ABSTRACT

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Edward (Ted) Gibson is professor of
cognitive science and principal
investigator at TedLab, the language
lab at the Massachusetts Institute of
Technology. He works on how human
language is processed, and how
language processing might affect how
languages are structured. He works
with big texts of language and with
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Traditional linguistic models of syntax and language
processing have assumed an error-free process of language
transmission. But we know that this is not the case: people
often make errors in both language production and
comprehension. This prevalence of errors has important
ramifications for models of language processing and
language structure. I first summarize some results from our
lab showing that language comprehension appears to
function as a noisy channel process, in line with Shannon’s
communication theory. In particular, comprehenders
rationally combine information about what messages are
likely to be communicated and what errors are likely to
occur. I then show (1) how a noisy channel model of
sentence acceptability better predicts acceptability data
across languages than other models; (2) how noisy channel
processing can help explain several ‘syntactic illusion’
phenomena in English; and (3) how a rational model can
explain the kinds of errors that people make in language
production, when probed with a sentence-completion
paradigm with syntactically complex materials across
languages. Overall, the pattern of results suggests that
thinking of language as primarily a tool for communication
can explain many aspects of language processing and
language structure, within and across languages.

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