



Sense-making
software
for crime
investigation:
*stories and
arguments*

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Making sense of evidence

Software support for crime investigations

MSOE: Project description

Crime investigation is a difficult and laborious process.



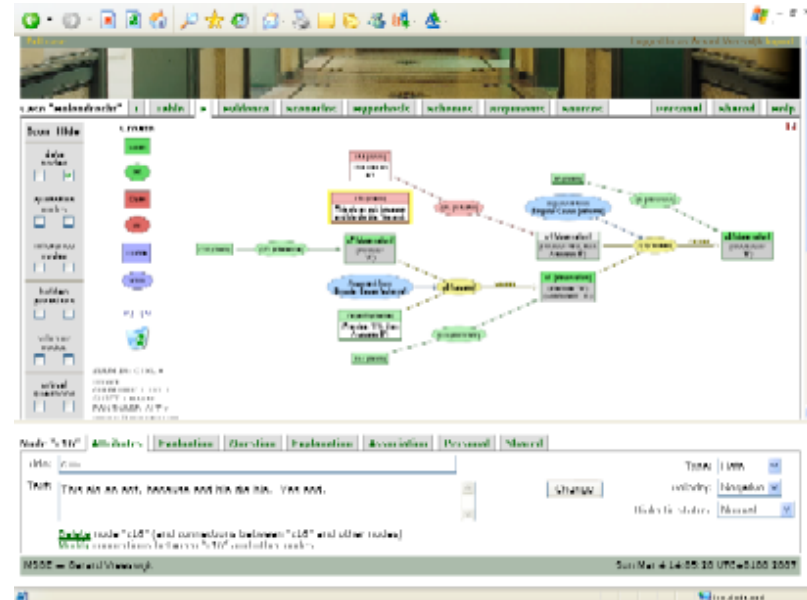
This project develops software to tackle two problems that often occur in complex criminal cases:

1. **Lack of overview** of a mass of evidence by initial investigators
2. **Lack of accessibility** of case files for subsequent investigators, prosecutors and fact finders.

Aim of the software

Crime investigators can visualize and analyse their reasoning about a case.

- Seeing patterns
- Discovering new relationships
- Discovering inconsistencies
- Identifying missing evidence
- Archiving / documentation
- Establishing intersubjectivity



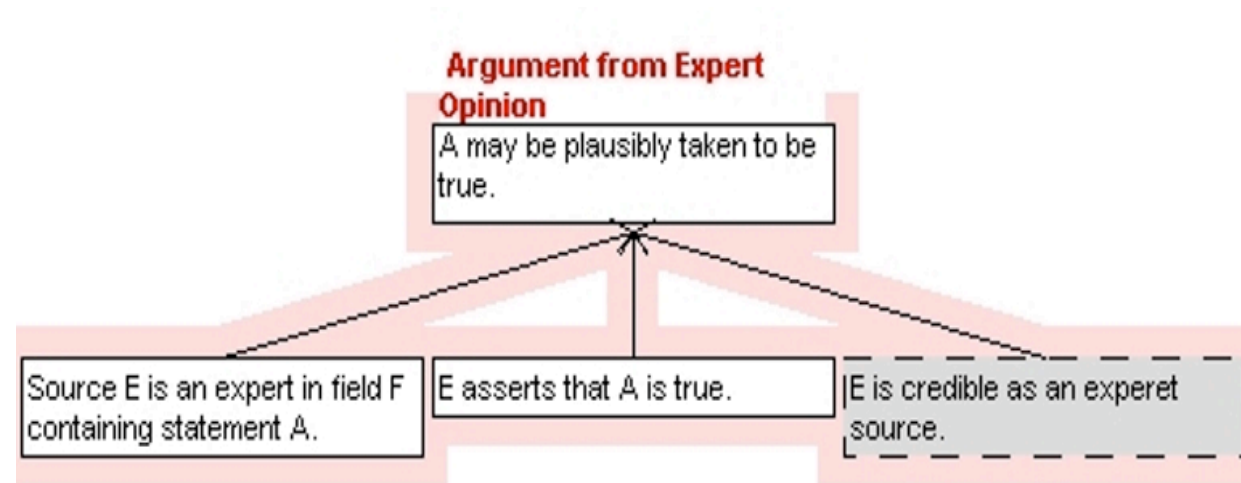
The effects of the software on an **investigator's understanding** of a case and the quality of file transfer will be measured in **detailed user experiments**.

