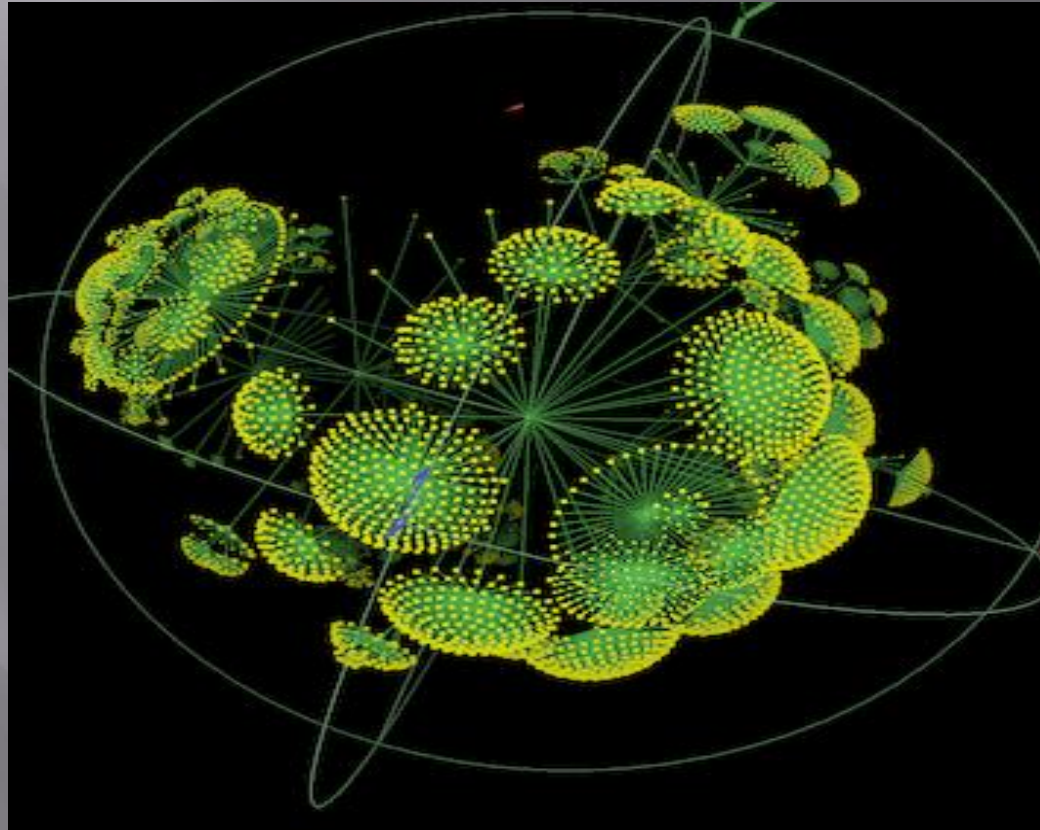


Complex Adaptive Systems



Anthropomorphize Organizations

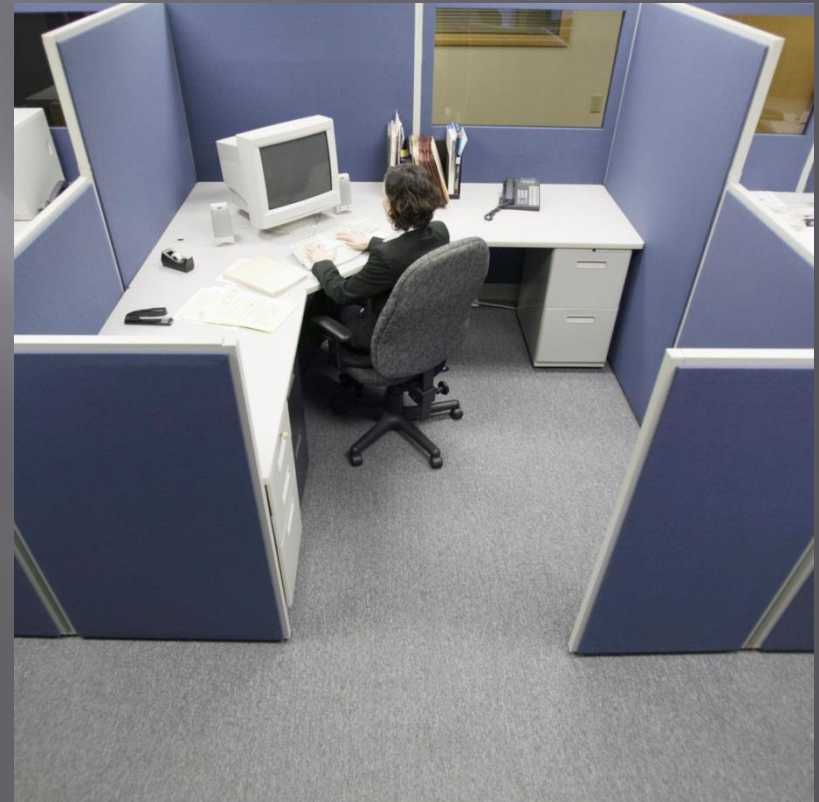
- ▣ Morgan uses the brain metaphor externally, in the sense that he is not concerned with drawing comparisons between how the brain actually works and organizations, but rather uses the metaphor to anthropomorphize organizations based on characteristics of the brain as observed from the outside.
- ▣ The brain metaphor provides a way to approach organizational learning the way you would approach individual learning: by building trust in the teacher, enthuse commitments to learning goals and provide availability of tools.

