Phil 321
Newcomb's Problem

I. The problem

	$1 M in box 2	$0 in box 2
Take only box 2	$1 M	$0
Take both boxes	$1 M + $1000	$1000

Assumptions:
1. Predictor puts $0 in box 2 if he thinks you'll take both.

2. Predictor correct with 99% frequency.

II. Two arguments and two decision principles

Argument 2 (two-box): The Predictor has made his prediction; the money is there or not, and my choice cannot change this. So I ought to take both. *Dominance Principle*: if action *A* dominates action *B*, then *A* should be performed.

Argument 1 (one-box): If I take one, I almost certainly get $1 million; if both, almost certainly $1000. *Expected Utility* principle.

III. 1st attempt to resolve the conflict

Apply dominance reasoning if and only if states are probabilistically independent of the actions. Otherwise, use Expected Utilities.

IV. 2nd attempt: parallel problems

Example 1: (Evil-twin Pascal's wager!)

	Saved	Not saved
Sin	12 (#1)	-8 (#3)
Don't sin	10 (#2)	-10 (#4)

Example 2: (Medical Newcomb)

	Sam is father	*Tom* is father
A: academia	Short academic career (-20)	Long academic career (100)
B: baseball	Short baseball career (-25)	Long baseball career (95)

Nozick's objection: Peter's choice affects our *estimate* of which one is more likely to be the dad, but does not affect which one really is his dad!

General problem:

- states are not probabilistically independent of the actions
- but which state is the case is already fixed and determined

Should we follow the EU principle or Dominance reasoning?

V. Causal relations and causal decision theory

Type 1: Action A → state S Ex: Disarmament

Type 2: State S → action A Ex: Disease case

Type 3: Common cause C → state S
Common cause C → action A Ex: Twin brothers' PD
Ex: Newcomb

(2) Type 2: From *S* to *A*

The actions are only *evidence* of the states.

(3) Type 3: A common cause (causal fork) *C* which causes both *A* and *S*.

Here both the actions and the states are merely *evidence* for some third thing; and hence, the actions are evidence for the states.