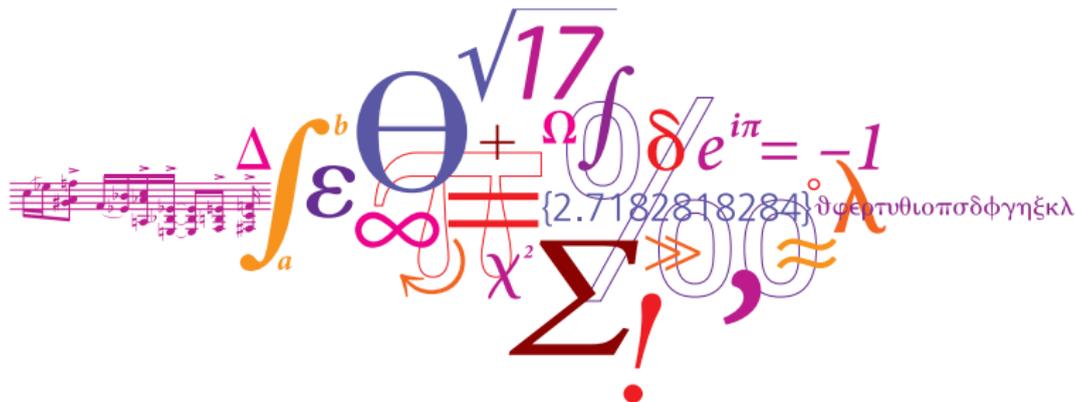


Humans! Collectively rational or socially stupid?

Thomas Bolander, DTU Compute, Technical University of Denmark
Science & Cocktails, Christiania, 8 October 2013



Chamber of horrors of social reasoning



The horror stories of Vincent: social proof, bystander effect, informational cascades, bubbles, pluralistic ignorance...

Human child, 15 months old

The child is *not* given any instructions beforehand.

(Waneken & Tomasello, Science, vol. 311, 2006)

TUG Robot, Hospital of Southern Jutland (2013)

The Hospital of Southern Jutland (Sygehus Sønderjylland) has since mid 2012 been experimenting with TUG hospital robots.

Anti-social TUG hospital robots (2009)

Frustrated users of hospital robots in USA:

- *“TUG was a hospital worker, and its colleagues expected it to have some social smarts, the absence of which led to frustration—for example, when it always spoke in the same way in both quiet and busy situations.”*



TUG hospital robot

(Colin Barras, New Scientist, vol. 204, 2009)

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- *“I’m on the phone! If you say ‘TUG has arrived’ one more time I’m going to kick you in your camera.”*
- *“It doesn’t have the manners we teach our children. I find it insulting that I stand out of the way for patients... but it just barrels right on.”*



TUG hospital robot

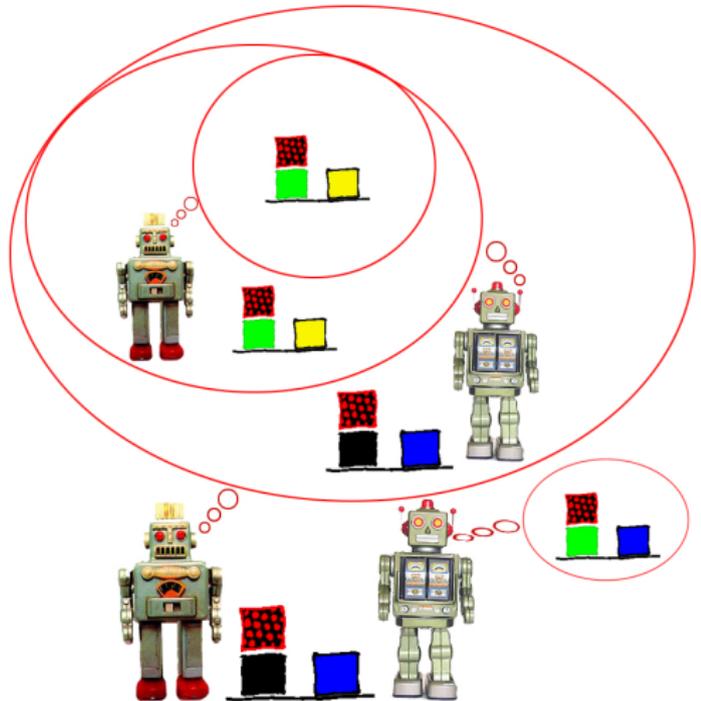
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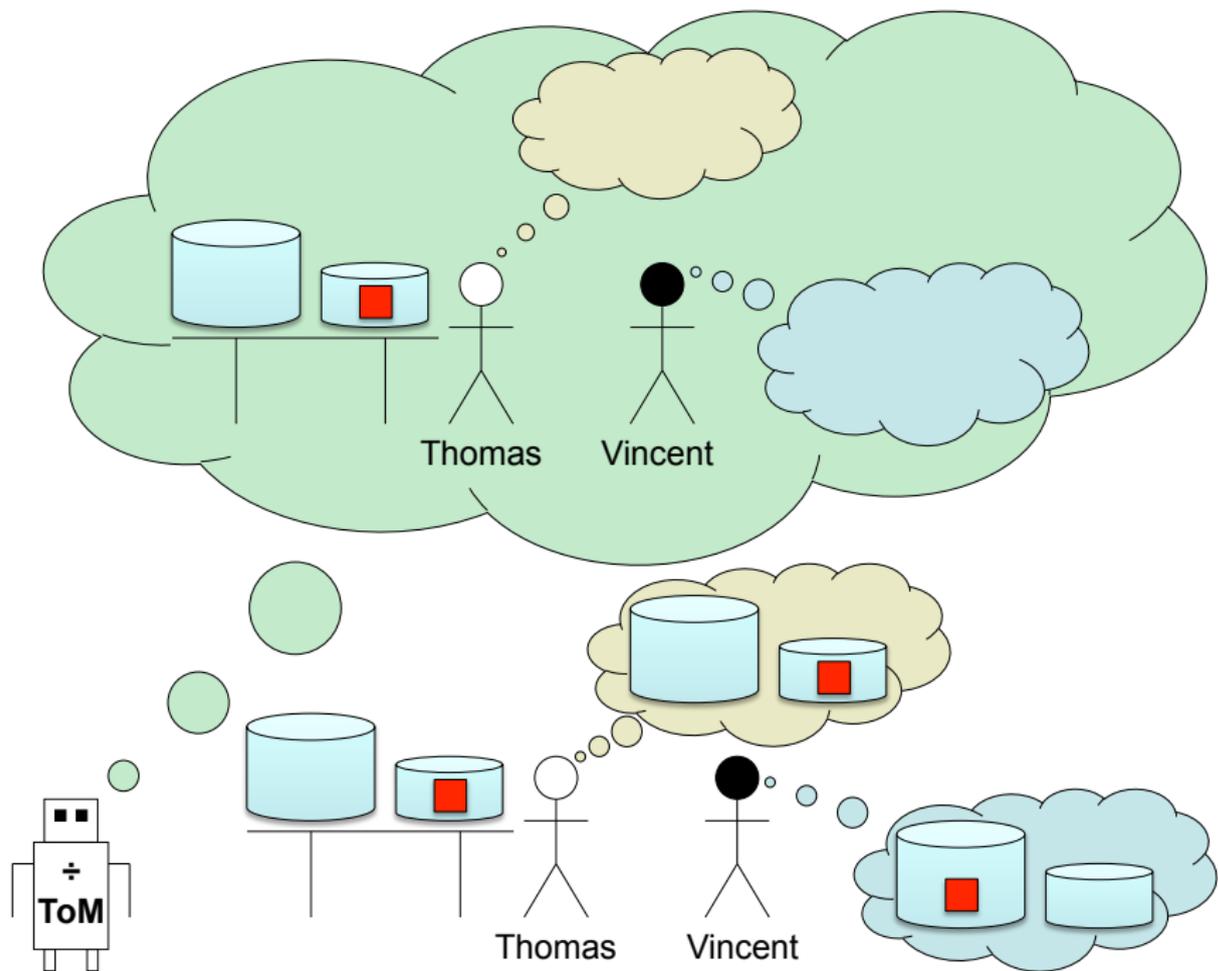
Social Intelligence and Theory of Mind

