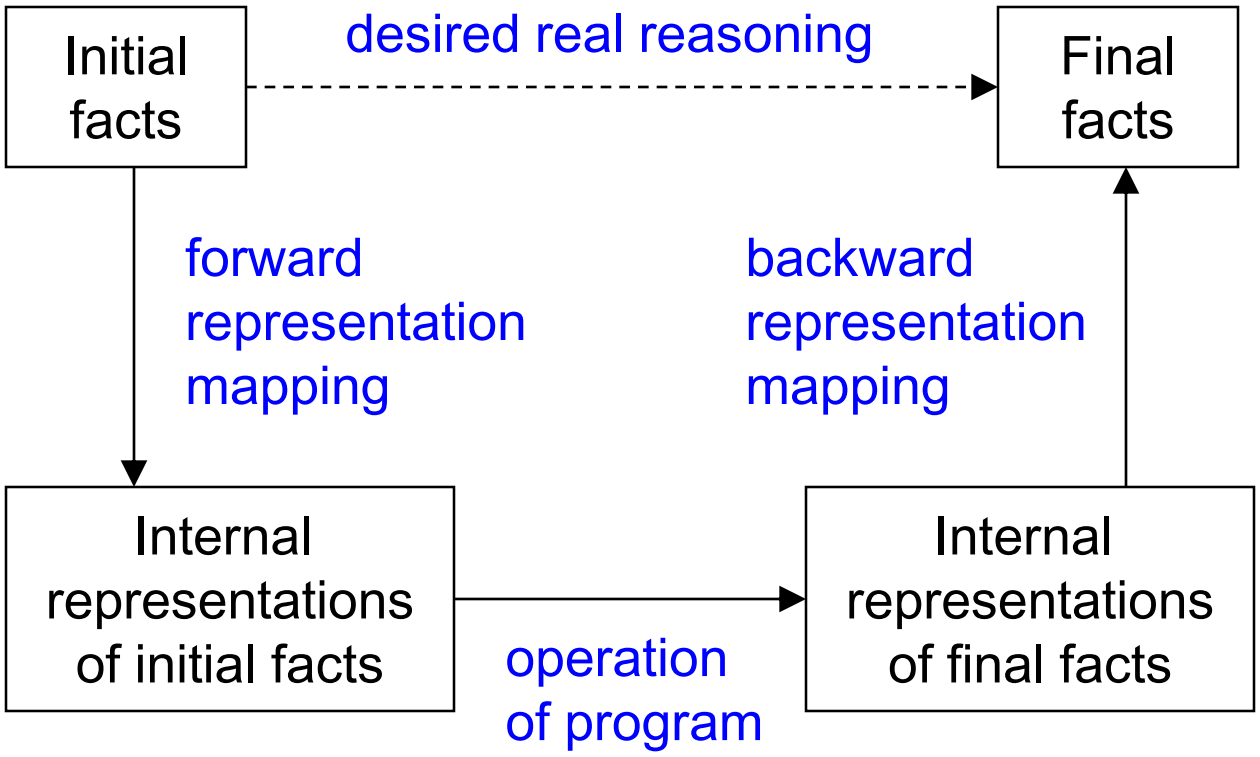
Knowledge Representation

Chapter 6

Representation and Mapping

- Facts: things we want to represent.
- Representations of facts: things we can manipulate.

Representation and Mapping



Representation and Mapping

- Spot is a dog

- Every dog has a tail

Spot has a tail

Representation and Mapping

- Spot is a dog

  dog(Spot)

- Every dog has a tail

  $\forall x$: dog(x) $\rightarrow$ hastail(x)

  hastail(Spot)

  Spot has a tail

Representation and Mapping

- Fact-representation mapping is not one-to-one.
- Good representation can make a reasoning program trivial.

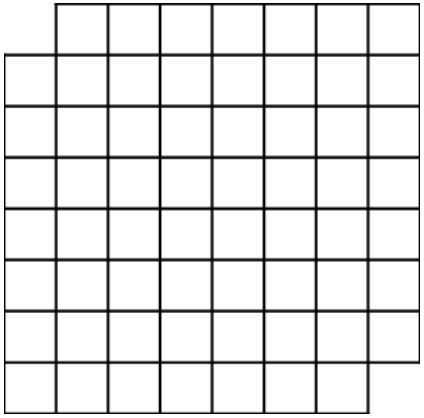
Representation and Mapping

The Multilated Checkerboard Problem

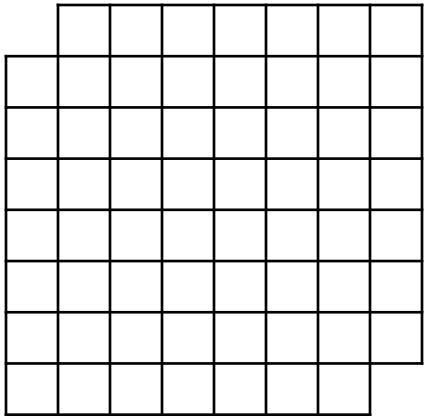
"Consider a normal checker board from which two squares, in opposite corners, have been removed.

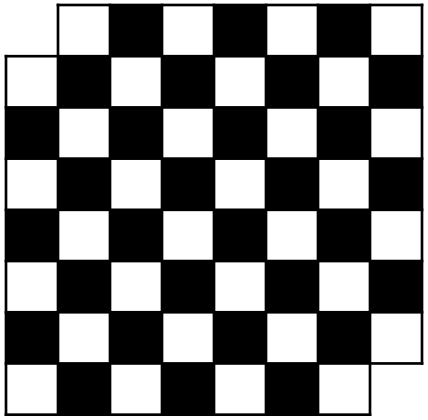
The task is to cover all the remaining squares exactly with donimoes, each of which covers two squares. No overlapping, either of dominoes on top of each other or of dominoes over the boundary of the multilated board are allowed.

Can this task be done?"



Representation and Mapping





No. black squares
= 30

No. white square
= 32

Homework

Reading

R. Davis, H. Schrobe, P. Szolovits (1993): “What is a knowledge representation?”