Regarding the first and last feedback points, then the first iteration of the evolutionary interaction will be based on pre-rendered sample packs (see below), so there will not be actual evolution of genes and rendering to sonic phenotypes. Further iteration might require more computationally capable hardware, such as the Jetson Nano (which IMS have relied on), perhaps integrated with Bela.

The second feedback point concerns the use of two soft membrane potentiometers and I may abandon that concept, and rather opt for the bendable sensor, which might be placed on the top of the robot's head, as the tail depicted on one of the sketches. Further button interaction might also be introduced; see also more on that below.

The carton-box might be reinforced with solid plastic foam, which electrical appliances commonly are shipped in.

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Adding here to the initial description attached above, so the those notes stand out (while a more coherent reading might come out of merging this text with the initial description):

The IMS can be viewed just as much as a toy as a musical instrument. The instrument should encourage playfulness. It should be discovered within the context of playful activities. Toys are the purest things for play, excuses for playing, embodyments of play, instruments for playing (Sicart 2014, ch. 3) and while this IMS is debatably created as a "toy", then the design will aim at being playful, which could be described as a toy design, catering to the playful attitude of humans able to toy around with most objects. As the instrument is intended to encourage musical activities that are transient and/or frivolous, allowing some expressivity without difficulty (McDermott, Gifford, et al. 2013), then it is important that it makes sound immediately, simply and reliably, adhering to the "instant music, subtlety later" principle for designing computer music controllers (Cook 2009).

While the IMS aims to not discourage beginners and reward effort it should also remain non-trivial indefinitely (McDermott, Gifford, et al. 2013), it should allow frivolous musical activities while also offering increased difficulty with more control. One way is to enable "beginners to carry out harmonic tasks in composition [and] performance … relatively easily" where "tonal harmony is a demanding area of music theory, and harmonic concepts can be difficult to learn, particularly for those who do not play an instrument." (Holland et al. 2013). Just as interfaces in general can be designed to "simplify and enable a variety of complex tasks, instruments exist to simplify and enable the act of music generation" (Wallis et al. 2013). An approach is to map gestures to scales, to avoid perceivably wrong notes, like (Eno and Chilvers 2009) offer with "Bloom", another is the spatial mapping used by Harmony Space (Bouwer, Holland, and Dalgleish 2013). The two dimensional mapping of pitches used by Hex Player (Milne et al. 2011) and Hex (Prechtl 2012) is closer to the approach aimed for by Robiohed, as previously discussed, where the interaction offers sonic navigation of tuning lattices (Narushima 2017, ch. 6). This "tuning system embedded in the instrument's design" (McDermott, Gifford, et al. 2013) will represent the main design constraint of the system, defining a space for potential expression (Magnusson 2010). At the same time this embedding can make the instrument a vehicle of theory, becoming a piece in itself (Magnusson 2019, ch. 14).

Even though a core design goal is to promote easy melodic playability, a parallel design premise is to “... support attainment of increasingly complex or desirable goals through sustained practice” (Gurevich 2014) by offering a mapping between gesture and sound which, while easy to begin exploring, will at the same time offer further exploration of nuanced interaction, where variations in the intensity of interaction produce varied sonic results. This will require the management of complexity by “balancing instrument expressivity versus difficulty” (Pardue, McPherson, and Overholt 2018):

Interaction attributes that may require practice to master include the different speeds at which the instrument can be rolled to attain different output, where slow rolling results in long durations and faster rolling produces shorter sounds with added reverb, for a speculated harp-like effect. This will entail exploration of the sampling and timbre stretching capabilities of Pure Data (Puckette 2007). Pressing and holding a button for pausing the sonic navigation, for silent arrival at discontinuous lattice locations, and other buttons for varying chord (tetronome) layouts or even arpeggios, may also require some mastery.

The design will also explore the value of ambiguity (Gaver, Beaver, and Benford 2003) by containing the hidden affordances (Zappi and McPherson 2014) previously discussed. Those will increase the difficulty of discovering all aspects of the interaction while also attempting to offer one possible solution to the evolutionary interface problems discussed in (McDermott, Sherry, and O’Reilly 2013) with embodied interaction. This possibly desirable ambiguity and difficulty is interesting to compare to the more general design advice to provide a good conceptual model (Norman 2002, ch. 1). Initial iteration of the interaction will not offer actual evolution of genes with sonic-phenotype expression, but rather selection within a predefined set of sample based instruments (rendered from an external evolutionary process), so the implementation will be based on mostly-pure Pure Data. Results from this iteration may be viewed as interacting with a Magic 8 Ball.

The play to be encouraged by the instrument will hopefully lead to states of flow (Csikszentmihalyi 1990), but that state is “most likely to occur when an individual is performing a challenging task that is just within the reach of their ability … [and] not always … pleasurable in the conventional sense of the word” (Bateson and Martin 2013, ch. 5).

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