

## NAHRAN RHANNAMZ<sup>1</sup>: LANGUAGE EVOLUTION IN AN ONLINE ZOMBIE APOCALYPSE GAME

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The use of artificial languages in communication games to investigate language evolution is now commonplace. However, these games, for the most part, remain very simple and confined to the lab (Scott-Phillips & Kirby, 2010). Large online multiplayer gaming may provide a new avenue for hypothesis testing in language evolution.

Urban Dead (Davis, 2005–2016) is an html-based massively multiplayer online roleplaying zombie apocalypse game. Players are either "survivors", who try to kill zombies and stay alive, or "zombies", who try to kill survivors and eat their brains. When a survivor is killed, they become a zombie. Zombies can also come back to life. When alive, players can interact as normal with other players in the same location, using a text field. However, when a player becomes a zombie their ability to use language is restricted.

The game manipulates the input text for zombies using a set of rules which include, but are not limited to, replacing all vowels except "a" with "r" and deleting all characters other than "zhrghmna !?-.". This constrained speech is called "death rattle". As a result of these restrictions, several coded languages have emerged (e.g. Zombish and Zomese), which simply replace banned characters with combinations of allowed characters. However, another language (Zamgrh) has also emerged, which uses a phonemic orthography. Zamgrh was originally bootstrapped by knowledge of English, but has since developed its own syntax, simple morphology and phonological rules. Some of these are similar to patterns found in pidgin languages, for example the use of "nah" before a verb as negation, and pronouns show no case (e.g. "ma zambah" can be used for "I" or "me").

The lexicon of Zamgrh remains limited because of the constrained phonemic limitations. Players are much more likely to use an existing word and allow context to dictate its meaning, e.g. using "babah" (baby) to mean "little", "son", "prince", etc., which of course is facilitated by the context of the game being so small. Previously, small language populations have been hypothesised to use

more context dependent language, because in tightly knit communities people have a lot of shared knowledge (Wray & Grace, 2007; Jespon 1991). Zamgrh may help us shed light on whether context dependence is not only the result of shared knowledge, but also the result of smaller phoneme inventories allowing for less productivity in the language. Incidentally, small language populations have been found to also have smaller phonemic inventories (Hay & Bauer, 2007). Death rattle may also have implications relevant to constrained linguistic modalities (or signal-space proxies in experiments) affecting emerging linguistic structure (Little & de Boer, 2014).

There currently exists a Zamgrh dictionary, as well as a corpus containing some naturalistic zombie discourse and a small number of translated texts, including the poetry of Robert Burns (Rabar Barnz) and Beowulf. Some effort has been made to investigate the potential existence of a corpus of interactions as the language was developing, but this data is not available. However, this case study shows us that simple online games may become a useful tool for investigating mechanisms of pidginisation, linguistic bootstrapping, and conventionalisation.

<sup>1</sup>Nahran Rhannamz (*Zamgrh*): Restricted phonemes

### **Acknowledgements**

Many thanks to the participants of the Zamgrh Project on the Urban Dead wiki (<http://wiki.urbandead.com/>)

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