

Chapter 3

Driving Mechanisms and Patterns

ABSTRACT

This chapter explains role of positive and negative feedback mechanisms that are similar to emotions, and can drive processes to reach goals.

INTRODUCTION

The top structures of our knowledge network describe learned situations and experience. We can create new models of other structures spontaneously. To create or derive new situational models and scenarios, the old models and scenarios must be split into smaller models. Language provides this opportunity, breaking everything into a set of smaller structures – sentences. In a certain order, they create a larger complete network model that describes a new situation, or scenario.

A simple sentence carries an observation that is called “fact.” The observed facts have a very high degree of certainty because it is observed. There are also cause and effect links when events are coming together, and existing of one observation may lead to anticipation of the linked one. Such related observations also have a high degree of certainty because they are observed together as cause and effect.

Spatial knowledge is represented by specifying qualitative relationships of and between spatial entities. Different kinds of spatial relationships representing different aspects of space: size, distance, orientation, shape, etc.

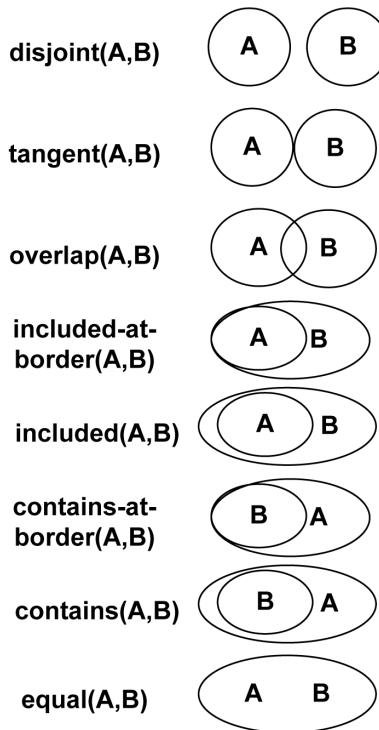
DOI: 10.4018/978-1-5225-2431-1.ch003

Spatial relationships are universal, and they describe how observed distinct entities may locate in space about each other. For instance, there are eight spatial relations for regions on the planar surface that are the basis for the Region Connected Calculus (RCC-8), depicted in Figure 1. The Region Connection Calculus (RCC) by Randell, Cui, and Cohn (1992) is the best-known approach to qualitative spatial representation.

Qualitative spatial representation is intended to describe relationships between spatial entities such as regions or points of a particular space, for instance, of a two- or three-dimensional Euclidean space. Topology offers a theory of space by categorizing different kinds of spaces, so-called topological spaces, according to different properties. And topology fits well to the case which does not depend on a 2 or 3-dimensional space but can be applied to a more general notion of space, which is the case here.

The topology may include the concept of a topological space; different kinds of regions such as open/closed; different parts of regions such as the

Figure 1. Fundamental spatial relationships between planar regions that comprise RCC-8



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