Chapter 2.2 | Semantic Networks and Frames

10 Salient Sentences

1. “Semantic networks and frames provide a simple and intuitive way of representing facts about objects”

2. “In a semantic network knowledge is represented as a graph, where the nodes in the graph represent concepts, and the links represent relations between the concepts.”

3. “It is now recognized that it is important to state, as precisely as possible, the *semantics* of a representation language, so we know exactly what expressions mean and what inferences are sound. One simple way to describe precisely this meaning of nodes and links in a semantic network is in terms of set theory. “

4. “It is straightforward to translate between semantic network and frame based representations. Nodes in the semantic network become objects in the frame system, links become slots, and the node the other end of the link becomes the slot value.”

5. “Most frame systems allow you to state which properties (ie, slots) are just typical of a class, with exceptions allowed, and which must be true of all instances.”

6. “The most important relations between concepts are *subclass* relations between classes, and *instance* relations between particular object instances and their parent class.”

7. “Semantic networks allow us to represent knowledge about objects and relations between objects in a simple and fairly intuitive way. The conventional graphical notation allows us to quickly see how the knowledge is organized. The sort of inferences that are normally supported is very restricted – but this means that it is very easy to work out what is going on. So, while the notation may be ill suited where very complex knowledge representations and reasoning is required, it may be a good choice for certain problems.”

8. “With all these features, plus multiple inheritance, it may be hard to predict exactly what will be inferred about a given object just by looking at the set of frames.”

9. “We say that the system has a *procedural* rather than a *declarative* semantics, as the precise meaning of a set of frames depends on how the inferences are done. This is

practically undesirable, but for practical systems it may be worth sacrificing a clean semantics for additional features and flexibility."

10. "There are many things that cannot easily be represented using frames. For example, it is hard to express *negation* (i.e. the fact that something is NOT true), *disjunction* (i.e. the fact that either one thing OR another is true), or certain types of *quantification* (i.e. the fact that something is true for ALL or SOME of a set of objects).