode functioned is the development of a rap song. Robert had created a rhythmical groove loop using *Garageband*. Encouraged by the rest of the music composition group, he rapped a short text from the

libretto framing the opera. Markus, intently listening to the groove, started to play some chord progressions on his synth. The rhythm in his playing seemed to indicate a relationship with rhythms from the groove, and the improvisation evolved into a repeated chord motif. Maria participated on the piano, trying out a melodic response in the treble octave. Through testing several different, but similar, ideas, she seemed to reach a decision about how this response should sound. Their ideas were solidified and rehearsed, and the rest of the group joined in. Next, Robert took the initiative to a full bar break in the rhythm loop where only the melodic response of the piano was played before they all started playing again.

The pupils employed a range of compositional tools in and through the music making. For example, when they developed the rap song in a creative flux, their responses built on a repertoire of contexts and actions from their experience. This description coheres with Donald Schön's (1987) descriptions of the teaching and learning of reflection-in-action. This emergent reflection-in-musicking can be described as embodied or musically experiential learning through interaction between the musical material that was developed and the participants. They listened, composed, played, revised and arranged the new material *in-action* as a reflective 'conversation'. Schön (1987, p. 31) uses experienced jazz musicians' improvisations as an example similar to the session described above:

Out of musical materials or themes of talk, they make a piece of music or a conversation, an artefact with its own meaning and coherence. Their reflection-in-action is a reflective conversation with the materials of a situation – 'conversation', now, in a metaphorical sense. Each person carries out his own evolving role in the collective performance, 'listens' to the surprises – or, as I shall say, 'back talk' – that results from earlier moves, and responds through on-line production of new moves that give new meanings and directions to the development of the artefact.

Here, Schön uses the idea of a unique situated 'conversation', but does not go deeper into how it reflects and responds to the wider social and cultural context. However, the empirical data in the present study reveals how reflection-in-musicking can be understood as conversations within a complex web of artistic knowing in development, in line with Small's view of musicking being included in the social and cultural practices of creative music making.

Developing structural reflection-in-musicking

On the fifth day of the intensive project period, Philip began the music composition group session by exclaiming that from then on, the project was in a 'deadline modus'. This was an important turning point in the process, Philip explained in an interview the same day. He urged the pupils to create overviews and structures relating to the whole opera and review their musical material in the context of the storyline, and wanted them to take

responsibility for the musical material in the project by defining their own goals for the continued work. The participants continued musicking, but subsequent jam sessions were mostly built around the structures of the musical material they had already developed. The musical material also needed to be communicated to the other participants in the opera project.

This revision process was not only encountered through verbal communication, but through *experiencing* what worked or did not work musically. When the opera company moved to the stage in the final days, they began by rehearsing the opera in its entirety. Philip played an important role here by encouraging the pupils to a “stop and think” reflection. This kind of interaction meant that instead of just playing things through over and over again, he encouraged them to be critical *in* the music-making process, to stop, find out what to focus on, for example text pronunciation, musical expression or the sound of the ensemble; and try again.

In order to develop a structural understanding of reflection-in-musicking, critical inquiries into well-known musical material supported the gaining of a meta-perspective on the musical product and process. Maria, Robert and Markus were the main contributors of musical support structures. They participated actively in the jam sessions from the beginning and took responsibility for developing and structuring musical material in relation to the storyline of the libretto. Linn had a different approach. She explained in one of the individual interviews that at first she felt uncomfortable with the jam sessions and the improvisation process. But later, she took charge of creating charts and a visually written overview of the musical material in relation to the storyline. From the overviews she had created, the music composition group found gaps in the musical material and unclear passages between the songs.

Attaining this critical meta-perspective on the musical material thus required the engagement and development of both an aesthetic and an artistic reflection-in-action. In addition, the pupils developed an understanding of how different parts of music needed to be structured and revised in order to appear meaningful, both to the performers and the audience. Structural reflection-in-musicking can be understood as a relational way of learning where all participants take part in creating different types of “scaffolds”, which are defined in this context as both social and musical support structures in the revision process (Wiggins, 2005). An important agent in facilitating the creation of these support structures was the professional composer, Philip.

Facilitating learning through reflection-in-musicking

Philip had an interactive, question-based approach to facilitating the pupils’ work with the musical material. He explained in the second interview that the purpose was to provide

and expand the array of opportunities for reflection and further work. The responses to his questions often took shape as musical experimentations within the music composition group. The group was encouraged to lead the flow of ideas and think in *sound*, a process that can function as an empowering experience (Randles & Sullivan, 2013, p. 56).

