Logic issues in policy languages

Luigi Logrippo

Université du Québec en Outaouais and
University of Ottawa
Canada

Where are we heading

- In the information society real people and automatic agents will have interchangeable roles
- The human world will still be regulated by human laws
- The agent world will be regulated by agent policies
- Laws and policies will have to be seamlessly integrated
- Their conflict resolution mechanisms will have to be seamlessly integrated

Example 1 (thanks: Waël Hassan)

Client Policy

- Buy Product P
- Price (P) < 500$
- Provide the following info to merchant
  - Credit Card #
  - Expiry Date
  - Name & Address
- If Merchant Requires extra info included in:
  - DO Birth
  - Sex
  - Age
  - Civil Status
- Send Information to Merchant iff Merchant Promises that
  - Not sell customer information to thirds

Merchant Policy

- Sell Product P , Price: 450 if cash or credit card, 500 if credit
  - But subcontract sales to Y
- Information required from customer sale related:
  - Credit Card #
  - Expiry Date
  - Name & Address
  - Sex:
  - Age
  - DO Birth
- Privacy policy, we will
  - Not sell customerl information to thirds

Company Y (GiveYourInfoAway.com)

A. Sells product P
B. Sells customer information to thirds

Scenario

1. Client sends information and payment information to merchant
2. Rules of client and merchant for the sale will not contradict.
3. However merchant will proxy to Y
4. But selling info rules of the client and company Y are in conflict
5. **How to protect client's policy**

Note similarity with another example!

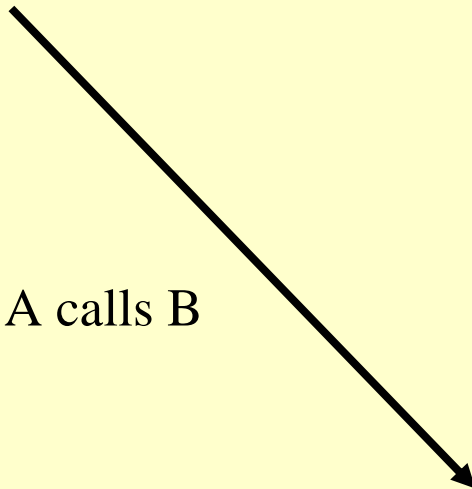# Example 2:
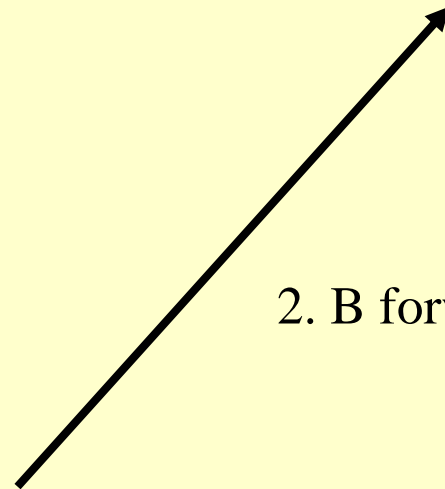# well-known interaction OCS/CF

A has C in OCS list

3. A gets connected to C

A 📞 ———————————————————▶ 📞 C

1. A calls B

2. B forwards to C

📞 B

B has CFA to C

OCS invariant is violated.

Learning from experience

- Lawyers and judges have been doing FI resolution for thousands of years
    - contradictions in different laws
    - contradictions in aims of agents
- They developed many concepts and principles to do this:
    - property, family, inheritance …
- Maybe we should also develop some principles
    - some will have legal implications and will be derived from law
    - others will be purely technological and will have to be invented by us

- Features and FI belong to a complex human and logical picture

- Logic, logic programming may be the glue

- The old question, how to go from logic to programs and vice-versa is still very valid