Selection of related work

- **CARNEADES**

(Thomas F. Gordon, Fraunhofer FOKUS, Berlin, Germany & Douglas Walton, University of Winnipeg, Canada)

- Recent work on **Argument Interchange Format (AIF)** (Hungary AgentLink group)

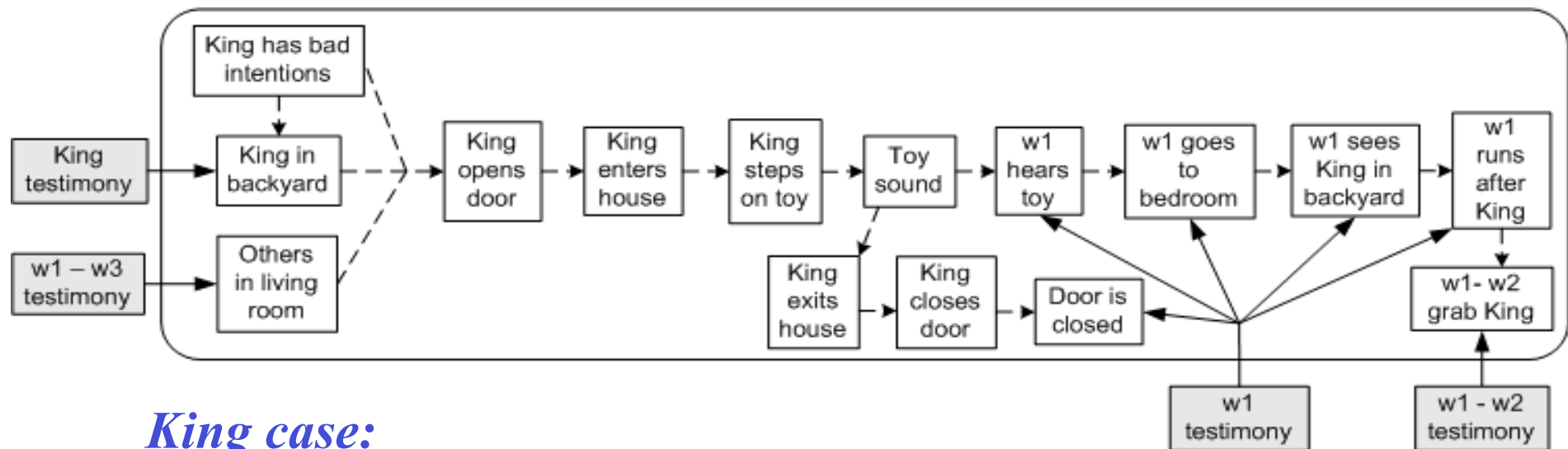


- **ARAUCARIA** (Chris Reed & Glenn Rowe. Division of Applied Computing. University of Dundee)

Definition of a story

- Informal
 - A description of “**what happened**”
 - A description of a **scenario**
- A **story** is a coherent (and preferably consistent) description of “what happened”
 - Example of an incredible story: a fairy tale
- A story is **credible** if (most of) its elements are anchored into claims that remain unquestioned
 - Theory of anchored narratives (Wagenaar & Van Koppen)
 - A claim is credible if it is part of a credible story

