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INFORMATION IN TIME STRUCTURE IN THE VIEW OF CARL FRIEDRICH VON WEIZSÄCKER

Michał Drożdż[1]

Abstract

Information in the structure of time according to Carl Friedrich von Weizsäcker. These analyzes relate to the temporal conditioning of information in the context of the information society. Our view of information is from the perspective of social communica-tion sciences and the media. This view is intended to show the essential, desirable characteristics of information, important for media communication. Our analyzes are intended to signal some aspects of information theory, thus showing selected elements of the semantic-pragmatic platform for understanding and describing information. In our analyzes, we refer to the rich literature of Carl Friedrich von Weizsäcker, in order to draw theoretical and practical conclusions synthesizing by analyzing the content of his texts. Our analyzes are not only an attempt to theoretical description of the specifics and functionality of information, but are intended to provide valuable tips for increasing the informativeness of information in the processes of social communication.

Keywords: information, Carl Friedrich von Weizsäcker, media, information theory, information ethics, media information

Introduction

These analyses, concerning temporal conditioning of information, attempt to touch up-on some of the challenges of information society. Our view on information is taken from the perspective of social communication and media sciences. This view aims to show the essential, desirable characteristics of information, important for media communication. Some of these characteristics of information, prioritised as primary, e.g. speed and exclusivity, do not belong directly and do not arise from the essence of information, but are generated more by the multiple contexts of contemporary media: commercial conditions, specific character of the audience, quality of journalistic skills and many other civilisational conditions. Therefore, it is worth looking at information and its contemporary context, and therefore also at the related challenges, from the perspective of social communication and media sciences, so as not to lose the essential features of information, its actual attractiveness and effectiveness, without neglecting its axiologi-

1 Michał Drożdż, University of John Paul II in Krakow, ORCID 0000-0002-8448-7607, michal.drozdz@upjp2.edu.pl

cal and ethical determinants.

In the last sixty years, especially since the mathematical theory of communication developed by Shannon and Weaver (Shannon, 1948, pp. 379-423; 623-656; Shannon Weaver, 1949), the concept of information has found a wide range of applications in explaining all processes of communication, as well as in explaining the processes of knowledge acquisition and exchange. This concept has found and continues to find its place and role in various theoretical analyses and practical references in many fields of knowledge, often very distant from each other: in social communication and media sciences, social sciences, linguistics, cognitive science and philosophy, and finally in biology, physics, cosmology (Buczkowska, 1999, p. 89-104; Ott, 2004; Lyre, 2002; Krallman, 2001, p. 21-46; Lyre, 2004; Mazur, 1970; Górecki, 2006). However, it seems that although the concept of information is increasingly used to explain phenomena and processes occurring both in nature and in society, the concept is not sufficiently clear or unambiguous. We do not have a single, universal, common for all fields of knowledge, definition of information, although different theories of information, both quantitative and qualitative, attempt to develop such a definition. We observe a valid tendency that each of the sciences defines "information" in a slightly different, specific way, defined by its methodology and needs, attributing it characteristics distinguished in the processes and phenomena it studies, including this concept in the theory of information developed in its fields of knowledge. Increasingly frequent attempts to use the concept of information as a basic concept for explaining a wide range of natural and social phenomena indicate the need for an interdisciplinary search for a common semantic and pragmatic platform for this concept. Such attempts focus primarily on the question of the essence (understood as a set of basic constitutive features) of information. This question is very broad and multidimensional. It seems that in order to discover and understand the essence of information it is first necessary to determine the very way of its existence, i.e. to try to answer the question whether the concept of information refers to something real, perceived as a component of reality, or is only a theoretical element of world description.

The second important component of the question about the nature of information is to determine the most basic way in which information manifests itself in various processes and structures (Buczkowska, 1999, p. 89-90). This aspect of analysing the concept of infor-mation also allows us to reveal its essential features. The questions presented above serve as a starting point and define the subject of our analyses, touching on many aspects of information theory. We are trying to present the outlined issues according to the following plan. First, we will show some sense-making functions of information in the context of attempts to define information, with particular emphasis on the concept by Carl Friedrich von Weizsäcker (Weizsäcker, 1971; Weizsäcker, 1985; Weizsäcker, 1992, p. 342; Weizsäcker, 1999). Next, we will show the temporal and pragmatic nature of information, referring to Weizsäcker's concept stating that information is an abstract but real component of reality which exists in time. We will show the semantic-subjective context of information communication, reflecting the increasingly common definition of information as the content of a signal which makes sense to the recipient. An interesting proposal in the search for persuasive aspects of information is Weizsäcker's analysis showing an analogy between information and form in the classical Aristotelian sense, i.e. seeing information as a formation. In the final part of our analyses, we will focus on the structure-making potential of information and its impact on the dynamic processes of change and formation of new structures in man, society and nature. Our analyses aim to show some aspects of information theory, thus showing selected elements of a semantic-pragmatic platform for understanding and describing information (Drożdż, 2006, p. 226-242). The aim of the analysis is to show Carl Friedrich von Weizsäcker's attempt to understand information, which is still a valid proposal for a universal understanding and application of the concept of information in many fields of knowledge and science, and above all in the area of media communication. At the beginning of the 21st

