WEEK 5

1. **A central idea of the course – that at this moment, computers are strongest in performing those tasks where the required information processing can be described in rules-based logic, a set of "If-Then-Do" rules in which an action is specified for each contingency.**

2. **Rules-based logic is one of the ways (but not the only way) that humans process information. Examples include arithmetic, the general spirit of recipes in a cookbook, the diagnostic instructions the mechanic was following (in the Beamish paper two weeks ago, etc.)**

3. **(Technical point – not yet brought up to students – at the level of machine language, all software is based on rule-like instructions. But these instructions can be used for either of two purposes – to support rules based information processing or to support machine learning programs (e.g;. neural nets) where probabilistic "rules" are inferred from the data rather than written out at the outset.)**

4. **Go through several examples including a mortgage underwriting program based on a logit estimation which uses mortgage application information to compute the ex-ante probability that a mortgage will default and, on that basis, rates the mortgage accept, reject, or two close to close for the software to call-requires human judgment.**

5. **Point out two major limits of rules-based logic.**

    a. **Can't handle "new" problems – i.e. problems unanticipated by the rules-writer since a new problem will create a contingency for which there are no programmed rules (there was a case in the Beamish auto mechanic paper of this kind).**

    b. **Particularly important – many tasks we do cannot be expressed in rules, either by us or by observers watching us.**

6. At the same time, there are ways that rules-based systems can be extended. One, noted in the Simon essay (week 2) is to routinize the context. For example, while we can't program the 4-year-old's walk for the apple, we can program tasks on an assembly line by first insuring that the various pieces – the vehicle frame, the pallet that holds the windshield that the robot will insert – each occupy precise positions.

7. In terms of labor demand, a point not covered in the course (which will be covered next year) is that the characteristics that make a task amenable to being programmed are similar to the characteristics that make a task amenable to being moved offshore – manufactured parts that can be described in digital files to set up CNC machine tools (in another country), customer service representatives whose interactions can be heavily scripted and linked to computerized data bases. I.E. "codification" - the process by which tasks can be moved offshore with minimal misunderstandings – looks a lot like expression in rules.