Neural Network of Energy

- ▣ Morgan states, "The metaphor draws attention to the importance of information flow, information processing, learning, and intelligence..." With this metaphor, the organization is seen as a neural network of energy, information, exchanges, and processes. The organization can think, learn, and problem solve. This metaphor is consistent with today's concept of the Learning Organization.

Organizations are:

- ▣ Adaptable
- ▣ Flexible
- ▣ Organic
- ▣ Thinking entities that are capable of learning
- ▣ Changing and adjusting



Specific theories in this section

- ▣ Information-based contingency theories
- ▣ Cybernetics and learning theory
- ▣ Holographic theory.



Consequences for the Organizational Metaphor

- ▣ When looking at organizational processes, viewing the organization as an information-processing system, we can divide what is going on into two main activities:
- ▣ The retrieval, processing and dissemination of information (not necessarily in that order)
- ▣ The storing (retention) of information

Animal Experiments

- ▣ Morgan's concept of the organization as a brain is based on the way organizations store information; that is, how organizational memory functions. As found by animal experiments, large parts of the brain can be removed without significantly impeding the functions of the organism.

Disappearance of Working Parts

- ▣ The ability to survive the disappearance of working parts of the system does not strike us as particularly difficult in an organizational setting: after all, humans are adaptable and can work harder under difficult situations than under normal conditions.

Interrelated

- ▣ The reason the brain can process information so quickly is its exploitation of massive parallelism: instead of, like most computers, having one single, albeit extremely fast, processor chugging through everything, the work is divided up and performed by a number of specialists: parts of the brain, not specifiable (though activities are localizable to a certain extent) but interrelated, mingled together.

Four principles to create a "hologram" organization

- ▣ functional redundancy: overcapacity, not by having many extra parts, but by having many functions performed by each of them
- ▣ necessary variation: all parts of a system must have the same variation and complexity as the environment it is supposed to control
- ▣ a minimum of critical specification: roughly that there has to be some type of formal organization, though it may change rapidly
- ▣ learning to learn: the ability not only to correct actions to goals, but also to question the goals if necessary

No Central Intelligence

- ▣ The new view of the brain emerging from brain research seems very consistent with the holographic image. There is no central intelligence. The brain is a random, chaotic, self-organizing system that produces patterns from experience that get embedded in its structure. These patterns guide behaviour and social life. In terms of the theory of chaos and self-organization this is what happens in all complex systems. Intelligence doesn't exist. It can't be designed or planned. It is something that evolves and emerges. So the challenge in creating organizations that can be brain-like rests in how can you create the parameters for guiding experience, or what I call "minimum specs" -- the minimum rules, values or reference points that can produce an emergent form of organization.

The Strong Points - Brain Metaphor

- ▣ increasing our understanding of organizational learning and autonomy
- ▣ showing why organizational guidelines should rather be in the form of negative (thou shall not) than positive rules
- ▣ showing the possibilities available when organizations break away from the limited rationality of bureaucracies
- ▣ providing guidelines for the use of new forms of information technology

Two Serious Weaknesses

- ▣ the danger of overlooking the conflicts created between the demands of autonomy and the existing bases of power
- ▣ the huge changes in personal beliefs and values necessary to implement it, changes that will take a long time