

# “Sounds for Mortal Ear” for three Voices and Glass harp (2022)

## *Attentiveness in action*

On the workshop and concert at the SENSE-Workshop in Bergen, 15. November 2022

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*The aim of the workshop* was to explore, share and discuss the possibilities and obstacles of an art-integrative science education. The workshop was three-fold: first an introduction to how I have worked (phenomenologically) with composing the piece *Sounds for Mortal Ear*, second the performance of the work, and third a group and plenary reflection on the STEAM opportunities.

*The aim of the introduction* was to suggest a specific STEAM methodology, where art (in this case music) is equal to science (in this case physics) from the very beginning of the creative-educational exploration process.

*The aim of the concert* was twofold:

- First, to create and discuss an “art-science performance”: By *create* I mean combining a (predeveloped) composition with more improvised elements. By *discuss* I mean reflecting on the possibilities of learning from joint creation by various participants.
- Second, to connect composer, performer and physicist in an integrative learning process, where the borders between *knowledge creation* and (artistic) *performance* is erased.

I will now take you through the five steps of the process, what I refer to as a STEAM methodology, from the starting point in listening to the crystal glass, via the creation and performing of the piece to the reflections on the educational aspects the day after the concert.

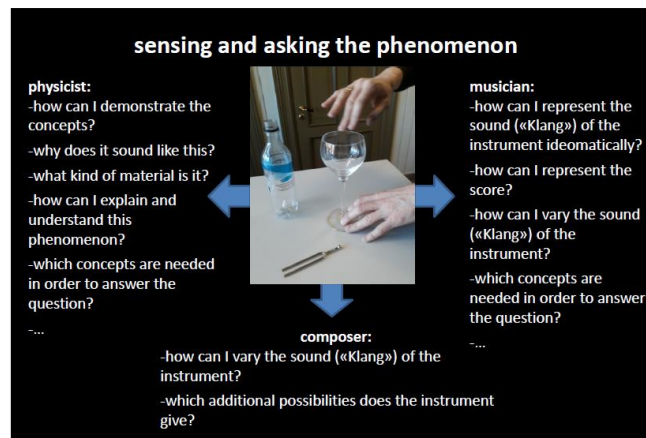
### Step I. The starting point



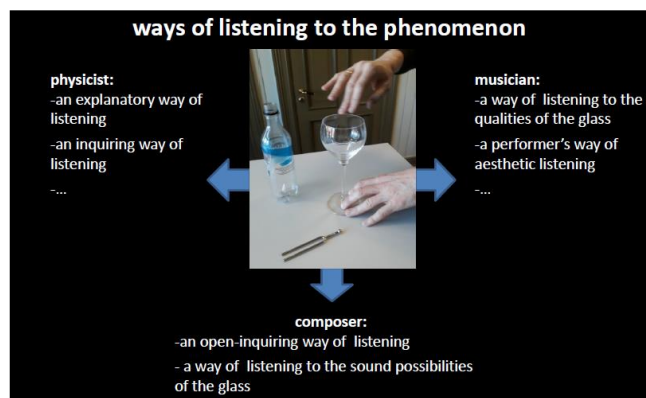
I have chosen the sound of a crystal glass (produced by rubbing the finger on the rim of the glass) because I regard the sound as a phenomenon that potentially integrates physics and music. Attentive listening to the sound is an exercise in first, letting the phenomenon speak, and second, allowing for a reflection on how our ears are guided by (conscious/unconscious) intensions.

