

Forgetting facts

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(PhysOrg.com) -- Researchers at two British Universities have been investigating the way in which we forget information.

Professor Peter Jupp at the University of St Andrews and Dr Jim Stone at the University of Sheffield are trying to determine whether relearning a few pieces of information can lead to the recovery of other forgotten facts.

When a person learns a language and then doesn't use it, they may find that relearning a few words will trigger many others to come back and be relearned. The same happens with other skills that involve mental associations. The authors term this phenomenon 'free-lunch learning'.

However, in this latest study, co-authors Peter Jupp and Jim Stone have created a mathematical model to show the opposite effect, called 'negative free-lunch learning'. This occurs when relearning parts of forgotten associations decreases the recall of the remaining information.

Professor Jupp explained, "We have found that the difference between free-lunch learning and negative free-lunch learning is due to the manner of forgetting.

"The typical scenario is that one learns two sets (A and B, say) of associations, such as two sets of vocabulary and then forgets both A and B. In free lunch learning, relearning A tends to assist recall of B as well.

"This recall of B comes free with the recall of A. We have had to pay in

terms of effort for recalling A but we pay nothing extra for recalling B also. Metaphorically speaking, we have 'had a free lunch'. We showed earlier that if forgetting takes the form of random perturbations of memory then free lunch learning is very probable."

In the new paper "Falling towards Forgetfulness", the authors demonstrate how a different form of forgetting leads to the opposite effect, in which relearning a few pieces of information can lead to decreased recall of other forgotten information.

Professor Jupp continued, "What we have done in this paper is to show both by rigorous mathematics and by computer simulation that negative free lunch learning can occur.

"The difference between the conditions leading to negative free lunch learning and those leading to (positive) free lunch learning lies in the manner of forgetting, not in the manner of learning or relearning.

"We have shown that if the forgetting takes the form of fading of memories then this is likely to prevent a spontaneous recovery of memory."

Ref: Stone JV, Jupp PE (2008) Falling towards Forgetfulness: Synaptic Decay Prevents Spontaneous Recovery of Memory. *PLoS Comput Biol* 4(8): e1000143. doi:10.1371/journal.pcbi.1000143
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