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Improving on novelty – from 1911 to 2000

We all know how technology has progressed from 1911 to 2000, that hardly needs pointing out, but the sort of progress that gets mathematicians in a lather is ‘jump Markov’ – discontinuous random events.

Searching for the common elements in the sequences of innovations and successful improvements of each, over three-quarters of a century, has been followed by the authors for the most important chemical process in petroleum refining – known as cracking.

In trying to find the common elements in these sequences of innovations and their improvements, the authors have drawn upon the mathematics of repeated random events, or stochastic processes. The particular stochastic expression that applies to discontinuous random events is ‘jump Markov’ processes, and, for their data on cracking in the petroleum refining industry, the relation between the observed data and this mathematical theory is quite close.

For more information on the reduction in the cost of cracking or the increase in productivity of the cracking processes, read the full article in the journal *Prometheus*.

[An inductive model of technological progress](#)

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