What does it mean to be human? For thousands of years philosophers and scientists have puzzled over the unique nature of humans and our species-specific ability to communicate through spoken language. These questions, while philosophically interesting, have direct and practical import in today’s world. CASL researcher C. Anton Rytting seeks to understand how humans learn language in order to help people both acquire a second language and decipher foreign language texts.

“The American public needs to be more multilingual,” says Rytting, a computational linguist. Rytting uses computer modeling of language to understand how beginning language learners (such as infants) find words in a continuous stream of sound. These techniques, it is hoped, can also be used to make predictions about who can acquire a second language and which language a person has the greatest aptitude to learn.

One CASL project Rytting is involved with investigates tonal languages, such as Chinese and Vietnamese. The project aims to uncover which speech mistakes made by nonnative speakers prevent listeners from understanding what’s being said. For example, a slight change in pitch can change the entire meaning of a word. Such subtleties make tonal languages particularly difficult for native English speakers.

Rytting spends most of his research time, however, on a second project that helps users make better use of Arabic speech technology. Rytting likens the project to search engines like Google, but for Arabic: If you type in the keyword speak, a linguistically aware search engine would search for other forms of the word, such as speaks and spoke. In English text, this type of search is relatively easy; however, Arabic speech includes dozens of forms of the same word, and several possible variant pronunciations for each form, making the speech search more difficult.

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—C. Anton Rytting, CASL research scientist

“...If we can develop tools to be made available to institutions [government, educational, and academic], there will be a larger pool of foreign language speakers, and they can use these tools to use their foreign language expertise more effectively.” Because these projects benefit second language learners and help us better understand the process of language learning, they are both “scientifically important and have practical import,” Rytting says. He investigates “what it means to be human while helping people. Few people get to do both in one lifetime; it’s ideal.”