



# Activity level in the hierarchy of propositions in case of the People of the State of California *v.* Orenthal James Simpson analyzed using Bayesian network



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## ABSTRACT

DNA profiling usually rests on source or sub-source level in the hierarchy of propositions and when used as evidence for level of activity and offence, much of its seemingly impenetrable power may be lost [1]. Fully Bayesian approach of evidence analysis for higher level propositions is achievable using Bayesian network. However, forensic geneticist alone does not have sufficient data and expertise to perform such analysis in real case scenario. Moreover, they would overstep the role of scientist in the judicial process.

With a benefit of hindsight, it is possible to perform such kind of analysis for highly publicised cases. Such case is one of the former professional football star and actor O.J. Simpson who was tried on two counts of murder (of his ex-wife, Nicole Brown Simpson, and waiter Ronald Lyle Goldman).

Here I present Bayesian network created on the basis of two other Bayesian nets [2,3] and information from Wikipedia. Five separate Bayesian nets (Motive; Occasion and Escape; Gloves; Knife; and Bloodstains, Hairs, and Fibres) are combined to yield the total likelihood ratio of over seven bans what would change 50% prior to 99.99999% posterior probability of O.J. Simpson stabbing two persons to death.

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## 1. Introduction

For publicized cases, it is possible to perform evidence analysis for higher level propositions using Bayesian network even by scientist that would otherwise lack the information needed and overstep their role in the judicial process. Such case is one of the former professional football star and actor O. J. Simpson who was tried on murder of his ex-wife, Nicole Brown Simpson and her partner Ronald Lyle Goldman, in June 1994.

## 2. Material studied, methods, techniques

Two Bayesian nets [2,3] and information from Wikipedia were used to construct five separate Bayesian nets (Motive; Occasion and Escape; Gloves; Knife; and Bloodstains, Hairs, and Fibres) using software GeNIe 2.0. Analysis of the mistakes made by prosecution and skills of defense are outside of the topic of this contribution.

## 3. Results

Sketches of 5 Bayes nets are depicted below (Fig. 1).

Prior probability of 50% is increased by likelihood ratio 31,506,240 (Occasion and escape  $LR_1 = 887$ , Bloodstains  $LR_2 = 1.5$ , Gloves  $LR_3 = 16$ , Motive  $LR_4 = 148$ , and Knife  $LR_5 = 10$ ) to reach posterior probability of 99.99999% for O.J. Simpson stabbing two persons to death. For me, guilt of O. J. Simpson was proven beyond reasonable doubt.

## Conflict of interest

None.

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No bias.

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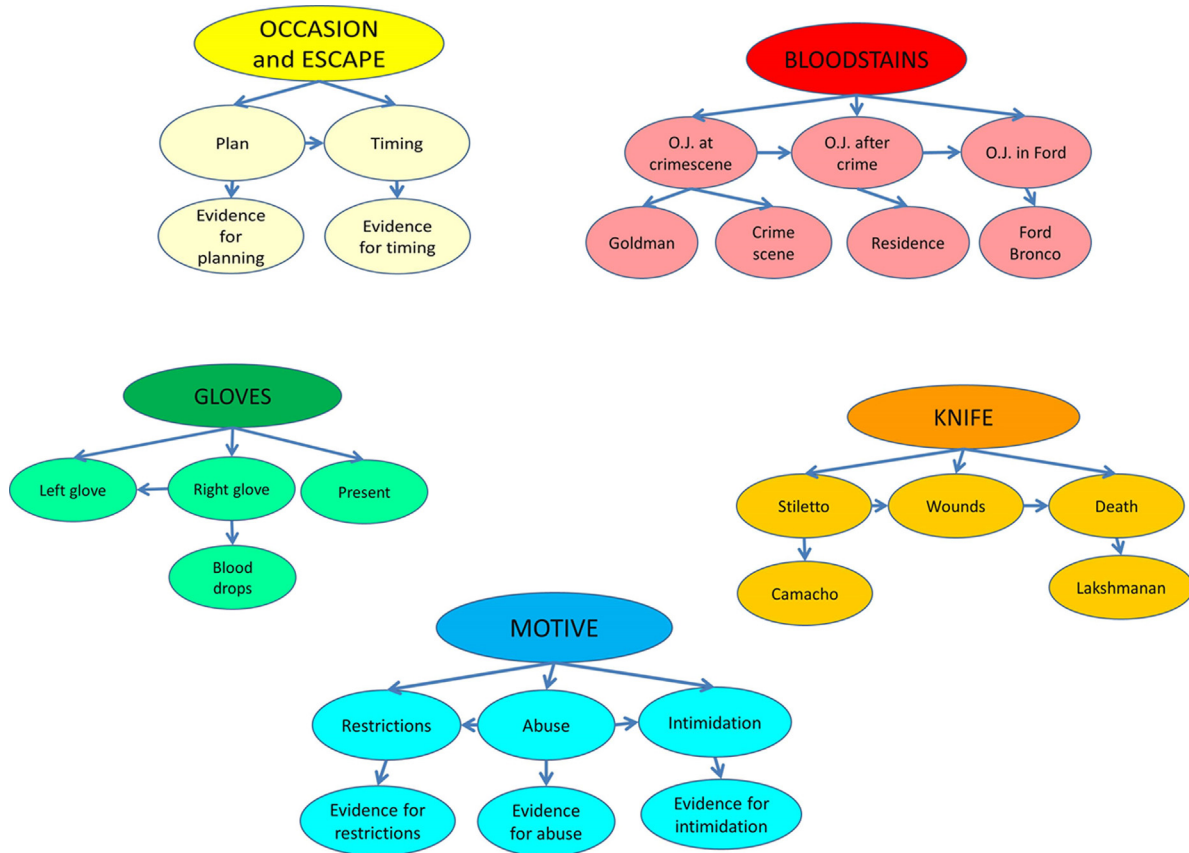


Fig. 1. Motive; Occasion and Escape; Gloves; Knife; and Bloodstains, Hairs, and Fibres.

\*.xdsl (\*.dsl, \*.net, \*.dne, \*.erg, \*.dsc) files are available from author upon request ([jiri.drabek@upol.cz](mailto:jiri.drabek@upol.cz)).

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