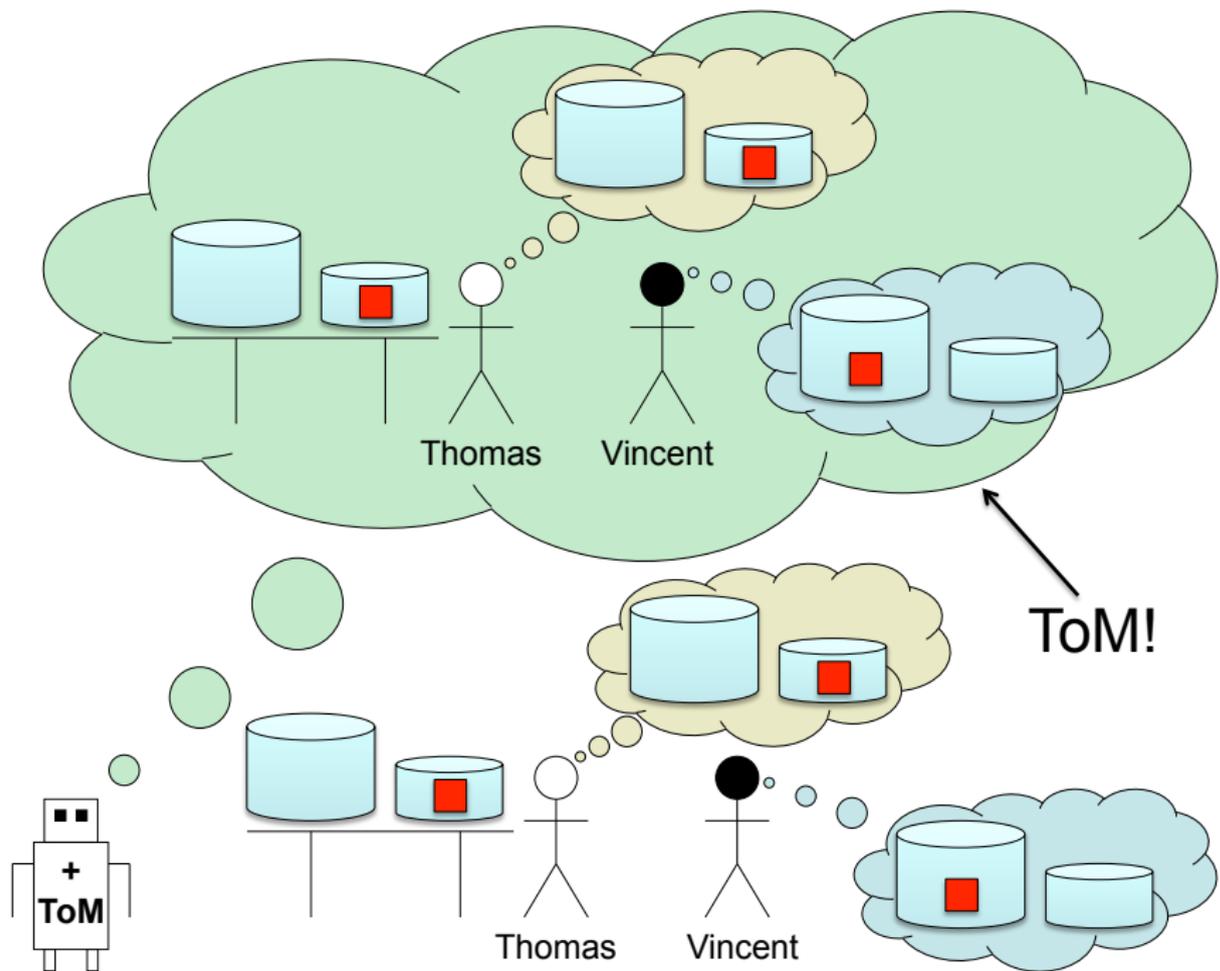
Theory of Mind (ToM): The ability of attributing mental states—beliefs, intentions, desires, etc.—to other agents.

Having a ToM is essential for **successful social interaction** in humans (Baron-Cohen, 1997).

The presence of a ToM in children is often tested through **false-belief tasks**, e.g. the **Sally-Anne test**.







