# Outline for April 11, 2000

1. Greetings and felicitations!
   a. Homework
   b. Handouts
2. General case: It is undecidable whether a given state of a given protection system is safe for a given generic right.
   a. Represent TM as ACM; reduce halting problem to it
3. Take-Grant
   a. Introduce as counterpoint to HRU result
   b. Show bridges (as a combination of terminal and initial spans)
   c. Show islands (maximal subject-only tg-connected subgraphs)
   d. can•share($r$, **x**, **y**, $G_0$) iff there is an edge from **x** to **y** labelled $r$ in $G_0$, or all of the following hold: (1) there is a vertex **y''** with an edge from **y'** to **y** labelled $r$; (2) there is a subject **y'** which terminally spans to **y''**, or **y' = y''**; (3) there is a subject **x'** which initially spans to **x**, or **x' = x**; and (4) there is a sequence of islands $I_1$, ..., $I_n$ connected by bridges for which **x'** is in $I_1$ and **y'** is in $I_n$ .
   e. Describe can•steal; don't state theorem
4. Decidability vs. Undecidability
   a. Notion of type; subject, object types
   b. Attenuation:
   c. If attenuating acyclic, it's decidable; so that is sufficient. Open question: is it necessary?