In the final individual interview, Robert elaborated on his perception of the question-based interaction with Philip: “He did it for us to become critical ourselves, because if we are critical, we are able to make good music”. As Maria also explained in an individual interview:

Maria: [Philip] is the critical sense that I just suppress myself, in a way. That is, I can hear it too, but I refuse to realise it ... In a way, it is easier when he points out those things that you really know, but ignore, like you need to make that song more varied, you must play it more like that, perhaps, and have some structure; then it is like, I *know*, I just can't bother doing anything about it. So, it is a little annoying, but very, very; I've learnt a lot from it.

The pupils seemed to perceive the facilitator's role in this process as central to the development of musical material, in terms of evoking their 'critical sense'. In this relationship, Philip was always urging them to reconsider and critically evaluate the choices they made while composing. Such learning processes can be understood as both musical and social, and they can be seen as being what Espeland (2007) calls a “vehicle for artistic *and* personal expression” (p. 204). Wiggins and Espeland (2012) also describe how the “learner's capacity to initiate and develop ideas in both learning and creating is deeply rooted in their feelings of personal agency in the situation” (p. 347). This resembles the impression the students gave in their final interviews, where they talked with pride of their performance and showed a strong sense of ownership of their music. For example, Linn says:

Linn: [Philip] wanted the songs to be ours ... he just wanted to guide us. So I feel really that I made that, I feel that those songs, that music, what I was standing there with at the premiere, that was really ours. Yes, it was our ideas. I felt that way.

Philip's role was, nevertheless, crucial both to the development of the musical material and in creating a learning context supporting different modes of reflection-in-musicking. A co-creative relationship like this can be understood in terms of what Small (1998) calls a social act, which builds on social and sonic relationships. These relationships can also be understood as a form of collaborative learning, where all participants contribute with their unique competencies in the creative practice. As Luce (2001) writes: “Collaborative learning is addressing individual differences, bridging cultural barriers, and uniting teachers and students in the pursuit and construction of knowledge” (p. 24).

Summary and Discussion

The project *Write an Opera* involving two classes at an upper secondary school in Norway was organized during an eight-day-long intensive project period with different group and individual contributions. The participants involved in the music composition group, led by a professional composer, were responsible for developing the musical material for the opera. The group collaboration process was crucial for the development of the material, from idea gathering to structuring musical material into a clear form, to refining and revising the musical material to fulfil the aim of creating a full 30-minute musical performance. This article examines features of learning in these creative music-making practices. This type of learning happens through collaborative creation where the actual doing becomes the learning process (Folkestad, 2012). Requisite to this kind of creative collaboration is, according to Sawyer and Dezutter (2009), that everyone contributes equally. As seen in this study, the contributions of the participants were equally important, but also different depending on the focus and type of their participation.

The relationship between the different modes of reflection-in-musicking described in the results section requires further examination. These modes seemed to permeate the creative practice. The participants collaboratively combined artistic production techniques, such as the trombone multiphonic technique, with aesthetic knowing derived from their shared experience to create *Northern lights music*, illustrated in the vignette in the introduction of this article. By describing how these modes interact, we can draw parallels to Dewey's understanding of knowledge as fundamental to the creation of art. Johnson (2011) cites Dewey thus:

It is not just enough to say that artistic making is more a knowing how than it is a knowing that. The reason this is not enough is that, as Dewey argued, all knowing is a form of knowing how, insofar as it is a matter of reconfiguring experience for the deepening of meaning. (p. 150)

When the pupil participants tested out possible chords for an arrangement by playing them, they related to aesthetic knowledge in flux with artistic knowledge about how these chords could be combined. Experiential learning is, in this study, also about developing an understanding of how such qualities could be produced. The pupils structured the emerging musical material in order to propose something that appeared meaningful to them in that particular context. It was knowledge rooted in experience, embedded in the participants' relationships with the musical material, their newly established community of practice, and the development of reflection-in-musicking.