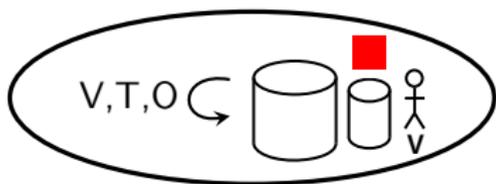
My research

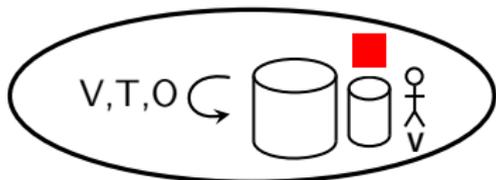
My research: Trying to make computers and robots socially intelligent by equipping them with a Theory of Mind.

A test case for my research: Passing the Sally-Anne test (Vincent-Thomas test).

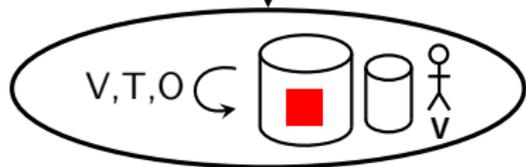
Let's see how it can be done...

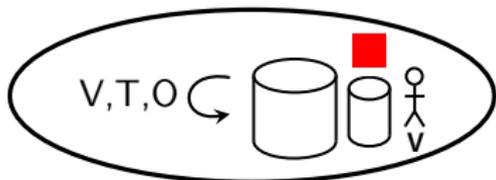
(Bolander & Andersen, JANCL, 2011)



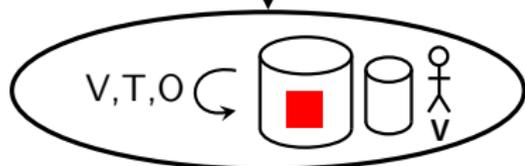


place in large tin

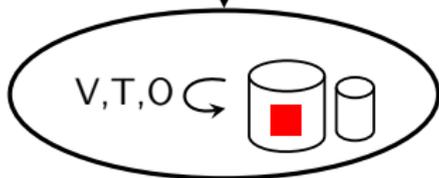


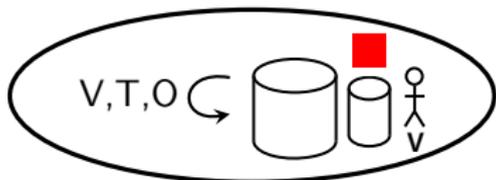


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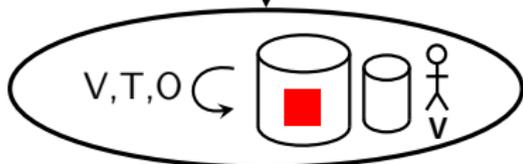


Vincent leaves

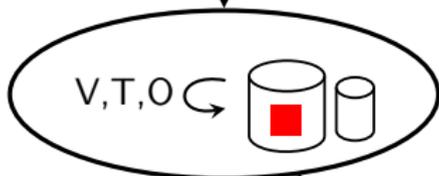




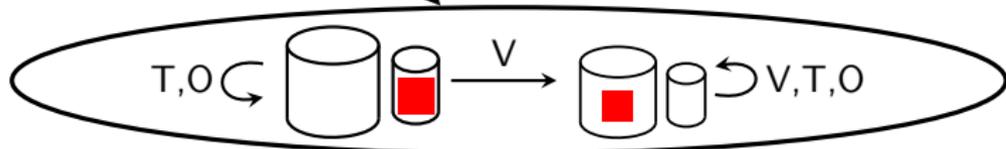
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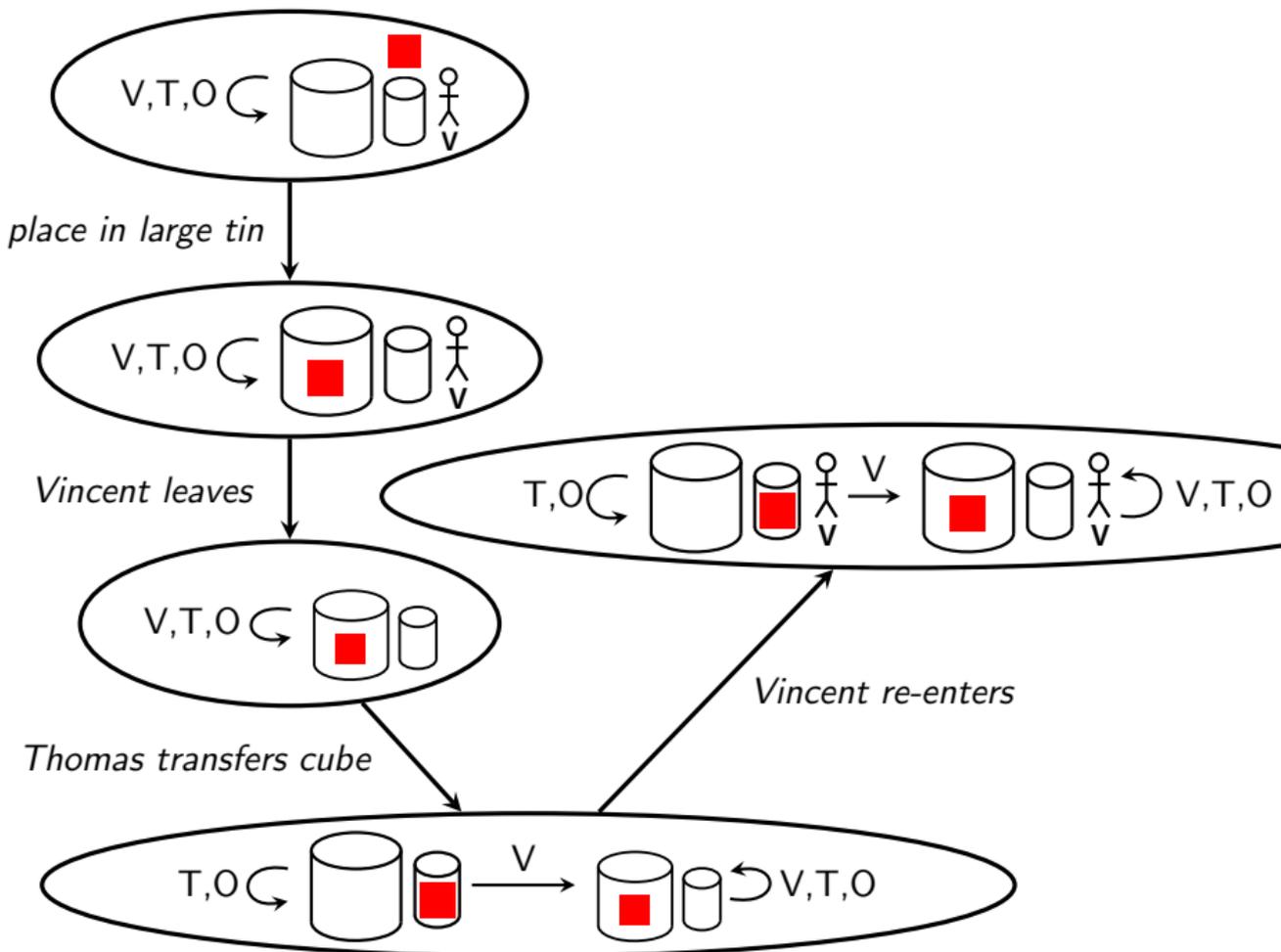


