

Ambiguous words probably make communicating easier

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It's a good thing some words have many meanings—ambiguous words actually make communication easier and may be an inevitable consequence of a language's evolution, according to a new SFI working paper by External Professor Ricard Sole and Pompeu Fabra University physicist Luis Seoane.

"Ambiguity is, against our intuitions, a major player in making [human language](#) so powerful," says Sole.

Words with multiple meanings are a universal feature of language—think "ticket," which could get you into a movie or make you pay a fine, depending on context. The distribution of meanings per word is thought to follow a power law, an observation linguist George Zipf attributed to a "least effort" principle: speaking clearly takes effort, but so does understanding ambiguous speech. The compromise is that some words have multiple meanings, while most don't.

To probe those ideas, Sole and Seoane built on work with BarcelonaTech researcher Ramon Ferrer i Cancho and developed a model of vocabulary networks linking words to objects. The ideal network, they argue, is one that maximizes the diversity of ideas that can be transmitted, given some balance between the effort speakers and listeners must put in to communicate. Beginning at randomly chosen points, Sole and Seoane used computer simulations to evolve vocabulary networks until they reached optimal states.

Depending on the speaker-listener balance, evolution usually produced unintelligible, single-word languages or inefficient languages with one word per object. But when speakers' and listeners' needs were perfectly balanced, optimal languages evolved that followed Zipf's power law—some ambiguous words, but mostly ones with single meanings.

"The main result is the massive importance of ambiguity in order to reach optimal communication, both in terms of least effort and in navigation on semantic networks," which describe how words can be linked together to form sentences. On those networks, ambiguous [words](#) such as "me" or "you" often serve as hubs that bridge otherwise disconnected ideas, ultimately making it possible to communicate complex thoughts.

More information: The working paper is available online: www.santafe.edu/research/worki...272f1af820a7f9f33bc/

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