# Introduction to Semantic Structures

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*One of the few things that could still interest Felka was emergence. On Diadem, the first world they had visited after leaving Mars in the very first near-light ship, Clavain, Galiana and she had studied a vast crystalline organism which took years to express anything resembling a single ‘thought’. Its synaptic messengers were mindless worms, burrowing through a shifting neural network of capillary ice channels threading an ageless glacier.*

From “*Redemption Ark”*, Chapter 7, Alastair Reynolds, 2002

## Basic concepts

### Semantic Aspect

Fundamental concept in the theory of Semantic Structures.

### Semantic Property

### Primitive Semantic Particle

The property set of the primitive semantic particle will be denoted with or short .

### Semantic Structure; also Composite Semantic Particle

### Semantic Distance between semantic structures

Usually, it will be denoted with or short .

### Association / Semantic link between Primitive Semantic Particles

It will be denoted with where is the subscript corresponding to first primitive particle and is the subscript corresponding to the second one.

### Association / Semantic link between Semantic Structures

### Aggregation levels of semantic structure

Let us consider the semantic structure . contains primitive semantic particles; we will denote this set of the primitive particles with . Thus, . Let us denote with the set of distinct pairs of primitive semantic particles from the set . With we denote the number of elements in . Obviously, . Let us sort these pairs by semantic distance. Let us denote with the minimal distance between the particles in a pair and with the maximal distance observed in a pair from .

**Definition**: Logical view and Physical view of Semantic Structures

**Definition**: Instance of a semantic structure