Stories and arguments: the story of the prosecution

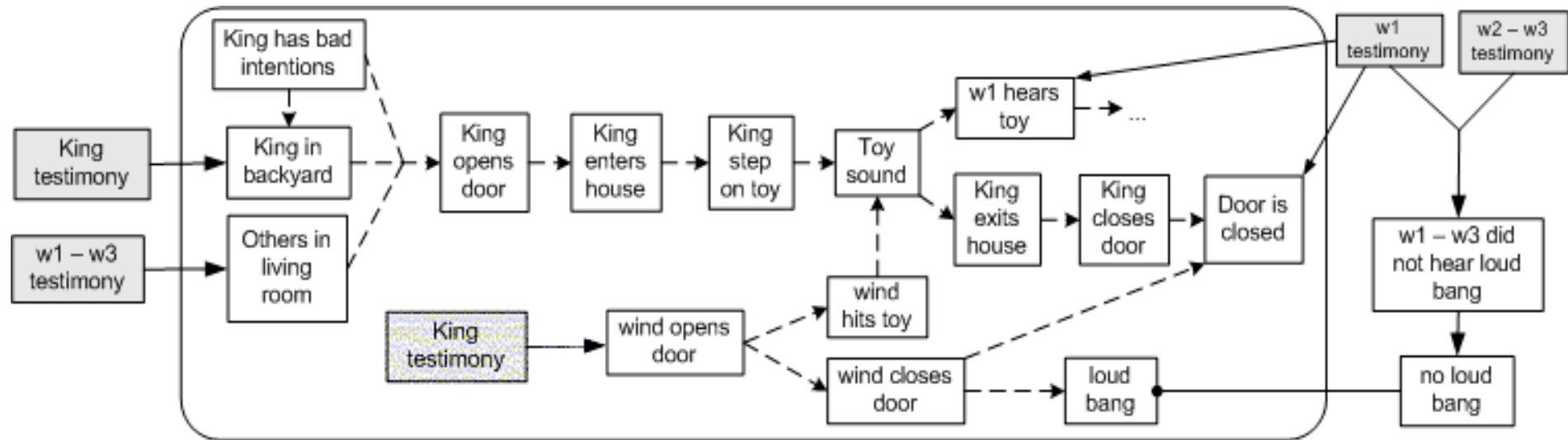


King case:

- Andrew King enters someone else's house at night.
- He touches a toy. Toy makes sound.
- Residents hear sound and grab King.

They grab King in the backyard

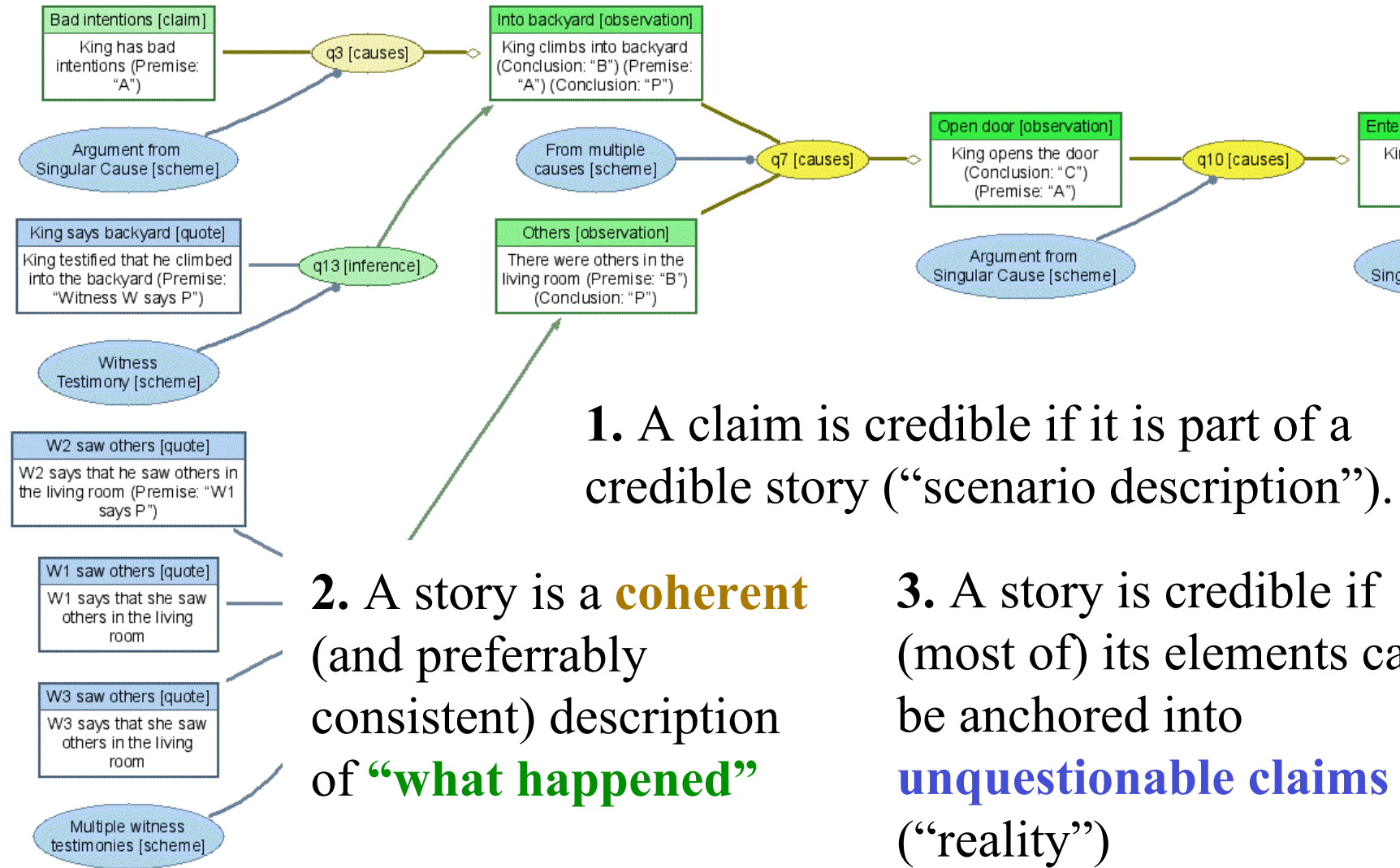
Stories and arguments: the **story of King**