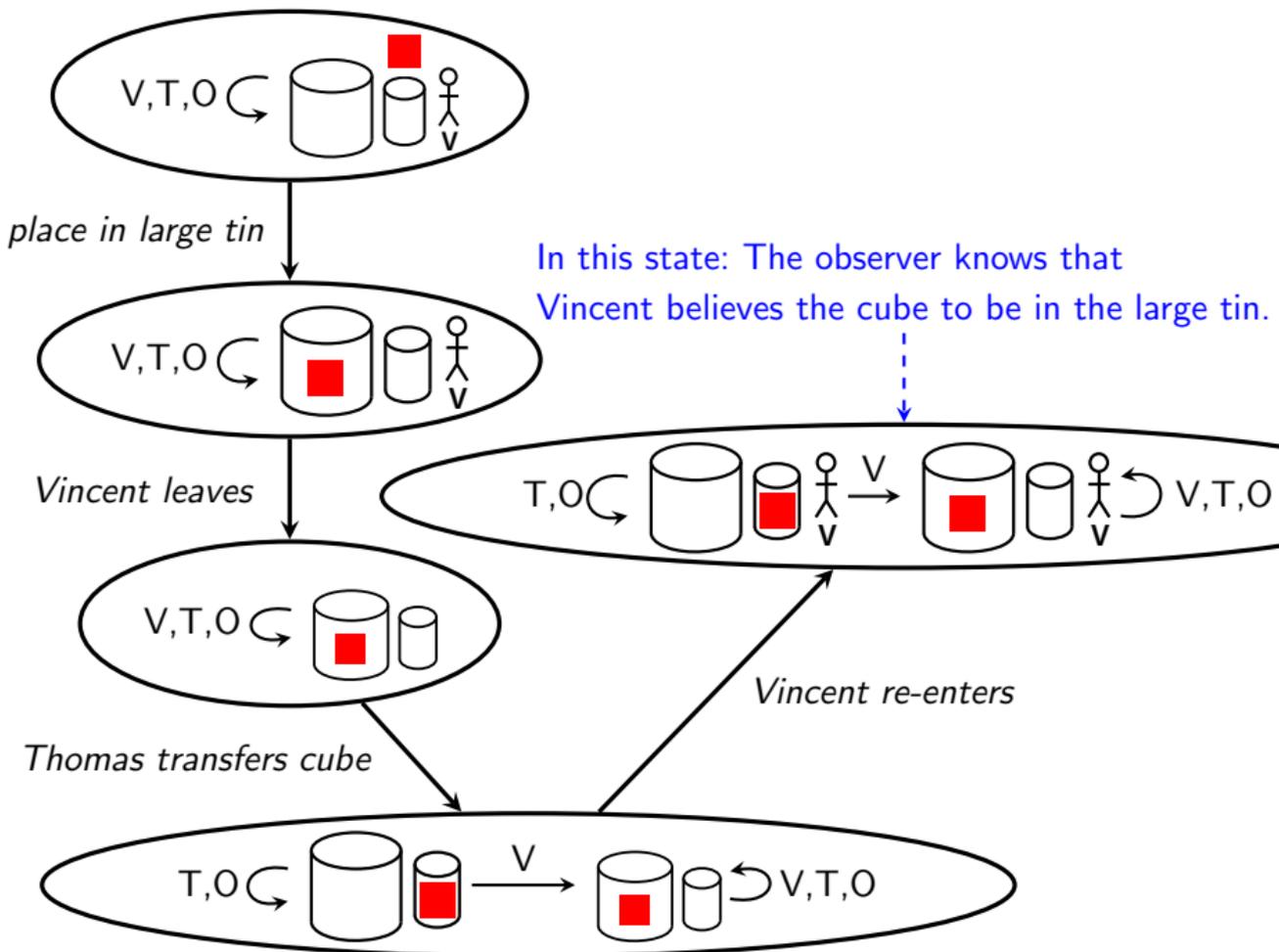
Vincent leaves

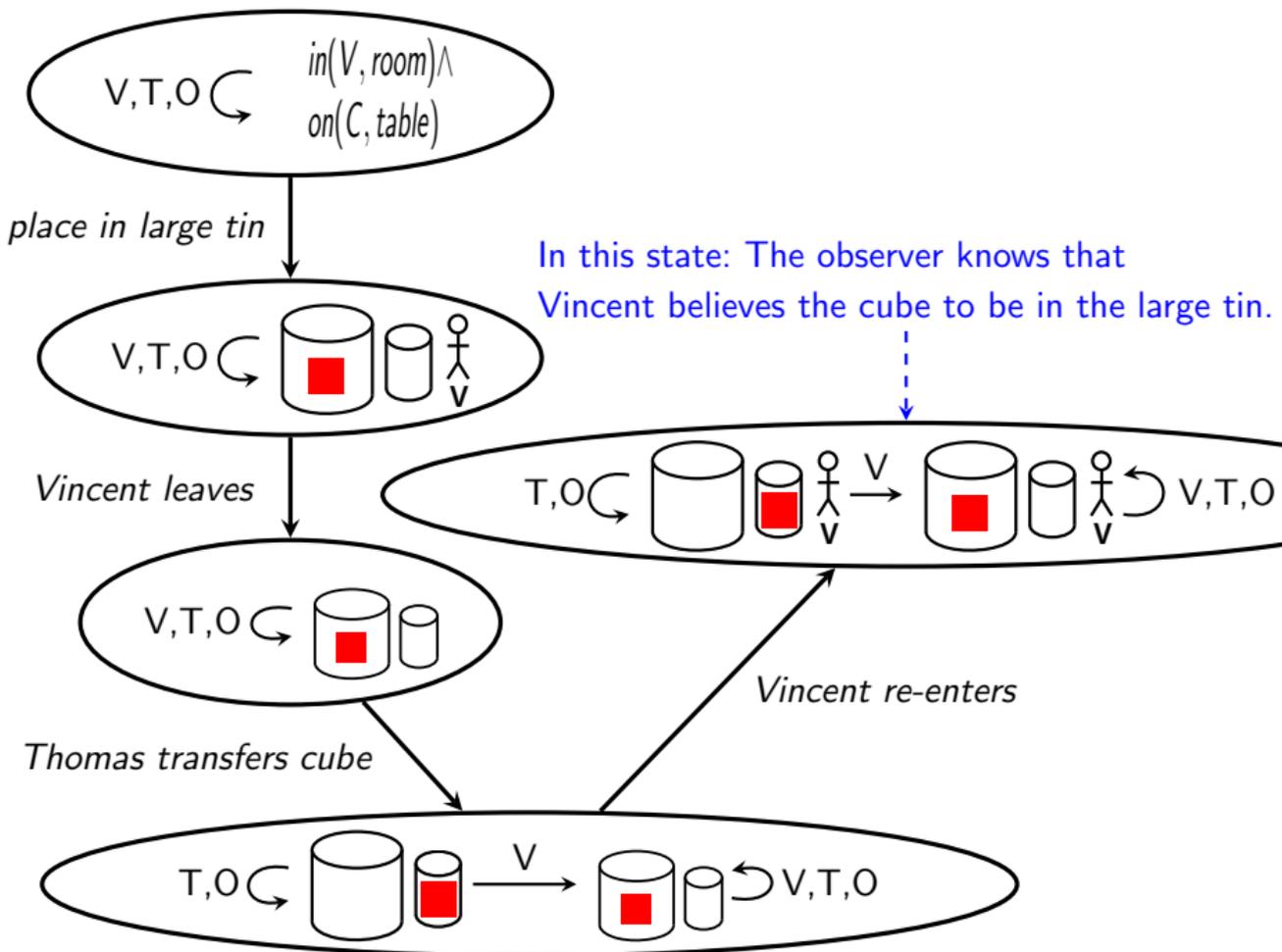


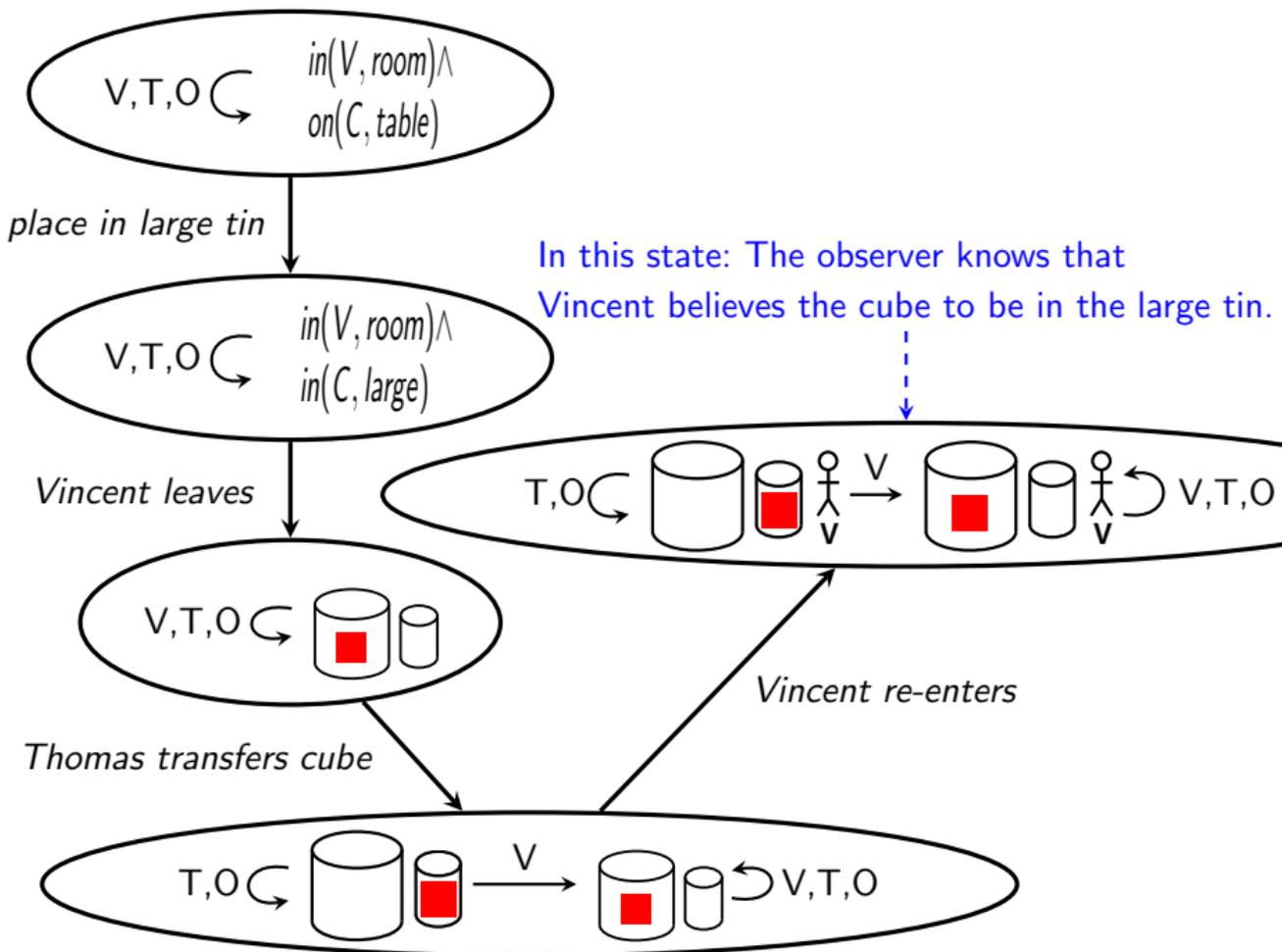
Thomas transfers cube

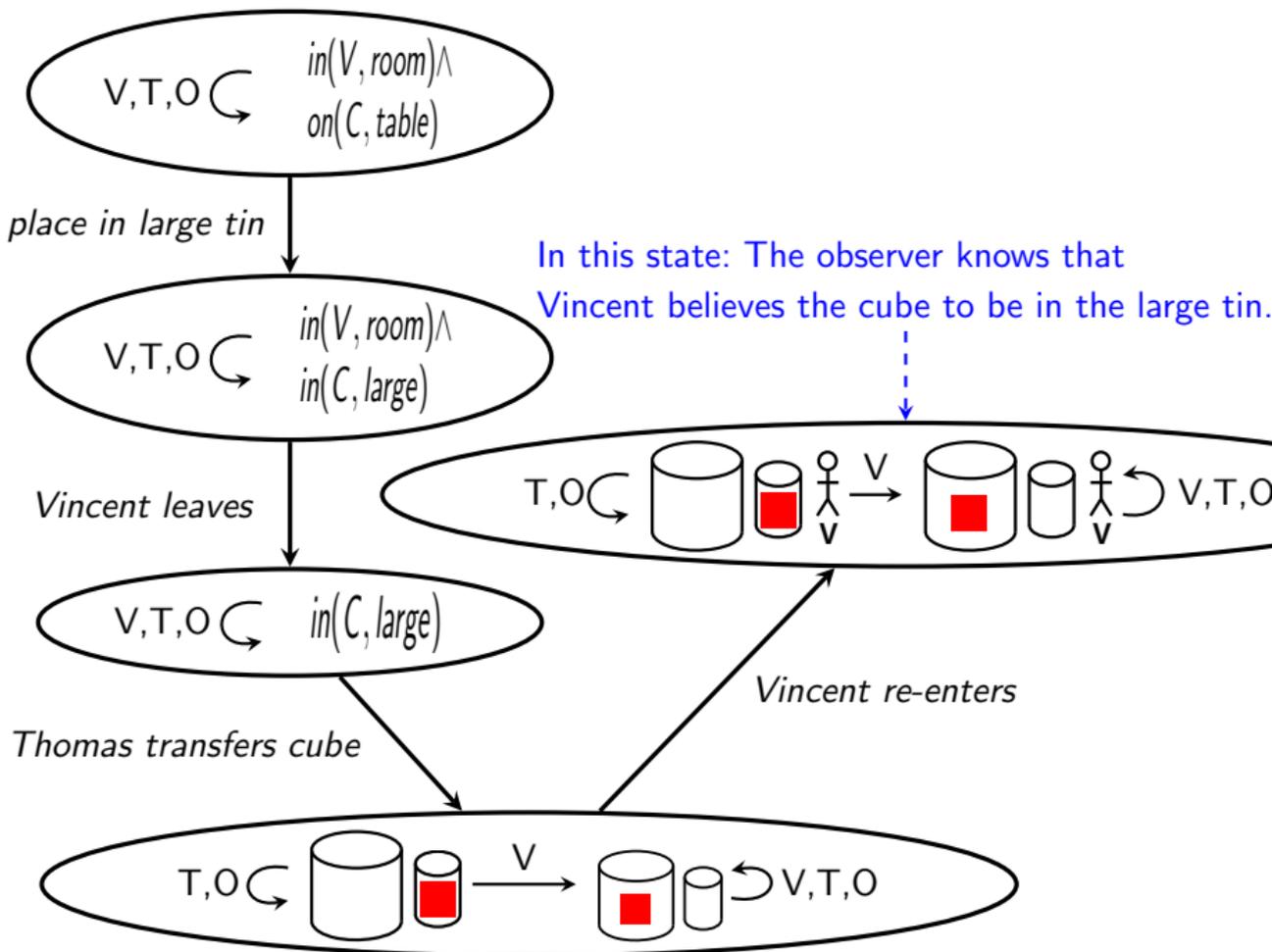


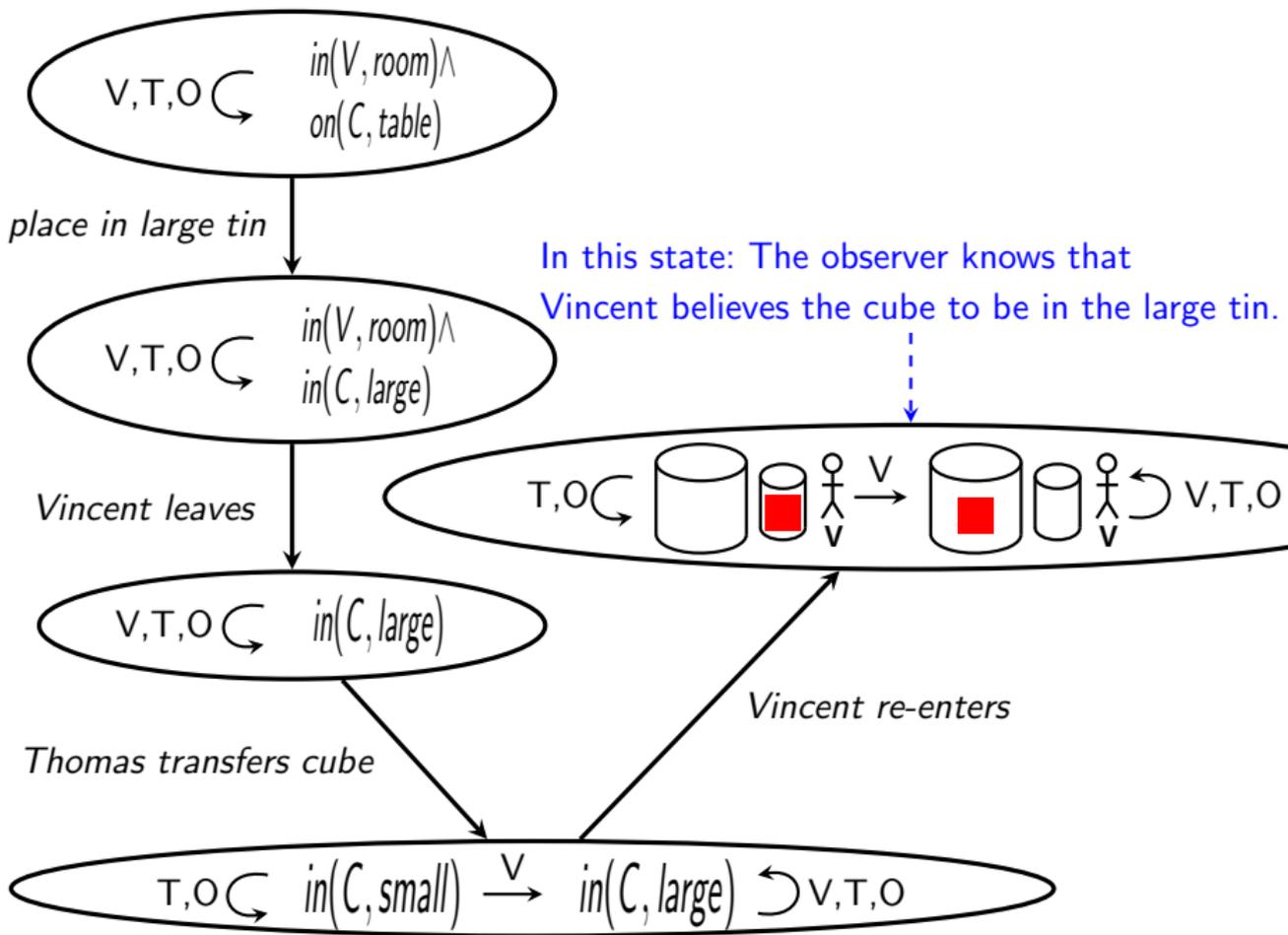


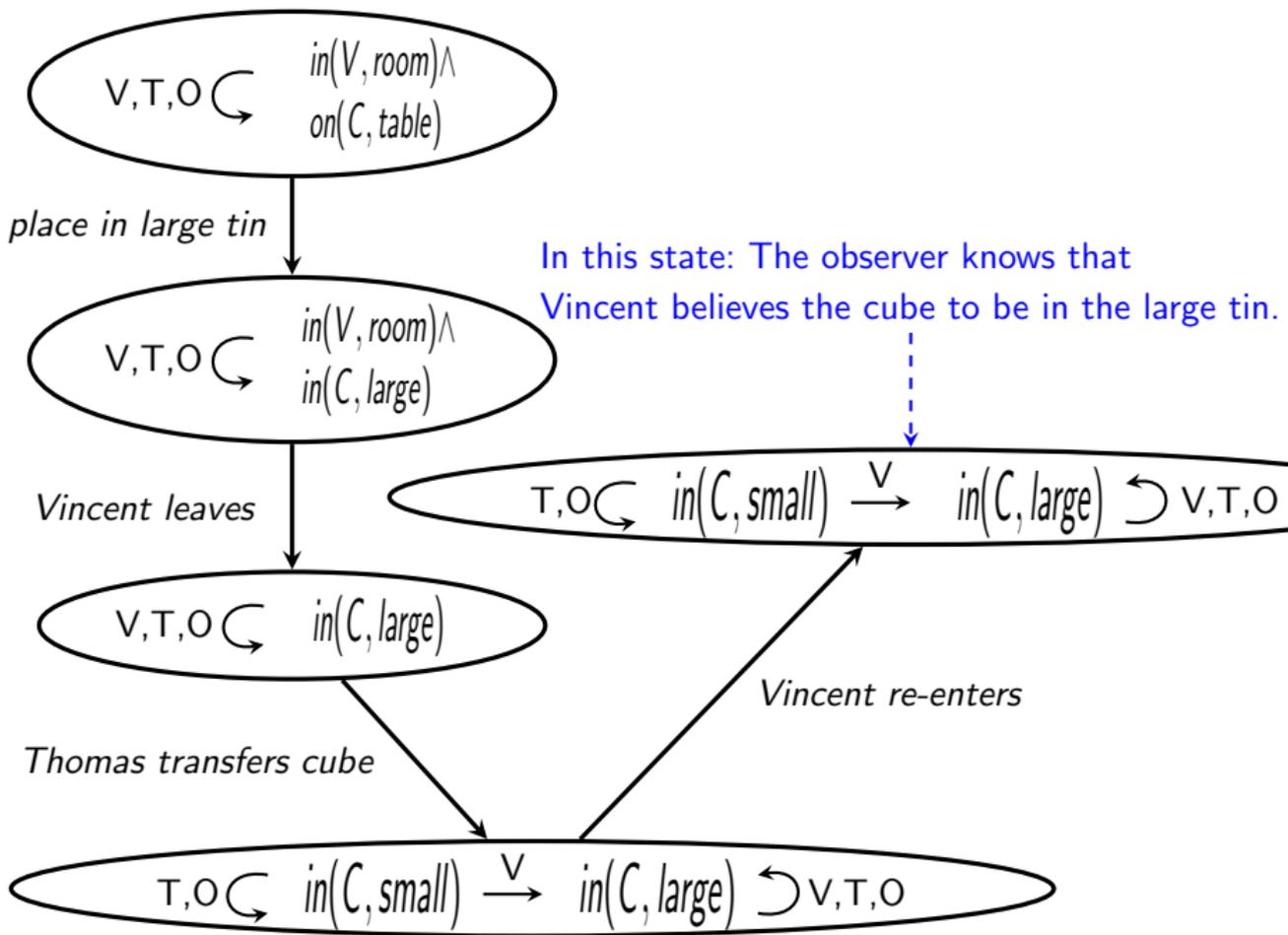


