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## Element of Novelty as an Expressive Feature of Information

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**Abstract:**

**Purpose:** When attempting to create the most commonly accepted definition of information, the most appropriate seems to be a broad approach to it, as well as focusing on some of its most expressive features. The purpose of the article is to examine if one of these features – namely the element of novelty – is included in many different approaches to the definition of information and therefore can be described as an expressive feature.

**Methodology:** The article uses such research methods as a critical analysis of scientific literature, both domestic and foreign, the method of logical inference and the method of synthesis.

**Findings:** The concept of information is widely used and is studied by various scientific disciplines. Initially, natural and technical sciences showed a strong interest in the essence of information. On the other hand, the analysis of the literature makes it possible to notice a relatively late approach to this subject in economic literature. Moreover, even within one discipline, this concept can be defined differently by different authors. However, the results of the article show that there are common characteristics of the information concept.

**Practical Implications:** In order to follow the main aim, the article first presents the essence of the information. Then, the most important concepts of the concept of information and its place in the vertical and horizontal system are described. Due to the focus on the element of novelty, which should characterize information, the horizontal arrangement has been expanded.

**Originality/Value:** The presented results of the studies show a multidisciplinary approach to information with the focus on the element of novelty included in many definitions and approaches.

**Keywords:** Information, element of novelty.

**JEL codes:** D80, D89.

**Paper type:** Research article.

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## 1. Introduction

The concept of information etymologically derives from the Latin word "informatio" (Brockhaus 1999; Kopaliński, 1989). Despite the consistent presentation of the origin of the word information, presenting the concept and the essence of information is a complex task. This is due in particular to the fact that the concept:

- is commonly used but with different meanings,
- is the subject of research in various scientific disciplines, both natural-technical and socio-economic, in which the emphasis is put on various aspects,
- is sometimes presented differently even by individual representatives of the same scientific discipline, which further complicates its presentation.

In common use, information is associated with: news, messages or even rumor, informing about something, communicating something (Kopaliński, 1989).

N. Wiener stated: "Information is information, not matter or energy" (Rathje, 2008). The laconic nature of this formulation may suggest treating information as a fundamental concept that does not require precise definition. Acceptance of such an understanding may also be indicated by the approach of C.E. Shannon, who in his deliberations on information focused on the transmission of information (specifically the characters that create information), developing a model of signal transmission, in which he distinguished: an information source, a transmission channel and an information receiver (Shannon and Weaver, 1949). Information as a primary concept that does not require definition is indicated also by Bogdan Stefanowicz (2010).

It should be remembered, however, that N. Wiener and C.E. Shannon are representatives of natural and technical sciences who focused on information technology and telecommunications as well as the technical process of signal transmission (Amerbauer, 2003). Such an approach is of limited use for considerations going beyond communication technologies, for example, not allowing inference about the content of the message (Arrow, 1984). At this stage, it should be noted that information is used to define many other concepts that are very often of a modern or relatively modern nature, such as the Information Society.

For example, Folta and Stolińska (2007) state that "the information society is a new type of human community, in which information management, its quality and the manner of using it play a particularly important role". In turn Luterek (2004) states that "the information society will exist when information becomes the basis for the functioning of the economy, and thus when people become independent from renewable energy sources. On the other hand, Kubicek (1999) defines the information society as "a socio-economic formation in which the productive use of information and knowledge-intensive production plays a dominant role".

The presented definitions, as well as a number of others presented in the literature, bring the essence of the information society closer, but not fully satisfactory. And one of the reasons for this state of affairs is the multifaceted nature of the concept of information as well as its various concepts.

## **2. Selected Significant Concepts of Information**

The presented approaches to "information" show that many scientific disciplines present their own understanding of this term, corresponding to the needs of a given discipline, relating information to various types of messages occurring, for example, in the form of speech, tone, writing, images, numbers, signs. For this reason, some authors striving for a certain ordering of the concept of "information" are supported by the achievements of semiotics, which, as a general theory of signs dealing with the typology of various forms and varieties of signs, as well as their essence and role, uses syntax, semantics and pragmatics.

The syntactic concept of information focuses on the analysis of individual signs and signals, the connections between them and the rules of their ordering (Gallager, 1986). This means that this concept only takes into account the formal meaning of signals carrying information (Wędrowska, 2010).

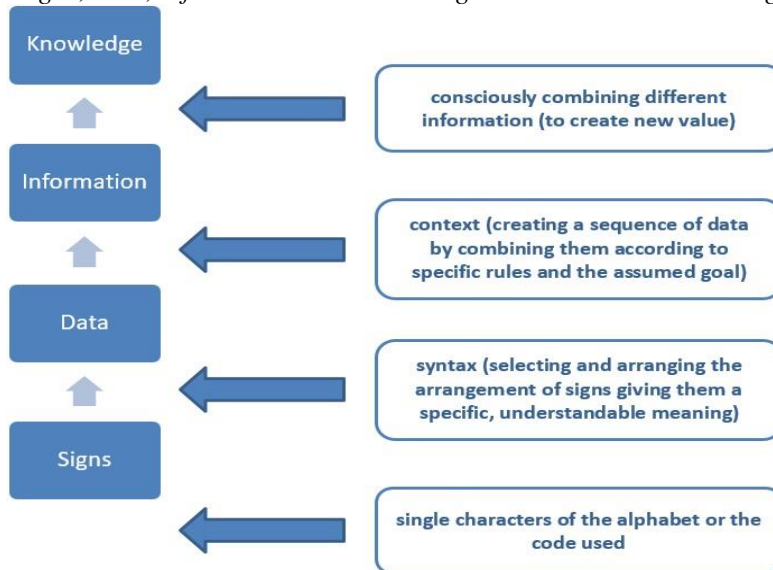
The semantic concept of information refers to the semantic side of information and the mutual relations between the set of signs creating information and the objects or phenomena to which these signs correspond (Oleński, 2001). This approach requires not only the ability to distinguish signs, but also to understand their meaning (Wigand, Picot, and Reichenwald, 1997).