King:

- “I was in the backyard. **I was lost**”
- “It’s probably the wind that opened the door and moved the toy”

Story of prosecution (switched to tool view)

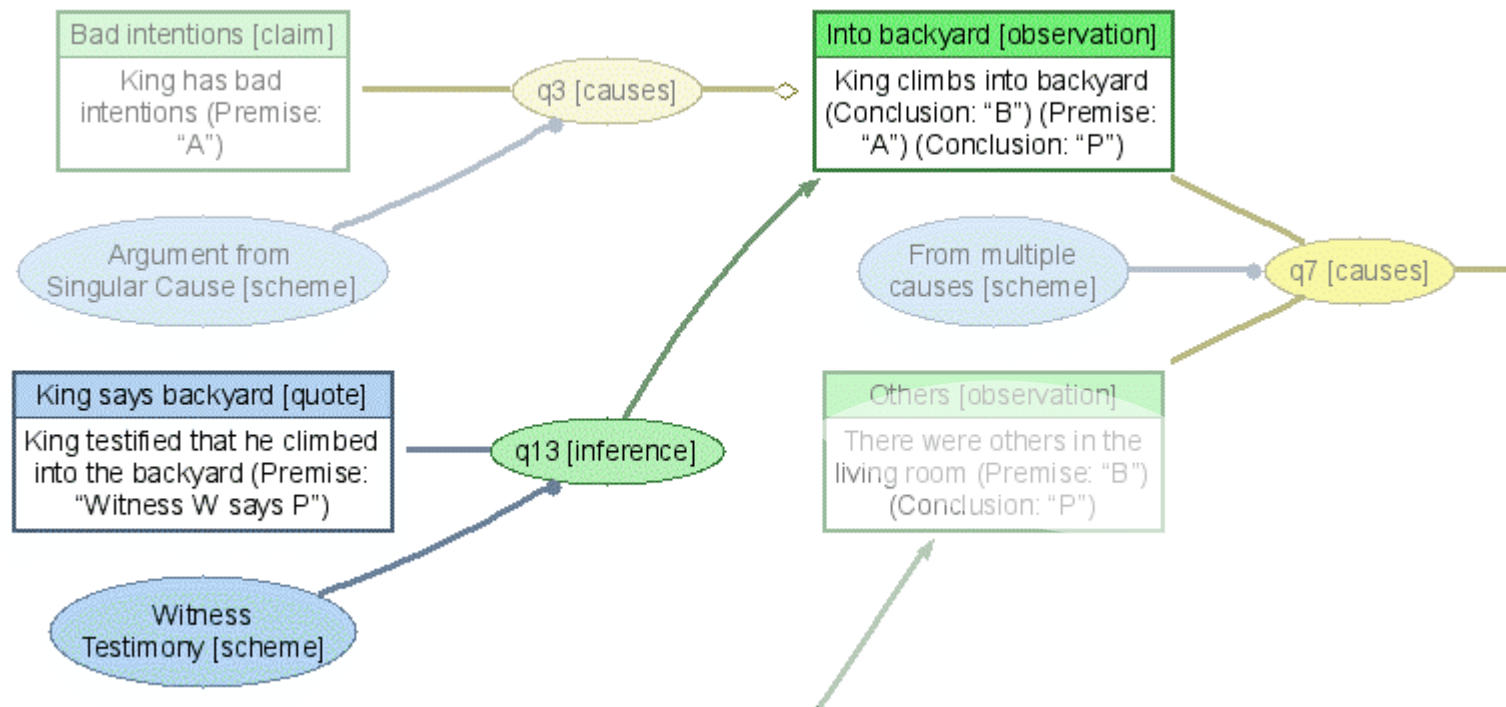


