Production System

Production system:

Since search forms the core of many intelligent processes, it is useful to structure AI programs in a way that facilities describing of performing search process. A production system provides such system structure as follow:

1. Set of rules as the form
2. One or more KB/Database that contains whatever information is appropriate for particular task

3. Control strategy that specific the order in which the rules will be compared to the database and a way of resolving the conflict that arise when several rules matched at once.

4. Production system is the simplest and one of the oldest techniques for knowledge representation.

1. **A set of production rules (PR):**

Left side determines the applicability of the rule and a right side describes the operation to be performed if the rule is applied.

2. **One or more knowledge/database:**

That contain whatever information is appropriate for the particular

task (is called the working memory)

3. **A control structure/interpreter:**

The control structure is strategy that specifies the order in which the rules will be compared to the database and also a way of resolving the conflicts that arise when several rules match at once.

- *the first requirement of a good control strategy is that it cause motion.*
- *The second requirement of a good control strategy is that it cause systematic.*

4. **Rule applier:**

A conflict may arise when more than one rule that can be fired in a situation of rule interpreter is to decide which is to be served of what is the order. The strategies used to resolve the conflict resolution strategies.

Production System Characteristics

- Production systems are a good way to describe the operations that can be performed in a search for a solution to a problem.

1. Can production systems, like problems, be described by a set of characteristics that shed some light on how they easily be implemented?
2. If so, what relationships are there b/w problem types and the types of production systems best suited to solve the problem.

1. Class of production Systems

- A ***monotonic production system*** is a system in which the application of rule never prevents the later application of another rule that could also have been applied at the time that the first rule was selected.

- A ***nonmonotonic production system*** is one in which this is not true.

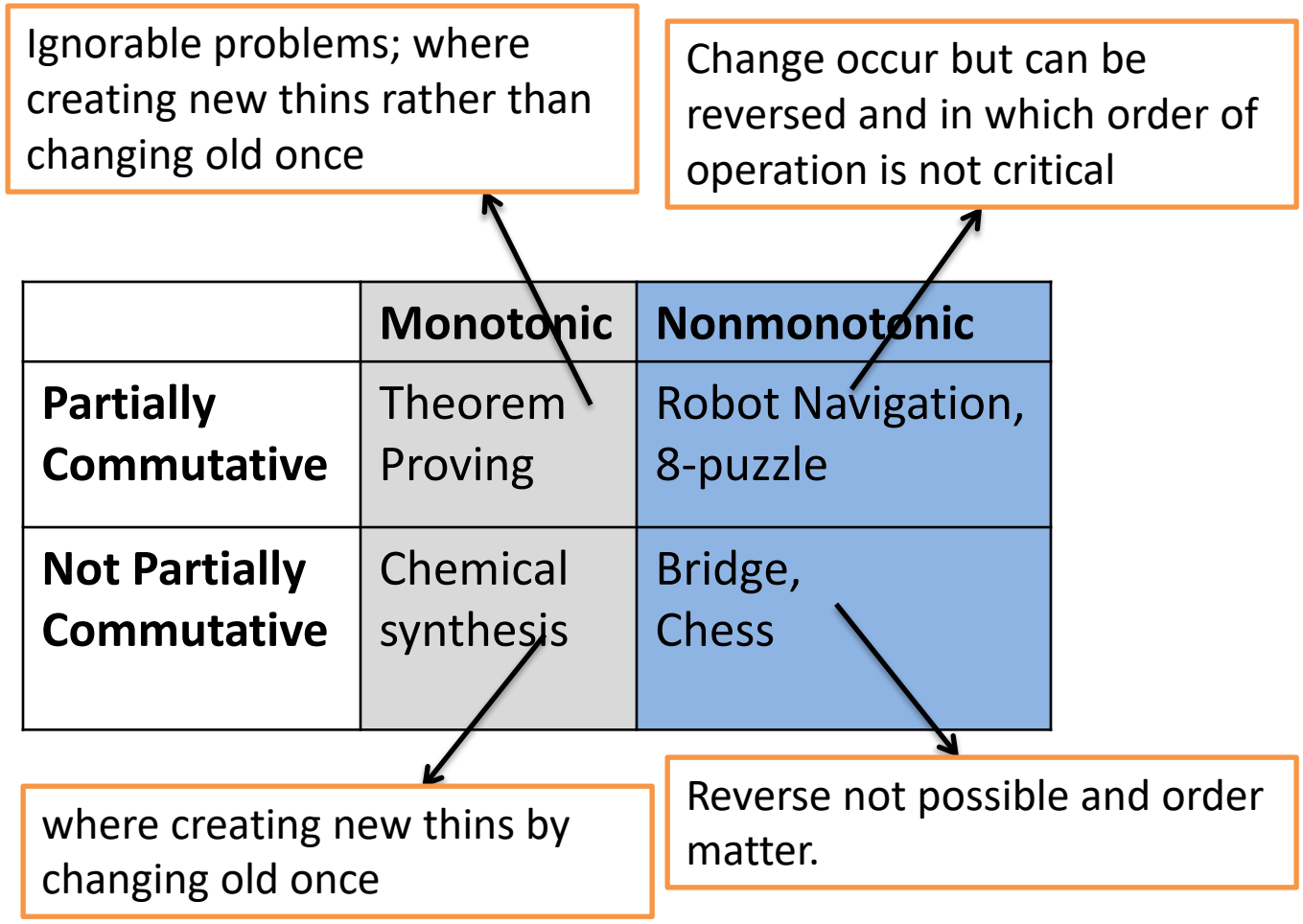
- A ***partially commutative production system*** is a system in with the property that if the application of particular sequence of rules transforms state x into state y, then any permutation of those rules that is allowable also transform state x in to state y.

- A ***commutative production system*** is a production system that is both monotonic and partially commutative.

2. Relationship b/w problems and production systems

- For any solvable problem, there exist an infinite number of production systems that describe ways to find solution. Some will be more natural or efficient than other.
- Any problem that can be solved by any production system can be solved by a commutative one, but the commutative one may be so unwieldy as to be practically useless.
- So in formal sense, there is no relation ship b/w kind of problems and kind of production system since all problems can be solved by all kinds of system.
- But in practical sense, there definitely is such a relationships b/w kind of problems and kind of systems that lend themselves naturally to describing those problems.

2. Relationship b/w problems and production systems



It is particularly important to make correct decisions the first time, although Universe is predictable.

Thank You!!!