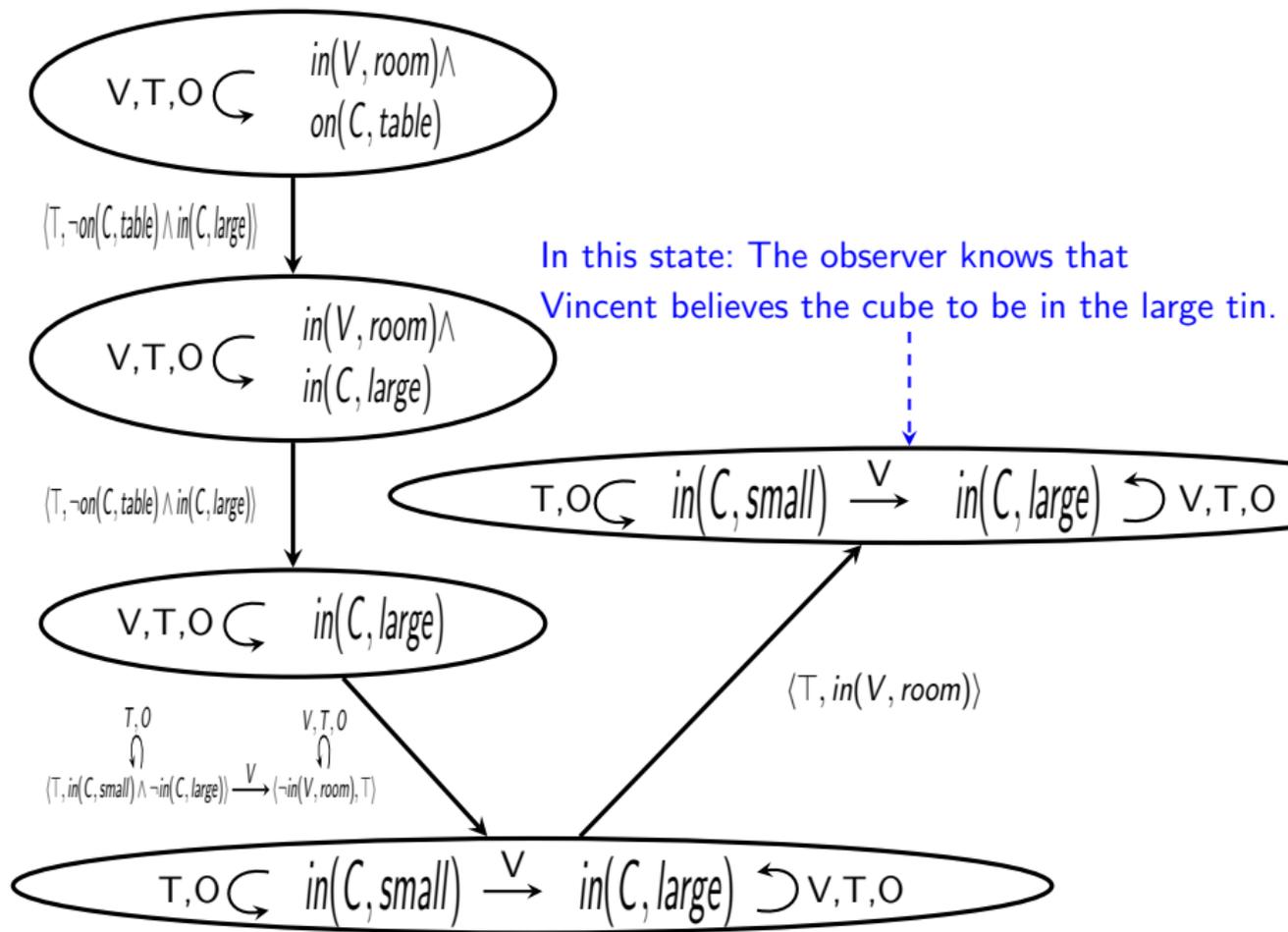












Social robots and science fiction

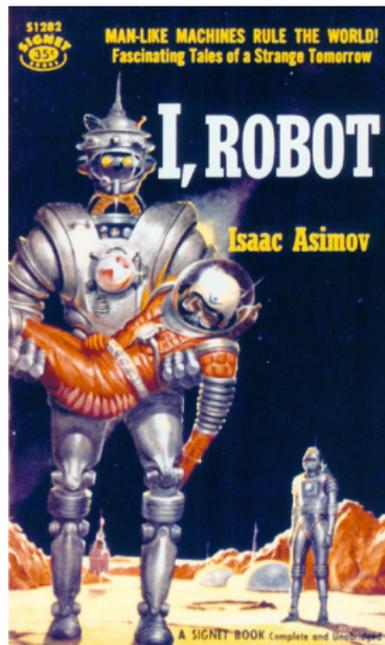
TUG robots at the Hospital of Southern Jutland: “There has been incidents where the ambulance personnel couldn’t wait for TUG to move away. Then they went and pushed it.” (J.K. Clausen to ing.dk).