1. A claim is credible if it is part of a credible story (“scenario description”).

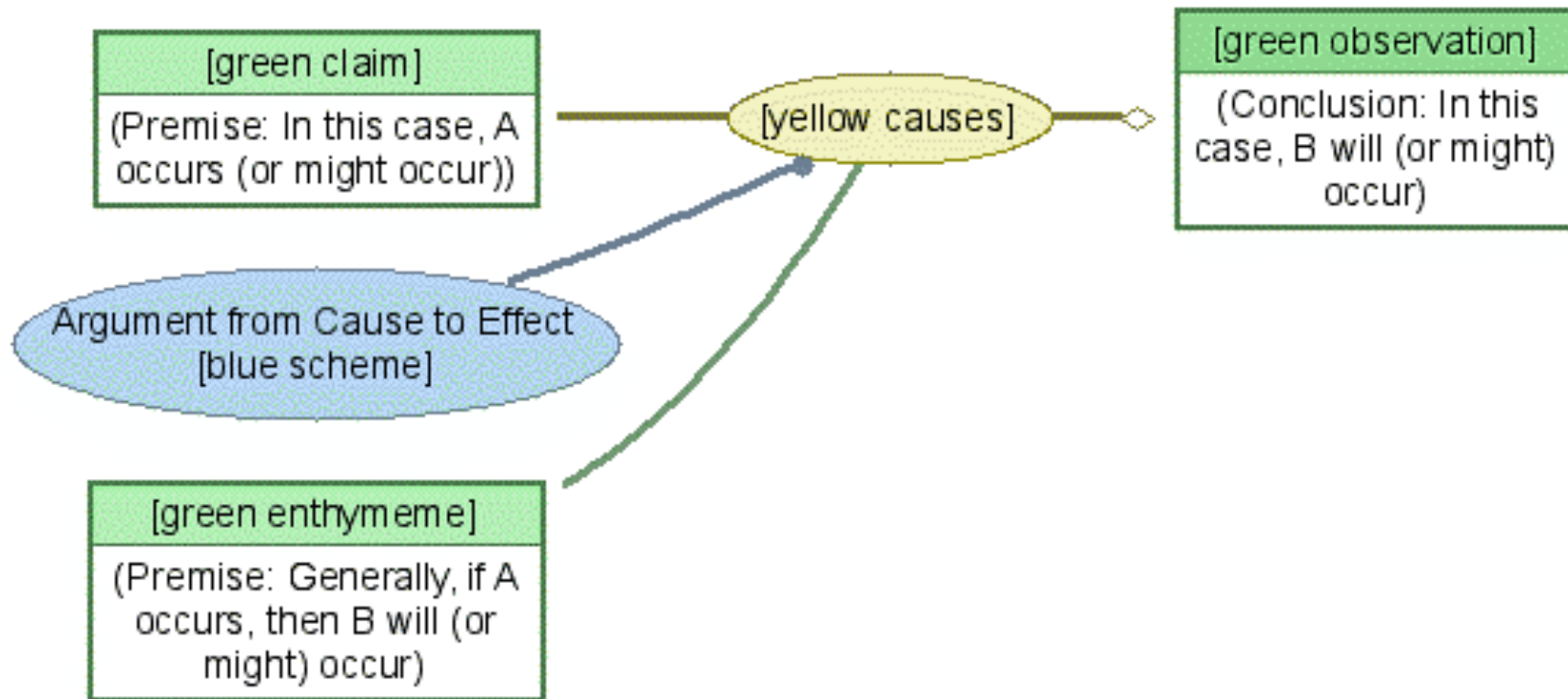
2. A story is a **coherent** (and preferably consistent) description of “**what happened**”

