Outline for January 31, 2007

1. Greetings and Felicitations!
2. BLP: formally, continued
   a. Theorem: $\Sigma(R, D, W, z_0)$ satisfies the simple security property for any initial state z_0 that satisfies the simple security property iff W satisfies the following conditions for each action $(r_i, d_i, (b', m', f', h'), (b, m, f, h))$:
      i. each $(s, o, x) \in b'-b$ satisfies the simple security condition relative to f' (i.e., x is not read, or x is read and $f_s(s)$ *dom* $f_o(o)$)
      ii. if $(s, o, x) \in b$ does not satisfy the simple security condition relative to f', then $(s, o, x) \notin b'$
   b. Theorem: $\Sigma(R, D, W, z_0)$ satisfies the *-property relative to $S' \subseteq S$, for any initial state z_0 that satisfies the *-property relative to S' iff W satisfies the following conditions for each $(r_i, d_i, (b', m', f', h'), (b, m, f, h))$:
      i. for each $s \in S'$, any $(s, o, x) \in b'-b$ satisfies the *-property with respect to f'
      ii. for each $s \in S'$, if $(s, o, x) \in b$ does not satisfy the *-property with respect to f', then $(s, o, x) \notin b'$
   c. Theorem: $\Sigma(R, D, W, z_0)$ satisfies the ds-property iff the initial state z_0 satisfies the ds-property and W satisfies the following conditions for each action $(r_i, d_i, (b', m', f', h'), (b, m, f, h))$:
      i. if $(s, o, x) \in b'-b$, then $x \in m'[s, o]$;
      ii. if $(s, o, x) \in b$ and $x \in m'[s, o]$ then $(s, o, x) \notin b'$
   d. Basic Security Theorem: A system $\Sigma(R, D, W, z_0)$ is secure iff z_0 is a secure state and W satisfies the conditions of the above three theorems for each action.
3. Using the model
   a. Define ssc-preserving, *-property-preserving, ds-property-preserving
   b. Define relation $W(\omega)$
   c. Show conditions under which rules are ssc-preserving, *-property-preserving, ds-property-preserving
   d. Show when adding a state preserves those properties
   e. Example instantiation: *get-read* for Multics
4. Tranquility
   a. Strong tranquility
   b. Weak tranquility
5. System Z and the controversy