



Reasoning and Formal Modelling for Forensic Science
2010/2011; 2nd Semester
Prof. Dr. Benedikt Löwe

Werkcollege Exercises # 4

Please start thinking about these exercises before the next *werkcollege* on Tuesday, 1 March, 11am, room A1.04. The exercises will be discussed in class with active student participation: you will get some extra time to think about them, and then present the solutions in front of the class.

Exercise 11.

Consider the following story:

Stage 1. *The police finds Ted Sallinger on the ground in front of a casino, having fallen from the roof. They learn that Sallinger had won the \$40 million jackpot the night before and was staying in the presidential suite. As they process the suite, they find a broken champagne bottle and bloody towels. They question Sallinger's girlfriend Jamie, who tells them that he broke up with her immediately after winning the jackpot. She reports that she was angry at him and attacked him with the bottle; the police have proof that he was still alive after this attack (a credit card receipt from buying a watch), so she did not kill him with the attack. After the attack, she left and never returned. The keycard records for the suite (which record when someone enters the room) confirm her story.*

Stage 2. *The Crime Scene Investigators conduct experiments to see if Sallinger fell or jumped from the roof—they conclude that he was pushed, but it is unclear whether he was conscious, unconscious or dead when he was pushed.*

Stage 3. *The investigators find fibers in the victim's watch, which was bought after he left his suite (proved by a receipt with time stamp). The fibers match the carpet in the suite, indicating that he returned to the suite after he broke up with Jamie. In the suite, the police finds the murder weapon, a candlestick. This matches with the autopsy findings that he was killed before he fell off the roof.*

Stage 4. *The police get suspicious and ask the hotel to check the keycard monitoring system. They find out that it does not work properly. They conclude that Jamie killed Sallinger when he returned to the suite after buying his watch. She then pushed him off the roof.*

Model the information gathering process in the above crime story (from Season 1, Episode 2 of *Crime Scene Investigators*TM) in analogy to the “Hit and Run” case discussed in class (see also the typed notes for this on the webpage).

At each of the four stages, check whether the following assumptions are consistent with the partially controlled situation:

- “Jamie killed Sallinger”,
- “Jamie didn’t kill Sallinger”,
- “Sallinger committed suicide”,
- “Sallinger had an accident”.

Pay particular attention to the final situation: Is “Jamie didn’t kill Sallinger” still consistent? If so, why can the police conclude that she did it?

Exercise 12.

Consider the two argumentation schemes called *Argument from Position to Know* and *Argument from Expert Knowledge*. In the lecture, we said that the *Critical Questions* in the argumentation scheme provide the Toulmin categories WARRANT, BACKING, QUALIFIER or REBUTTAL. Go through the nine *Critical Questions* of the two schemes and for each of them discuss in what sense this is the case. Furthermore, we discussed Pollock’s classification of counterarguments into defeaters and undercutters. Which of the nine *Critical Questions* is a defeater and which is an undercutter? How strict is the separation?