3. A story is credible if (most of) its elements can be anchored into **unquestionable claims** (“reality”)

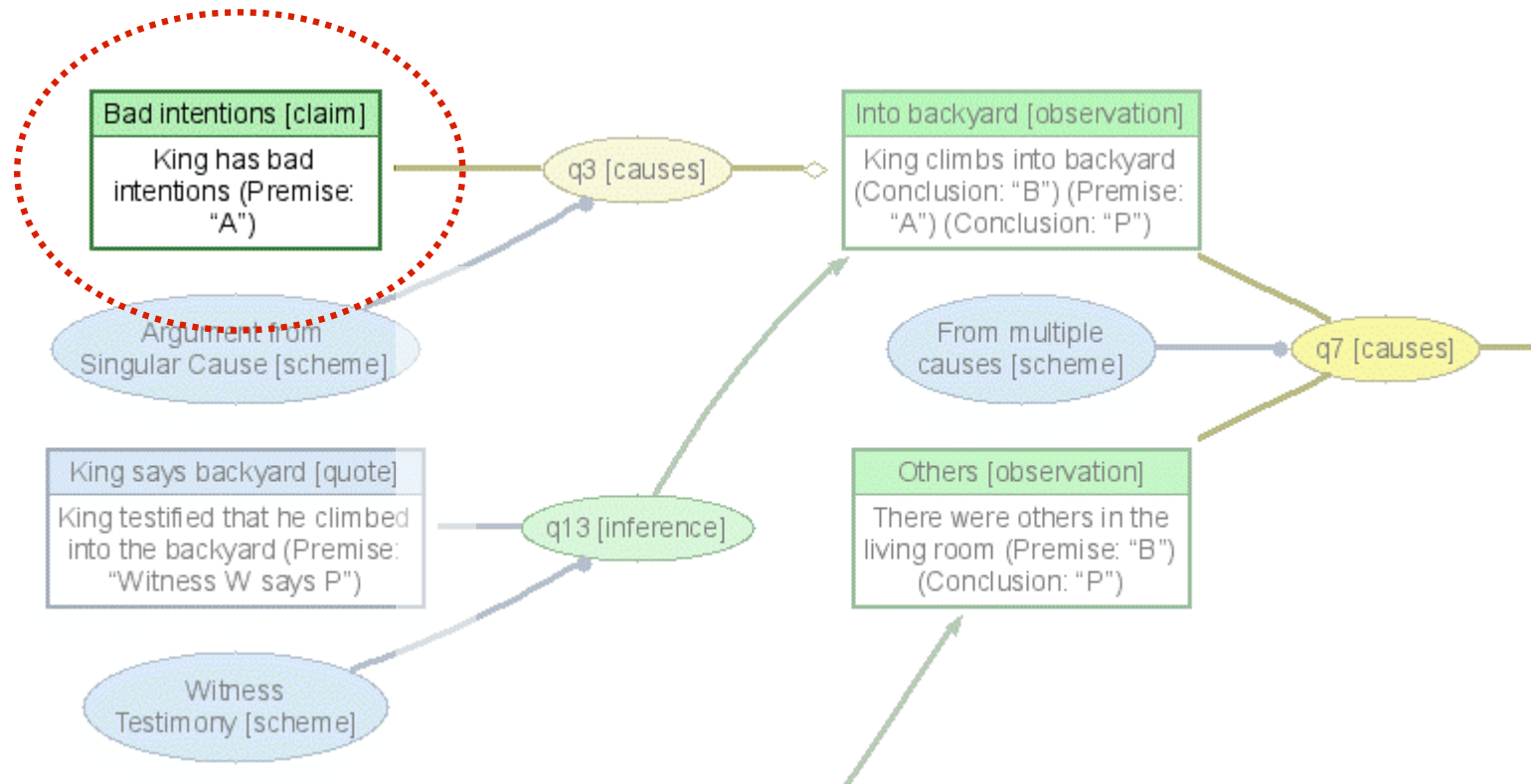
Story of prosecution (close up)