Their reflection linked existing knowledge and listening skills with the ability to recognise particular cues in the musical material. This stretched the participants' knowledge to include new ways of creating musical material. In musicking activities, they interacted

with the new musical material through what Schön (1987, p. 40) calls reflective conversations. ‘Composition’ is thus seen as a complex and relational activity. Replacing reflection-in-action with reflection-in-musicking derived from Small’s (1998) term *musicking*, the modes of reflection-in-musicking function as “multi-levelled set of dynamic relationships situated in sonic, social and physical spaces” (Odendaal et al., 2014, p. 165). According to Small (1998, p. 55), there is a relationship between the knower and the known, and in terms of reflection-in-musicking, this relationship constitutes what appears as meaningful for the participants. Values are situated in our relationships with a cultural community, as, for example, in expressions of self-identity (Bruner, 1990, p. 29). Led by a more knowledgeable other (Vygotsky, 1978), the participants were *exposed to* and *immersed in* (Schön, 1987, p. 38) a culture of existing musical material, techniques, and ways of thinking providing “bridges between familiar skills or information and those needed to solve new problems” (Rogoff 1990, p. 66).

The second aim of the article is to understand a kind of ‘intuition’ or ‘sense’ that seems to support the development of musical material. The shaping of structure and form in the new musical material was earlier defined as development of reflection-in-musicking involving a relationship to the listening sample from *Das Rheingold* described above. However, in a stimulated recall session in the final focus group interview a few weeks after the project, the pupils expressed surprise over these resemblances when they listened to their own music. This leads toward questions about how learning and reflection-in-musicking is related to intuitive action. The important attributes of the reflection-in-action that Schön (1987) identifies build on categories of *knowing-in-action*. When we encounter surprising experiences requiring on-the-spot experimentation, we start to critically question assumptions stemming from our repertoire of knowledge. Following Schön (1983, 1987) and Small (1998), we could regard intuitive responses to a situation as engaging in a learning process of reflection-in-musicking. When the participants collaborate in musicking interactions; responding to and creating new musical material, as described in the observations and interviews of this study, they also engage in a reflection process where thought and action intertwine. The ‘feeling’ of doing the right thing, which could be characterized as an ‘intuitive sense’ supporting the creative practice, is a form of reflection-in-musicking where previous knowledge, skills and experience are engaged simultaneously.

The creation of musical material relates to different types of structures. For example, the product intention (Webster, 1990) in this project was defined both by external and internal agents. The different aims and preferences of the social, cultural, institutional, and even political levels of influence had an impact on decisions made in the project. Methodological choices made by the initiators of the project, such as the idea of connecting science and arts, led to the theme of the opera, *Aurora borealis*. The musical style and genre selected, ‘opera’, built expectations for the product as a culturally situated term. It also

raised questions among the participants of how the musical material could and should be shaped to meet the aesthetic standards of an 'opera', which built a relationship to a genre they did not normally meet in their everyday music experiences.

At the same time, there is evidence that the multiple frames of this project concurred to establish an environment that allowed each participant to feel that they were able to promote, learn and develop personal agency as musicking co-constructors in the creative practice. The processes of invention, contextualisation and revision also represent reflection-in-musicking on an individual level. Recognising and appreciating the qualities of good design were an important part of the learning process (Schön, 1987, p. 102). But it is clear that such judgements, as reflection-in-musicking, happened within what Burnard (2012c) describes as a particular socio-historical field. Each participant related individually to a culturally situated social and contextual understanding of genre qualities; they developed and expanded their repertoire (Schön, 1983) or personal inner musical library (Folkestad, 1996, 2012) when they participated in a community of 'musickers'. Consequently, this illustrates how complex and multifaceted internalised reflection-in-musicking building on a repertoire of experience and knowing can be. When it is not reflected *on*, the tacit dimension of aesthetic reflection-in-musicking could be seen as evident in the musical discourse, in the forms and structures of the music produced, as Barrett (1996) found in her research.

My role as an interviewing researcher may have caused a change in the reflection-*on*-musicking. Distinguishing reflection-*in*-action from reflection-*on*-action has epistemological implications in Schön's (1983, 1987) theories. Would the recognition of the professional composer's role as a critical voice have been so explicitly reflected upon by the music composition group members if this had not been discussed in the interviews? It is likely that the interviews spurred a verbalisation of certain aspects of reflection-in-action that may have influenced the practices observed. This could form a potential departure point for further discussion in future research on reflection-in-musicking in creative practices.

Concluding remarks

Developing reflection-in-musicking in creative practices is about each individual contributing with their socially and culturally constituted knowledge and experience. An important feature in this process is to be able to critically revise your own and your collaborators' ideas through aesthetic, artistic and structural evaluations of the creative material under development throughout the process. Facilitating this aesthetic, artistic and structural reflection-in-musicking can, as a consequence of this study, be considered an important pedagogical tool in creative practice.

About the author

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