Reanalysis and limited repair parsing in neural networks

Peter beim Graben (Humboldt-Universität zu Berlin)

In his paper "Reanalysis and limited repair parsing: Leaping off the garden path", Lewis (1998) presented a computational account to Fodor & Inoue's (1994) diagnosis model for syntactic garden path theory (Frazier 1987). In my presentation I shall demonstrate how the discrete states of Lewis' (1998) symbolic repair parser can be represented by activation vectors of a neural network that are connected through heteroclinic sequences in continuous time (Rabinovich et al. 2008, beim Graben & Potthast 2012). In this picture, encountering a garden path corresponds to an undesired fixed point attractor that has to be destabilized by a bifurcation in course of diagnosis processes. Leaping off the garden path is then described by a change of the network's control parameters reflecting the syntactic processing strategy (beim Graben et al. 2004, Kiebel et al. 2009). I present a hierarchic neural network model for Lewis approach and will address several prospects regarding event-related brain potentials, automata complexity and minimalist grammars.

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