Social robots and science fiction

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1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.



Social robots and science fiction

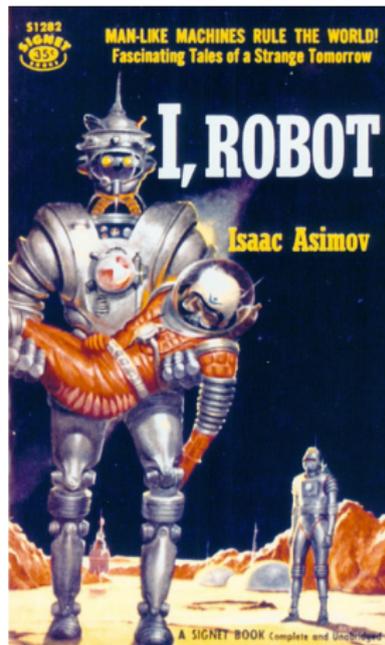
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Showing consideration to others requires:

- 1) the **intention** to do so;
- 2) the **ability** to do so.



Collectively rational of socially stupid?

The current state of affairs:

Collectively rational or **socially stupid?**

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humans



robots

Collectively rational of socially stupid?

The current state of affairs:

Collectively rational or socially stupid?

↑
humans

↑
robots

Conclusion: Robots need a ToM to learn how to behave well in a world of humans; humans need to learn to be more careful in how they apply their ToM.