## Step II. Introducing physics, music, and composition

As a next step, I compare the sound according to three different intensions: The *physicist/physics* teacher, the *musician* and the *composer* will all three sense the sound differently and they will create three different ways of “asking” the phenomenon:



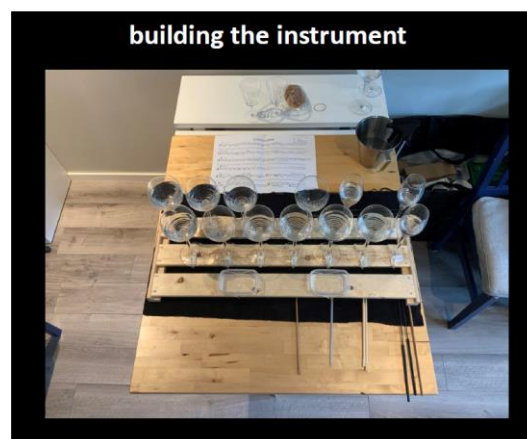
Three different intentions relate further to three modes of listening: the *physicist/physics* teacher, the *musician* and the *composer* will all three listen differently to the sounding phenomenon:



## Step III: Creating expression (the composition steps)

After having developed the three relations to the sounding phenomenon, the next step is twofold:

- (i) Developing an instrument from the glasses (a Glass harp)



(ii) Writing the score (for three voices and glass harp)



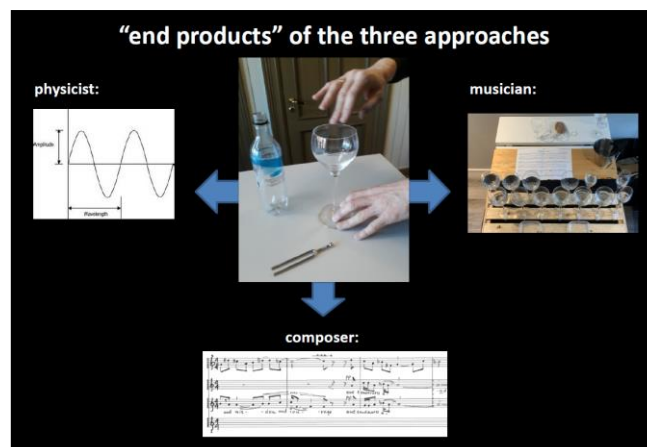
**Step IV: Performing/listening to the composition**

In a conventional setting, the performance of *Sounds for Mortal Ear* (in Tårnsalen, University of Bergen) is regarded as the end point of the creative process: An audience listen to this piece, performed by the musicians at the concert.

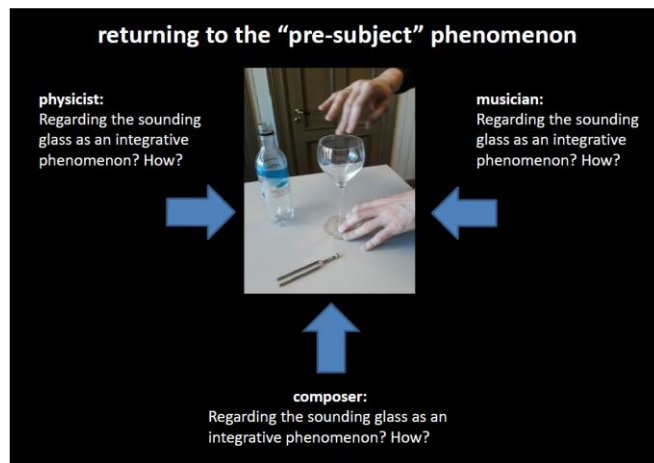


**Step V: Reflecting on/researching the concert in terms of joint learning**

(i) As a phenomenologist, I would ask: How to ensure that the “end products” of the activities of the physics teacher, the musicians and the composer are re-integrated?



This part involves methods for documenting and analysing, creating mutual arenas for analysing the learning process (mutual learning = mutual analysis and reflection), as well as communicating the results. The idea is that we now should “return to the things themselves” (Husserl), in this case to the sounding glass in its *predisciplinary appearance*:



(ii) **Resonances** in groups and plenary after the concert, the third part of this workshop, gave the participants the possibility to share the experiences with listening to the music and discuss potential STEAM opportunities. Two out of several of the discussion questions for the reflection were:

- How to challenge the subject-specific way of listening; as a science/physics teacher, as a music teacher?
- What can the science/physics teacher and the art/music teacher learn from each other by choosing, experiencing and reflecting on common themes/phenomena?

