Sonic Structures Submission 1: single-press alert

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1 Introduction

Flexi-digit approached me last week with a particular challenge: they have a button. I've invented a context/scenario in which the button to be used corresponds to a flat number of a traditional Edinburgh residential tenement building and have attempted to design convincing sounds that communicate the nature of the party requesting a particular resident's permission to enter, and when.

2 Background Research

As part of my research, I ventured out onto the streets of Edinburgh and started pressing buzzers (as part of my part-time job as a delivery driver). Due to the catchment area of the job, I was confined to the relatively old, dense streets of Central and West Edinburgh. My findings are as follows:

- Approximately 70% of buzzers I encountered do not make any sound at all upon button press. It is unclear in each individual case whether this is due to design, or a electrical/mechanical fault of the system. My only feedback that the button worked was the eventual response of the resident.

- One particularly popular brand of door entry system emits a 3-note repeating pattern, whose duration is approximately 5 seconds upon

button-press (a field example can be heard here). It's irrelevant to the system how hard the button is pressed, or indeed the duration of the button press - these have no bearing on loudness or duration. The tone was recognizably 'digital', and one whose bit-depth appeared very sparse by today's standards (possibly 8-bit or lower).

- Another type of buzzer, evidently older than the one above, emits a much harsher single noted sawtooth-wave based sound. Its duration does depend on how long the button is pressed - it stops once the button is released.

3 Aims

My main aim in this submission was to emit a sound upon pressing a button in Max/MSP. Other aims, somewhat secondary to this one, included roughly matching the frequency range with that of field recordings, including more notes in the sound for a more modern/pleasant feel, the option to shorten the sound note by note via button release (a subtle yet useful broadening of functionality for the user), varying the loudness in response to differing context e.g. pressure of button press, 'localized' location of unit (i.e. height of unit on wall) as well as 'global' location (i.e. a buzzer out in Corstorphine's suburbs does not need to be as loud as one in a busy industrial estate in Saughton). In the previous section I mentioned how a door buzzer was evidently older - whilst it may be obvious what this means in a visual sense (e.g. age-related marks on unit), one of the more ambitious intentions of this submission was to modernize what I believed to be a dated range of sounds emitted by all door entry systems I came across in the last week. Other more farfetched aims (but aspects of a door buzzer I believe are not being realised in current systems) include loudness variation with time of day, and varying the output frequency range and loudness (to an extent) with the age of user (i.e. the older they are, the louder and more mid-pitched the sound could be).

4 The Max/MSP Patch

The patch is written and implemented using Max/MSP 7 2014 (by Cycling74). No third-party components were used, though the particular set

of ratios and amplitudes associated with the synthesis of a typical bell were taken from this article `<http://www.soundonsound.com/sos/aug02/articles/synthsecrets0802.asp>`.

5   Conclusions

The main aim (at least, as set out by me in the previous section) I feel I achieved. An attempt was also made to ensure the sound was pleasant and inviting. Additional functionality was added to give the user the option of controlling the duration of the sound emitted by releasing the door bell (or conversely, the intuitive option of lengthening the duration by holding the button down). Even with my severely limited knowledge of Max/MSP, and the timescales involved, my bell exhibits similar behaviour to the majority of door entry systems in Edinburgh today, and I believe it wouldn't take a professional sound designer too long to implement a system with most, if not all, of the aims/ideas set out in the previous section.

6   What Next?

- With more time, I would collect more field recordings of door entry systems such that conclusions drawn from tones, loudnesses and frequency ranges of buzzers in Edinburgh could be reasonably extracted from an adequately large enough sample.

- Whilst the initial sound brought about by a flat number's button being pressed is vital as feedback for the user, also essential for the effectiveness of a door entry system is appropriate auditory feedback for the resident whose attention is being requested, as well as the follow-up 'accept' or 'reject' sounds. I would spend time investigating these sounds in a similar fashion.