Chapter 3
On the Infological Interpretation of Information

Bogdan Stefanowicz
Warsaw School of Economics, Chair of the Business Informatics, Poland

ABSTRACT

In the chapter, a proposition of so-called infological interpretation of information is presented. The concept was formulated by Bo Sundgren (1973) in his publication devoted to data bases. Sundgren developed a consistent theory of a model of data base based on the concept of message as a specific set of data. The model inspires not only a new interpretation of information but also is a good base for manifold analysis of the concept. In the chapter, the following basic concepts are disused: properties of information, diversity of information, and information space.

INTRODUCTION

Information is one of the most fascinating concepts present in theoretical discussions and practical projects. There are different proposals of its definition and interpretation. As an example one can mention the following concepts:

- **Claud Shannon's** theory of information (Shannon 1948).
- Non-probabilistic theory of **Andriej N. Kolmogorov** (1969).
- The theory of **Ralph L. Hartley** (1928) describing the information quantity in a set.

And among the Polish authors:

- Quality theory of information by **Marian Mazur** (1970).
- Pragmatic theory of information by **Klemens Szaniawski** (1971).
- Semantic interpretation of information proposed by **Józef Olenski** (2001).

DOI: 10.4018/978-1-60566-890-1.ch003

A common character of these approaches is the fact that all of them actually describe some selected aspects of information (e.g. its quantity) and don't explain what **information** is. One can find a long list of proposals in this area but all of them are biased with the field of interested of the authors. To prove this, we cite two known definitions of information:

- (**NorbertWiener**, 1954, p. 17): "**Information** is a name for the content of what is exchanged with the outer world as we adjust to it, and makes our adjustment felt upon it".
- (**GlynnHarmon**, 1984, p. 193): "(...) **information** as *metaenergy* – a very minute amount of energy that regulates larger amounts of energy in and among various kinds of biological or physical systems".

This is why, still there is a need of looking for a satisfactory definition of this concept. In this chapter, a proposition of so-called **infological interpretation of information** is presented. The concept was formulated by **Bo Sundgren** (1973) in his publication devoted to data bases. Sundgren developed a consistent theory of a model of data base based on the concept of **message** as a specific set of data.

The model inspires to look for a new interpretation of information, and is a good source of manifold analysis of the concept.

INFOLOGICAL CONCEPT OF INFORMATION

An interesting and forward-thinking attempt of defining the term **information** was presented by **Bo Sundgren** (1973) and **Börje Langefors** (1980). The essence of this approach is as follows.

Let us assume that observer *U* focuses on a certain segment of reality **R**. Analysis of **R** means separating certain objects *O* within it, their attributes *X* and relations between them. Generally – according to Sundgren (1973, p. 92) – a description of object *O* can be presented as:

$$M := \langle O, P, t \rangle \quad [1]$$

Where:

O – object belonging to the analysed reality **R**;

P – predicate determining the value of attribute *X* of object *O* or its relation with other objects also belonging to **R**;

t – time, in which object *O* is considered with regard to *P*.

Expression [1] enables one to describe object *O* in terms of both its state and relations with other objects as well. This allows distinguishing two specific variants of [1]:

(a) Description of object *O* in terms of its attributes characterising the state of *O*:

$$M := (O, P(X = x), t, \mathbf{v}), \quad [1a]$$

Where:

O – analysed object.

X – attribute of object *O*.

x – value of attribute *X*.

t – time in which object *O* takes value *x* of attribute *X*.

v – vector of additional characteristics related to object *O*, attribute *X* and its value *x* and time *t*.

Expressions *M* defined according to [1a] can be interpreted as the following sentence: "object *O* *has* value *x* of attribute *X* in time *t* with additional characteristics **v**". The word *has* distinguished in italic stresses the special kind of relation between elements of [1a]: it emphasises that object *O* is characterised by attribute *X*, which *has* value *x*.

We have added an additional **vector v** to [1a], which is not present in [1]. Its task is to make the contents provided by *M* more precise: to indicate the measure unit which has already been referred