From Complex Systems and Post-modernism

Capabilities of Complex Systems

* Self Organization – evolutionary. Adapt to the environment as it changes
* Representation – it must be able to store and analyze information about elements in its environment. Information elements must have meaning.

Artificial intellegence (AI)

Two types:

* Rule based models

Combining symbols and tokens in accordance with a set of rules. Tick-tac-toe for example

Computer is an example

* Connectionist based

Very much like neural networks of nodes, synapses and weights.

This book deals primarily with connectionist models

* Neural networks are complex structures modeling complex structures
* Representation is distributed rather than encoded
* They can self-organize and adapt

The main theory set forth by this author is that a neural network (a connectionist architecture of complex systems) has no method of representation. There is no symbol system or semantic meaning to any object or situation. The nodes that fire are unimportant. The representation is constructed through the weights between nodes. Information is not stored in symbols. It is reconstructed every time through the system of weights in the neural pathway.