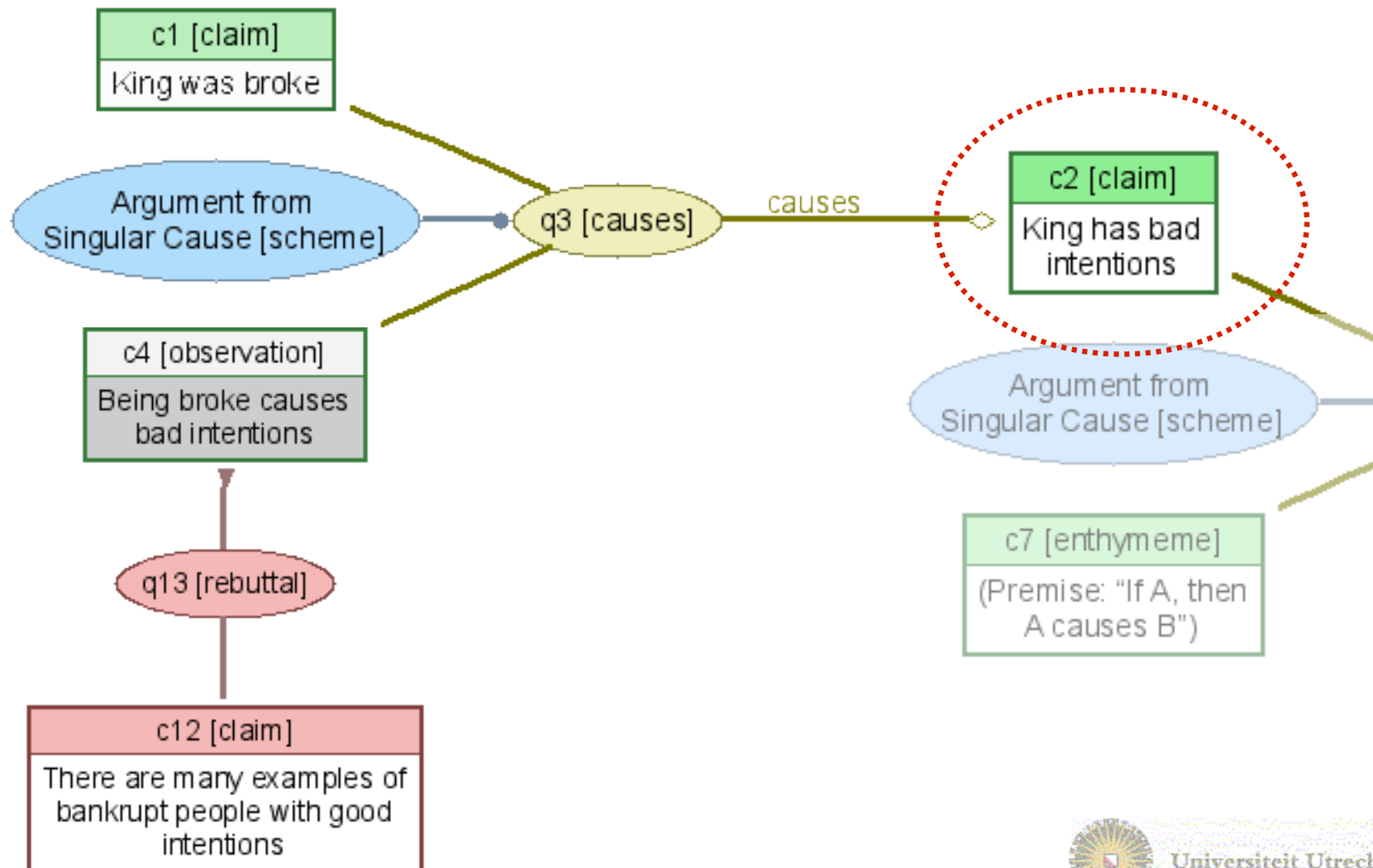
Step from cause to effect



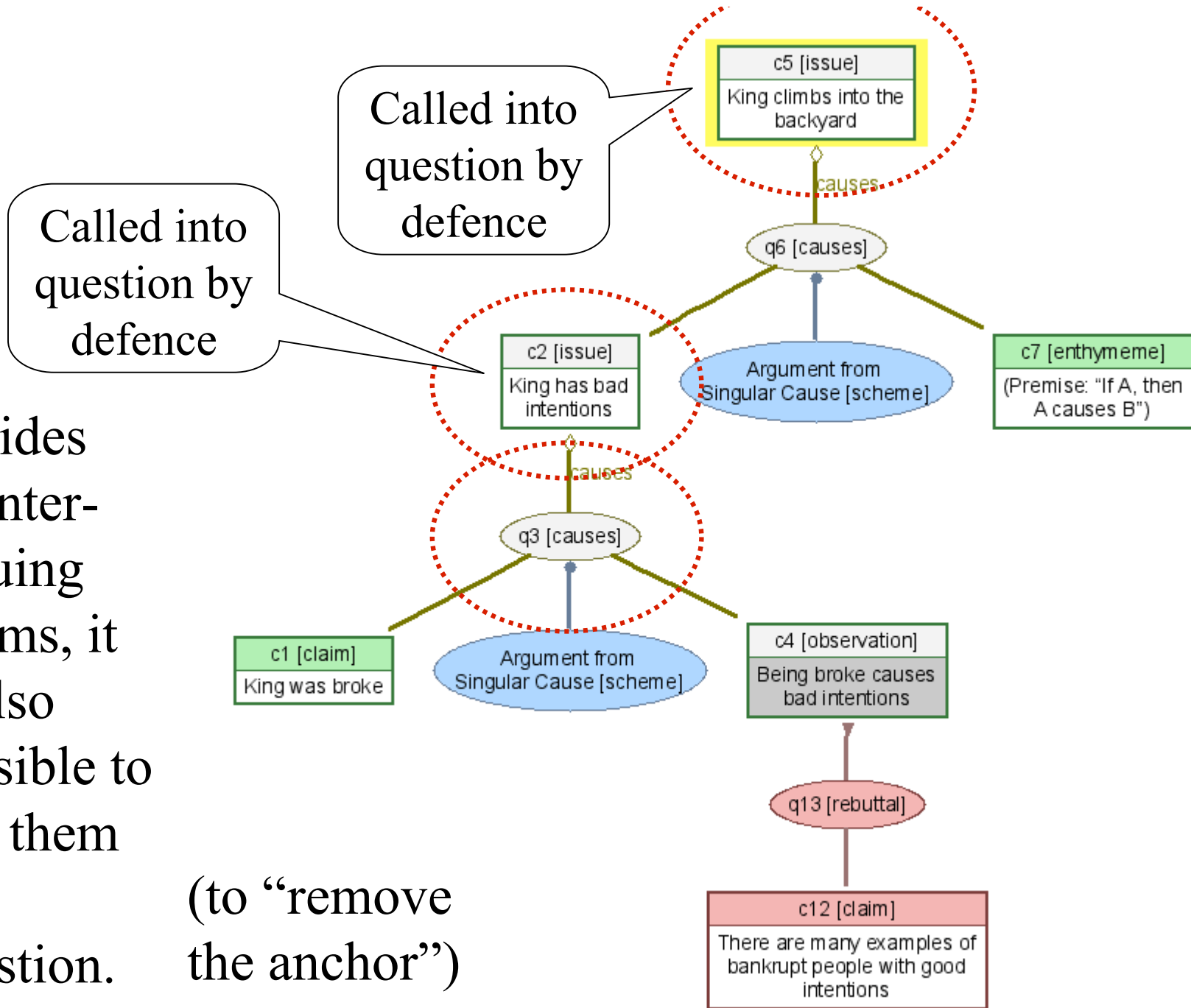
Is “having bad intentions” an anchor?



If not an anchor, then elaborate



Besides counter-arguing claims, it is also possible to call them into question. (to “remove the anchor”)



Move to demo ...

Things to sort out ..

- Definition of node coloring
- Nature of causal links.
Are they ..
 - disputable?
 - metaphysical entities?
 - instantiations of causal schemes of inference?
- Presentation of possible and plausible explanations to end users
- Interoperation with other systems
(BRAINS, Holmes, Analyst's notebook)