On the other hand, the pragmatic concept of information makes it possible to establish the relationship between the information, its recipient and the purpose or goals that the recipient of information sets for itself. This allows the concept to be used to control purposeful activity (Radzikowski, 1981). The pragmatic approach differs from the semantic approach in that it takes into account the issues of how information is used by the user (Kuhlen, 1995). This approach allows you to combine information with knowledge, which, unlike easily transferable information, is closely related to a specific system or specific unit. Using syntactics, semantics and pragmatics, you can create a simple hierarchical system, the base of which is formed by signs and the top - knowledge. This is shown in Figure 1.

## **3. Place of Information in Vertical and Horizontal Arrangement**

The system shown in Figure 1 showing that knowledge arises thanks to information created from data is derived from the so-called the infological concept of information, which has been widely presented e.g. in the works of Langerfors (1980,) or Stefanowicz (1996). In the infological interpretation, data are understood as elements of the message.

**Figure 1.** Signs, data, information and knowledge as a hierarchical arrangement



*Source:* Own study with consideration of: J. Rehäuser, H. Krcmar, 1996, p. 6.

It is important for the considerations contained in this article that this system can be expanded in:

- vertical mode, e.g., by adding to it "wisdom", "competences" (Griffin, 2008),
- horizontal mode, by distinguishing two components within the "information"
- messages and data (Bergmann, Gerhardt, and Frohberg, 2003).

From the point of view of the subject of the article as well as the considerations concerning the element of novelty conducted here, it is appropriate, first of all, to present a possible horizontal expansion of the presented concept of "information". This is due to the fact that the horizontal expansion of the concept of "information" is associated with the ongoing process of digitization of information. Authors analyzing information in digital form, as a rule, distinguish two components within it: messages and data. Graphically it is presented in Figure 2.

**Figure 2.** Horizontal information layout



*Source:* Own elaboration.

The two components shown in Figure 2, messages and data are defined differently in the literature, and consequently the differences between them are also presented differently.

According to Bergman, Gerhardt, and Frohberg (2003), messages are created using one or more pieces of information. This means that messages as well as information are based on signs and can be presented in the form of, for example, speech, text, images and moving pictures.

According to other authors, the basic difference between messages and data boils down to the fact that data most often presents information that is difficult to know directly, and therefore its interpretation requires the use of a processing process. Yet another approach is presented by Stahlknecht and Hasenkampf (1997), who create information from signs and in the event of their processing they call data, but in the case of their onward transmission, they call them messages. Despite the different ways of defining messages and data, there is agreement that both concepts are components of information that can occur in various forms, including in particular: speech, sounds, letters, images, numbers and characters.

The multiplicity of information components and the variety of its forms lead to a preference for a broad definition of this concept. The legitimacy of adopting such a position is strengthened by the systems theory approach, which in modern terms consists of four main (chronologically arranged) elements, cybernetics, catastrophe theory, deterministic chaos and complexity theory (Jakimowicz, 2009). According to this approach, apart from energy and matter, information is treated as the third universal category (Grochla, 1970).

The following definitions can be presented as interesting examples of broad understanding of information:

- is a reflection of reality that causes a change in the recipient's behavior (Bratnicki, 2001);
- it is a factor that increases our knowledge about the reality around us (Flakiewicz, 2002);
- the kind of resources that allows us to increase our knowledge about us and the world around us (Kisielnicki and Sroka, 2005);
- "information is intentionally directed knowledge containing elements of novelty about a specific material and / or non-material state of affairs in a specific space and time" (Schmid and Lyczek, 2006);
- information is "messages (reports) improving the state of recognition and knowledge of the subject about the state of a specific object in the existing situation and the existing environment, allowing a given subject to better fulfill the task ahead" (Szyperski, 1980).

A feature of all these definitions is the emphasis on the element of novelty obtained thanks to information, which creates strong premises for improving the position of the entity holding the information. It can even be assumed that the degree of novelty contained in the obtained information is decisive for the evaluation of the value of a

given information. The degree of using the value contained in the information, however, is closely related to the abilities and skills of its recipients.

#### 4. Conclusions

The presented considerations indicate the difficulty of presenting a precise definition of information. This is due to the multifaceted nature of this concept and its use by many scientific disciplines.

For this reason, it seems most appropriate to define this concept broadly but at the same time taking into account the element of novelty. Moreover, striving to identify criteria that will allow the concept of information to be distinguished in the created definitions, emphasis should be placed on emphasizing the following features (Picot, Reichenwald, and Wigand, 2001):

- the information is immaterial, and therefore it is not consumed in case of repeated use,
- information may be presented using signs (symbols), sometimes single or few characters are sufficient to present information, and their type and value should be treated as independent of the type and value of the information itself,
- information improves the state of recognition and knowledge, thus reducing the level of uncertainty and doubts in the conduct of entities holding the information,
- information can be used in various ways, and the degree of its use by the entities obtaining it depends on their subjective features, in particular their previous knowledge and skills.

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