Creativity through routine: The roles of form accessibility and top-down inhibition in language production and change

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The opposition between creativity and routine is often merely apparent. In this talk, we present a unified mechanistic account of how speakers generally keep extension under control, i.e., preventing overextension, e.g., how one avoids using the much more frequent form *work* to express the meaning of 'worked' (Kapatsinski, 2022). We then show how the same mechanism is responsible for certain types of creativity that have not yet received a mechanistic usage-based account.

In most models of production, the intended message activates semantic features, which then activate their associated forms in proportion to frequency We have previously shown that this naturally produces overextension of frequent forms (Harmon & Kapatsinski, 2017). Here, we discuss how these overextensions are kept in check by what we call the Negative Feedback Cycle (NFC, Kapatsinski, 2022). The forms send the activation they receive back up to semantic features with which they are associated via inhibitory links). Inhibition of a semantic feature by a form is proportional to how well the form cues that feature. At this point, intended semantic features remain activated because they are still receiving activation from the message, but unintended semantic features associated with activated forms are inhibited by them. As activation spreads back down from meanings to forms, the inhibited unintended semantics inhibit the associated forms. The NFC suppresses overextension by suppressing the production of forms with unintended meanings or connotations.

Interestingly, the same mechanism that usually prevents overextension, may also be responsible for certain types of creativity, including the formation of splinters, novel morphemes that used to be mere segment sequences. For example, *–holic* was splintered off *alcoholic* to be extended to other contexts (*workaholic, shopaholic* etc.). Because *-holic* occurred in only one context (alc) before being extended to new uses, its liberation from this context is rather mysterious. However, the NFC can generate *workaholic* when a speaker who knows *work* and *alcoholic* intends to express the meaning 'addicted to work', by suppressing the best cue to the unintended meaning 'alcohol', *#alc*. Thus, a mechanism that suppresses certain types of creativity also naturally generates creative productions.

References: • Harmon, Z. & V. Kapatsinski (2017). Putting old tools to novel uses: The role of form accessibility in semantic extension. *Cognitive Psychology* 98, 22-44. • Kapatsinski, V. (2022). Morphology in a parallel, distributed, interactive architecture of language production. *Frontiers in Artificial Intelligence* 5.