This is describes the program that runs Simulation 10, the “hard” bilingual micro-languages simulation.

To run the program, at the Matlab prompt (>>) type:

run\_TRACX\_biling(10000, 0.025);

where the arguments are

* total no. of words in familiarization sequence,
* language switching rate

(Note: there is a third, optional parameter that allows the program to be run again, exactly repeating the previous run.)

The familiarization sequence, biling\_seq.txt, is a sequence of 10,000 3-syllable words, half from language A, half from language B. At any point in the sequence there is a 0.025 probability of switching languages. The sequence consists of words from two micro-languages:

* Language A: All words have 1 Initial syllable, 1 Middle syllable, and 1 Final syllable drawn from syllable sets: Initial = {a,b,c}, Middle = {d,e,f}, Final = {g,h,i};
* Language B: Initial and Middle are switched.
* The following words from Alpha were not in the training set: adg, beh, cfi,
* The following words from Beta were not in the training set: dag, ebh, fci

TRACX was then tested on all possible words, i.e., 27 from each language, including the excluded words above that it had never seen. The excluded words represent one-third of all possible words.

The output of the program is sent to: Biling\_data.xls. Worksheet ‘hid’ gives TRACX’s hidden-layer representations for all of the words.

A cluster analysis incorporated in the code gives the dendrogram for the 54 words.

The results reported in the paper were put in the Results directory.

All parameters are set in set\_params.m