NYUx - Theories of Media and Technology
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Creation 1 - Beat conversations

My project for this uses processing.js, as used in the Creative Coding course. This time I have published it myself, without using the openprocessing.org platform. The project is very much a draft / proof of concept and does not yet have a good interface! (I'll post some basic user notes shortly on project page)

It is available at: https://phhu.org/beat-conv .
The source code is available at: https://github.com/phhu/beat-conv

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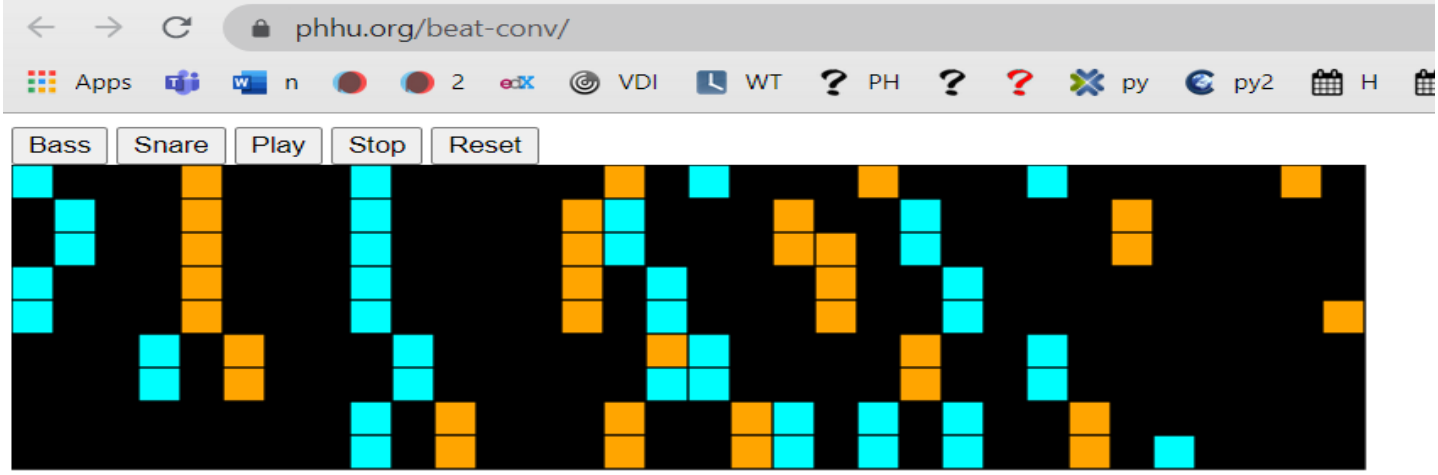
In my synthesis ("Me Want Cookie: Noisy external inputs as a constructive element in creative cybernetic conversation"), I was interested in the idea of reflexivity in Cybernetics, and I developed this into an idea that rather than just being about communication of a (pre-established) message, conversation can be understood as a process by which a message can develop: hence it is potentially a creative process. In such a process, a wondered if noise would always be an undesirable thing, or if rather it's sometimes a necessary element to successful conversations. I also looked at the importance of proprioception, or self-monitoring, especially when dealing with input from without.

To develop this, I decided it would be interested to create a very basic conversation between two agents, a user and a computer-agent. I considered various forms of message, looking for ones that are simple and easily understood. The most obvious candidates were words (sentences, or short poems) and musical phrases. Both of these are good examples of new media: they can be represented numerically, and manipulated programmatically. Another possibllity briefly considered was the development of abstract visuals: this was rejected owing to the relative complexity of representing he messages involved.

I settled on musical phrases, and decided that a simple drum beat, with bass drum and snare drum, would be the most simple message to work with: it's easily digitised, can use discrete time units, and requires special equipment other than a keyboard. In contrast, using words would require typing or speech recognition.

In the sketch, when you press play, a basic 8 beat drum pattern is played by the computer, and visualised. IN the following two bars, the high-hat continues to keep time, and a user can play bass and snare drums (using space and enter keys respectively), trying to imitate or develop the rhythm that was just heard. After this, the computer will play back the rhythm just played by the user, but with small random mutation of one sound.



The cycle repeats, with the idea being to see if an interested rhythm will develop.
In principle, this pattern should allow a conversation where a rhythm changes and potentially becomes more interesting: the sketch should function like a mirror for the rhythms of the user, allowing the user self-perception of his own rhythmic accuracy, while also introducing small variations (random noise), which would keep the user engaged, trying to mimic - and also develop - the variations suggested by the computer.

While all of these principles are expressed in the sketch, in practice there are various difficulties. Firstly, the discrete time used (32 units of time per 2 bars, or 8 subdivisions per beat) mean that recordings of the user are sometimes inaccurate: a drum can be "digitised" too late or early, possibly losing the feel of the beat. This is a problem common to much low resolution digitisation, and is in principle soluable (with finer resolution).

Secondly, the random variations made by the computer are a little arbitrary, and show no sensitivity to the previous performance of the user. When talking to young children, for example, adults will often repeat phrases until a child understands them, and once its established that the child has understood, move on to a more complex idea, a kind of cybernetic feedback mechanism, which if it works well, will make learning happen at an optimal rate. This is in principle soluable in this sketch: we just need a comparison function to establish how well the user imitated the rhythm give.

Thirdly, the mutations produced by the computer are arbitrary, and lack musical sensitivity. This is perhaps harder to address, and may require a more expressive format of musical representation to solve. One solution might be to define some common rhythmic alterations, and let the copmuter choose one at random.

In summary, then, I have found making this sketch to be more challenging that I expected. It gives a very rough proof of concept of the idea of cybernetic conversation as a developmental system for ideas, and when I use it I think it could be developed as a format to produce something absorbing. As it is at the moment, it would need further development,.

If I reflect on the last paragraph of my synthesis....

> *I would like to create a conversational media system, which allows the iterative development of an idea (a meme perhaps, in Dawkin's original sense) to some better state than what was originally input. An idea should be allowed to flow between an agent's mind and another, perhaps artificial, mind, encouraging iteration and improvement by way of feedback. It should integrate external inputs, or noise, as a means of making this progress happens. It should not just be a passive interface. It should not be solely about transmission of an existing idea, but about a process of development. Perhaps both imitation and creation are necessary in such a system. If a system can act as a mirror for our own thoughts, perhaps this mirror can also modulate and challenge the reflection it sends back. Another metaphor might be the designer's sketchbook. Or a good cafe.*

...I think that in principle I have just about met the requirements: there is definitley iteration and development, and there are just about two minds (user and computer, the latter VERY primitive). There is feedback (the user hears their own input played back), and both creative and imitative processes are at work. The major shortcomings, it terms of creating a cybernetic conversation, are in terms of the sensitivity of the computer to the quality of the user's input. This is perhaps an area I need to research more.