One of the groups noted as follows:

**Q1 Through the concert - what resonated with you?** What resonated with me was the space - the overall - the *soul space*, but also space around me. And as the concert moved along, there were moments when this resonance touched to the point of answer in me – a tear, a smile.

**Q2 With what ear did you listen – physicists, composers etc.?** The air (ear) I listened with was the air (ear) of my soul – mainly – throughout. And at times the ear was in and out listening more to particulars; movements of tones among tones, movements of hands among tones, movements of voice – of words, of myself.

**Q3 Sharing of experiences? Edwin: I compose, but leave it is all up to the audience what they hear**

*Pers 1* ... without me it would not be... *Pers 2* ... it did not resonate, I was disappointed – could enjoy the handcraft of it. *Pers 3* I was surprised by the room, the sound in a wooden room. *Pers 4* ... it was like a choral, atmospheric soundscape.

**Q3 The “bridge question” connecting science and art - sharing of thoughts in plenary**

- ... my ears were full of (visioning?) = (it’s like to) listen with your bones = (it’s like) expanding the sensing
- ... moving – how the sounds came together – resonances = (it’s like) water
- ... will you destroy the music (by talking about it) – how do we overcome this...
- ... different resonances in different parts of me – volumes of myself...
- ... outcome oriented vs. being in an aesthetic experience / alignment attunement – how do you take those principles from aesthetic experience (and make them fruitful for science)
- ... (the very) high tones – low tones – embodied experience of them
- ... after the concert, the hands-on experience when the audience came up to the stage and tried. I was thinking so what for education? How could we use a similar mode there?
- ... my writing (Q1) reflects my *soul state*.

- ... was surprised to sit down – (felt) free – (could if I wanted) fall asleep = (it is a) freedom contract. Listening – individual experience – left free – in its (the concert's) constrained set up.
- ... the ear of an educator; how I could use this with my students – engaging – could raise many questions!
- ... the room = (how to) describe the space for someone with visual impairment.
- ... could give prisms out (to see what was happening in the glasses) = (it would give you an) ecology of knowing.
- ... (what struck me) was how highest form of simplicity and complexity comes together in this piece.
- ... (where science and art came together for me was in the moment the singer) poured the water in the glass. It combines through surprise. (This moment was where it came together.)
- ... we seem to over-evaluate the digital nature – we still can and want to put hands onto the glass.

As a reflection on these reflections, and on the workshop as a whole, I suggest to work both *concrete* and *conceptual* when developing the ideas of STEAM education further: To specify the relation between STEM, STEAM and SENSE.STEAM should in some way or the other relate to concrete projects and practical attempts to join art *and* science in education (not art *into* science education). In addition, there is a need for (new or additional) conceptualizing rather than merely attempting to give STEAM a content, letter by letter. During the ending session/reflection of the Bergen workshop, I realized how much more applicable it is to talk about A as *attentiveness* compared to A as *art*. It is easier to communicate – and avoiding the question what we mean my art, a discussing that is in danger of derailing the development of sound STEAM practices. The skill of attentiveness is common for the fields of science (think of the accurate observations of scientists like Galilei and Darwin!), pedagogy (listening to each individual pupil with his/her genuine learning requirement) and art and music (training observation skills in the visual arts, listening ability as a musician).

As the subtitle to this summary of the Bergen STEAM workshop indicates, I use *attentiveness in action* to characterize a common thread throughout the process: letting the phenomenon of sound from a crystal glass unfold, composing the piece *Sounds for Mortal Ear*, performing and listening to the piece at the concert and, finally, discussing potential STEAM opportunities. In all these stages the ability to listen attentively takes on another form, but it is still attentive listening. When relating STEAM to SENSE.STEAM, attentiveness in action indicates a way of understanding the world which is grounded in refined sense experiences.

(E.Ø, Edinburgh, 3. November 2023)