

“Singing the Medication Label”

A performance inspired by helping people with dementia to remember new information using computer-generated music

5 minute short documentary film “Singing the Medication Label” here:

<https://vimeo.com/84024362>



Far Left: Alexis Kirke; Far Right: Doreen Abbott



Most of us are irritated when our morning alarm goes off. Imagine a chamber performance for cello and mezzo soprano which actually starts with a mobile phone alarm. This is not just any alarm – it is the tune of a short jingle that composer Alexis Kirke has written to the libretto of a daily todo list and will open the performance of ‘Remember a Day’ on February 7th 2014 at Peninsula Arts Contemporary Music Festival at Plymouth University, UK. Alexis is a member of the Interdisciplinary Centre for Computer Music Research at the University, and also a member of Plymouth University Dementia Group (PUDG). He had been wondering for a while if the seemingly insidious jingle musical form could be utilized to help people with Alzheimer’s remember new information. There has been plenty of research into how familiar music can be used to bring the brains of people with Alzheimer’s “back to life”¹. However Alexis could only find two papers on the use of new music to create memories in those with Alzheimer’s and dementia. One of these was scientifically excellent but artistically limited² and the other has a greater artistic understanding, but was limited to a study of one individual³.



So a performance embedded in this topic would not only be an artistic exploration of the idea of ‘memory jingles’ for daily life for people with dementia, but also a way of encouraging new and more artistically aware scientific studies on the subject. “We ourselves are considering pursuing this as a longer term collaborative scientific project here at the ICCMR,” says Alexis, “but at this stage things are very much artistic rather than scientific.” As well as encouraging a more artistic approach, Alexis is introducing algorithms to the mix. The Interdisciplinary Centre for Computer Music Research are

known internationally for their expertise in algorithmic composition, and Alexis has started developing simple prototype algorithms: one for text and one for mobile phone numbers.

By replacing each digit in a phone number by a pitch, and using note rhythms to identify digit-groupings, he creates what he calls 'Memory Ringtones'. These can be placed on a mobile phone and assigned to the appropriate caller. Alexis hopes that people with dementia will eventually memorise the tunes of their most frequent (and possibly important) callers. And then from the tunes, deduce the numbers: since each pitch in the octave represents a unique digit. The lowest note (middle C) is 0, the next note (D) is 1, the next (E) is 2, and so forth. This algorithm has already been coded and used to generate some musical elements for the 'Remember a Day' performance.

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For words (rather than numbers) the algorithm is more complex. "The system works in two stages", explains Alexis. "First it attempts to estimate the syllables and thus the rhythmic content of the words. This is not a trivial task with the English language. So we've used a simplified approximate approach based on consonant-vowel transitions. As a composer and co-librettist I then tweak the program code to create what I consider a 'catchy' rhythm. Multiple approaches were attempted for pitch assignment. The most effective seemed to be assigning pitches based on the vowel in the syllable. So a, e, i, o, u (and y) have pitches assigned based on their frequency in the English spoken language and the dictionary."

Through Plymouth University Dementia Group Alexis met Doreen Abbott at the Alzheimer's Society 'Singing for the Brain' music therapy groups. Doreen provided him with a description of one of her medications and her daily todo list. Alexis threw his and a friend's mobile numbers into the list and began composing and writing code. Alexis says of his 15 minute piece for cello and mezzo soprano that "the first movement is based mainly around Doreen's daily to-do list. I composed music for that by hand in as simple and catchy a way as possible. The second movement introduces her medication memory jingle. This jingle was composed using the algorithms. The final movement starts with audience members calling a mobile phone with two of the numbers embedded. The mezzo sings along and a 'ringtone fugue' or 'ringtone round' of sorts is initiated." Alexis has kept the piece simple and repetitive, so it is in itself a form of 'training tune', "while trying to keep it musically interesting."

Alexis foresees more catchy and rhythmically accurate computer systems which could perhaps be linked to alarms on phones or smart watches. "Play the start of a familiar tune to someone, and the rest of it normally carries on in their head," he says. "Also I've experimented with changing pitch and tempo of memory ringtones to represent the age and gender of the caller." So as well as providing engagement opportunities and new inspiration to his collaborators with dementia, Alexis hopes this composition may inspire more research into this potentially fruitful area.

"Remember a Day" is composed by Alexis Kirke (www.alexiskirke.com) in collaboration with Doreen Abbott. It was commissioned by Peninsula Arts Contemporary Music Festival at Plymouth University and developed at the Interdisciplinary Centre for Computer Music Research (<http://cmr.soc.plymouth.ac.uk>) with support from Plymouth University Dementia Group, and the Alzheimer's Society, Plymouth. It premieres 8pm Friday 7th February 2014 in the Upper Theatre, Sherwell Centre, Plymouth University, Plymouth. Peninsula Arts Contemporary Music Festival 2014 "Thinking Music" runs from 7th Feb to the 9th Feb. For details of other performances see www.pacmf.co.uk

References

1. "Alive Inside" <http://www.youtube.com/watch?v=fyZQf0p73QM>

2. Simmons-Stern NR, Deason RG, Brandler BJ, Frustace BS, O'Connor MK, Ally BA, Budson AE, *Music-based memory enhancement in Alzheimer's disease: promise and limitations*, *Neuropsychologia*. 2012 Dec;50(14):3295-303.

3. Moussard A, Bigand E, Belleville S, Peretz I, *Music as an aid to learn new verbal information in Alzheimer's disease*, *Music Perception* volume 29, issue 5, pp. 521–531.