# Outline for April 15, 2003

1. Schematic Protection Model
   a. Create operations and attenuation
   b. Result: acyclic attenuating schemes decidable
2. Expressive power
   a. HRU *vs*. SPM
   b. Multiparent joint creates in HRU
   c. Adding multiparent joint creates to SPM (giving ESPM)
   d. Simulation of multiparent joint creates by 2-parent joint creates
   e. Monotonic ESPM, monotonic HRU equivalent
   f. Safety question in ESPM decidable if acyclic attenuating scheme
3. Comparing Expressive Power of Models
   a. Graph representation
   b. Go through 3-parent joint create as simulated by 2-parent joint create
   c. Correspondence between two schemes in terms of graph representation
   d. Formal definition of scheme $A$ simulating scheme $B$
   e. Model expressive power
   f. Result: monotonic 1-parent models less expressive than monotonic multiparent models (so ESPM more expressive than SPM)
4. Typed Access Matrix Model
   a. Add notion of type for entities—set of types $T$, set of subject types $TS \subseteq T$
   b. New create rules: specify subject/object type
   c. In command, child type if something of that type created; otherwise, a parent type
   d. Show type graph and cycles in it
   e. Safety decidable for systems with acyclic MTAM schemes