FINAL PROJECT WORKSHEET

Project Title (1-25 words)

The "Bringing it all together patch" (Steef van Winkel 2016)

Artist's Statement (20-200 words)

Wanted to create something musical. It's a start towards a project where I can input musical ideas and automate some creation of variations, harmonizations, composition, structuring etc. This particular patch obviously doesn't do all that but it does analysis of musical input; repetitions of musical input in somewhat harmonic ways; random playback of pieces of the musical input. Additionally the patch contains some experiments with gen~: 1 around the creation of sound in a somewhat feature rich oscillator and 2. around doing rhyhtmic timing within gen~. Bring all that together and you have this final project.

Parts List

Quantity	*Item*	*Description*	*Approx. price each*
1	computer	I use a macbook pro from 2014 and am currently running OSX el capitan.	1800 usd
1	Keith McMillen Qunexus	Small portable midi keyboard that connects to USB.	120 usd
1	pair of headphones	I used different ones e.g. beyerdynamic dt770	130 usd

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Technical Description (20-200 words)

There are 4 key ideas. The first idea is around note and note motif analysis. The abstraction 'svw.AnalyzeNoteMotif' first analyzes individual incoming notes, then puts them in a list (the motif) and then analysis the motif as a whole. The analysis comprises note duration, relative note starting points, and to which scales/keys they belong. The latter is actually not used here but useful for future development.
The second idea is the 'svw.IntervalDelaySynth'. The user can select how many voice there are, each of which will be delayed and starting at an interval offset that can be selected by the user. As such you can get rhythmic and harmonic interactions between what is played live, the repitions and between the repetitions themselves.
The third idea is the section where the patch randomly plays prior motifs (p PlayRandomMelody). The user can choose the play speed.
The fourth/final key idea is the polyrhythm area which has 2 percussive elements which are synced to a bpm (which is derived from the svw.IntervalDelaySynth settings) and the user can select meters for each to create polyrhythms.
Finally it all comes together in the (beap) mixer and then some effects are added to make it all gell together.

Credits (10-1000 words)

* Borrowed envelope from gen~.fm_bells example included with max/msp reference documentation. Used in LeftRightRhythmPerc~.

* Used 'p DelayAnythingWithAnyLength' from pipe.maxhelp and panning.maxpat by Iain Mott and Karlheinz Essl (1997) in svw.InternalDelayPanSynth.

* Thanks to Matthew Wright from whom I'm sure I've stolen a lot :)

Future Work

The goal is to expand on several elements in this patch. E.g. the note analysis currently has an incomplete scale library and I intend to complete it or at least add the most common ones. Then I will be able to scale analysis done on the motifs. Goal is to understand which is the best matching key, where on the key are the motif notes positioned and which chords would work well. That way the patch can automatically choose chords to accompany melodies with. Further I would like to have the autonomous parts be able to invert and revert notelists and be restricted to the scale or deliberately non-compliant to the scale. That way the melodic repetitions become more interesting. Finally I would also like to build an ability to automatically structure the elements, i.e. understand structures such as verse-chorus-verse-chorus and be able to build repetitions/variations based on structure as well as tension and release based on the structure. I.e. a lot of ideas which will take a lot of time and effort :)

Self-assessment

	Evaluation	*Comparison to intention*
Art / aesthetics of result	Overall I'm pretty happy with the result. I learned something from each of the experiments and they came together pretty well. It's also very interactive and the user gets different results every time. I would have liked the percussive elements to work better in the overall piece and the work can use some sort of narrative build and development which currently isn't built in -- although the user could probably achieve it by controlling parameters.	I find it quite pleasing; repeating melodic motifs at different intervals can have great effects and repeating random motifs in random orders can give interesting results. It does get a little boring after a while though - so it needs more variation.
Max Programming	For one, I am not a programmer, and don't have a CS degree or background. I think that was most obvious when I wanted to rank a list of elements by their frequency and then output the top matches. That took me an enourmous amount of time and I have a sense that experienced coders would have been able to do that much more elegantly. Further, I wanted to clean up more abstractions - i.e. create more help patches (I have 4 now) and more comments to clarify data types for inlets and outlets. What's good about this project is that I found solutions for most if not all problems. E.g. I was able to rank although not elegantly, I fixed probably 5-10 big bugs each of which took me a long time and a lot of research. So I'm very pleased that I manage to resolve what was needed and get to a decent end result.	Yes, once I had an idea about what I wanted to achieve, I was able to prototype it pretty quickly and when I got stuck (which happened many times) I managed to find solutions that achieved the results I was looking for in the end
Implementation of additional project elements (if any)	Nothing besides patches, abstractions etc. No audio, video or other media files. I included a few help patches (4) and think those are pretty useful and descriptive. Would have liked to create more i.e. for the remaining abstractions.	I didn't know how to make an " official" help patch for a gen abstraction. Other than that it was pretty straightforward.

Is there anything else you'd like people to know about this project?

If anyone reads this - I'd be super happy to hear feedback. Do people like it? Not like it? Is it useful, did it give them new ideas? Do they have tips on doing certain tasks more elegantly? Do they have ideas on how to improve?