century, we do not have one universal definition of information, common to all fields of knowledge, although various quantitative and qualitative theories of information are trying to develop such operational concepts for their needs. Therefore, the main purpose of the analyzes contained in the article is to show practical aspects of the concept of information by Carl Friedrich von Weizsäcker, possible to apply and use in the theory and practice of media communication. Weizsäcker's concept of information is practically unknown in Poland, therefore the aim of the article is to present selected elements of his semantic-pragmatic platform for understanding and describing information in the context of the needs of media communication. In our analyzes, we refer to the rich literature of Carl Friedrich von Weizsäcker in order to draw synthesizing conclusions of a theoretical and practical nature using the analysis of the content of his texts. In our article, we do not compare comparatively to other attempts to understand information, because they are disciplinary in nature, related to a specific field of science, without the potential of universal application. The Weizsäcker information concept is universal, with great potential for practical applications in an interdisciplinary dimension. The subject literature we refer to only fulfills the role of contextual embedding of Weizsäcker's thoughts in the selected area ofreception of his concept, but it is not our intention to at least contribute to the state of knowledge about information theory, because it goes far beyond our goals (Khatam, Shafiee, 2015; Lyre, 2014). Our analyses are not only an attempt to theoretically describe the specificity and functionality of information, but they also intend to provide valuable tips for increasing the informativeness of information in social communication processes.

Sense-making function of information

In everyday language, the word "information" is common and interchangeable with words such as "message", "news", "notice" and even "knowledge" (Drożdż, 2010, pp. 25-52). This colloquial, even intuitive notion of information seems clear and does not cause any problems – according to Lubański – in case of its colloquial applications, even media applications. The situation is completely different when this term is used in scientific, technical and philosophical analyses (Nawrocki, 2003, p. 37-62; Lubański, 1974, p. 75-78).

For over fifty years, the concept of information has served as an operational concept in scientific and technical language (Shannon Weawer, 1949). It has emerged in this area with the development of new communication technologies and advances in computer science and cybernetics. Information theories, quantifiable theories and quantifiable theories of information begun to emerge, which have helped broaden the scope of use of the term, attempting to clarify the reality it describes. The development of telecommunication transmission technologies – as Shannon has shown – has provided one of the first indications that information can be understood independently of human consciousness or human cognition, thus opening the way for the development of quantitative theories of information with empirical-technical orientation.

Attempts to define information in these areas have depended on the chosen scope of application of the concept. There are many terms in the literature that serve to define information, e.g. uncertainty, change, order and disorder, organisation, structure, entropy, communication, message, etc. However, it seems that the scope of these auxiliary terms is as "capacious", broad and ambiguous as the concept of information defined by them. For instance, in the area of communication, attempts are made to define information using terms: message and communication. A message is a factor on whose basis humans, living organisms or automatic devices can perform deliberate actions efficiently. A message can be transmitted in a communication. Communication is a coded message containing information. Information is the content conveyed by the communication, it is the function of the communication. Communication is in this sense a carrier of information content (Stefanowicz, 2004, p. 13-50).

The terms indicated above and many others are helpful in trying to define or only pro-vide some operational explanations of the term. These terms set a certain dominant direction in the understanding of information, namely a semantic-pragmatic tendency, emphasizing the role of the subject in encoding and decoding communications that are the carrier of information. On this level there are several interesting proposals for understanding infor-mation, which primarily serve as a reference point for qualitative information theories:

- information is any factor that can be used to perform efficient and purposeful actions;
- information is a factor that reduces the recipient's ignorance. Information is the amount of uncertainty the communication removes (Shannon, 2000, p. 48-50). This definition constitutes the basis for measuring information. Information is measured by the probability of certain symbols appearing in the message; this is a purely formal definition, not taking into account the content of the symbols transmitted. However, that formalisation of information was a breakthrough for the theory of infor-mation quantity, the theory of information quality and the theory of communication used just a few years later in humanities and sociology (Schramm, 1055, pp. 131-146);
- information is a factor that allows a person or device to work better;
- information is everything that changes us (Bateson, 1983);
- information is signal content that makes sense to the recipient. This is a holistic
- approach represented by Carl Friedrich von Weizsäcker (Weizsäcker, 1992, pp. 342-345; Weizsäcker, 1974, pp. 82-113; Weizsäcker Weizsäcker, 1972, pp. 335-555; Weizsäcker, 1973; Weizsäcker, 1972/1, pp. 515-530; Weizsäcker, 1972/2, pp. 531-535). It emphasises the pragmatic-semantic nature of information. For Weizsäcker, the mathematical-technical concept of information, on which his conclusions are obviously based, seems too narrow and therefore he extends it include the semantic and pragmatic scope (Buczkowska, 1994, pp. 71-79).

Weizsäcker's semantic-pragmatic approach can be summarized in a few basic theses:

1. There is no information without its receipt: talking about information sent and not received is not legitimate.
2. Information is by its nature relational: one of the limits of the relationship must be the system of information reception and its adaptation to existing information re-sources.
3. Information does not have to be – as such – intentionally given by the sender: it may also be accidental and unintentional, although, of course, the source of its carriers must be some kind of transmitter.
4. Information is neither energy nor matter, but cannot exist without it: it is founded in them through signals whose carriers, i.e. the substance, are energy-material interactions.
5. Information is an abstract entity: it reflects in its relations the effects of the pro-cessing of abstracted changes in energetic-material interactions in the form of signals.

All these theses lead to a general conclusion that information is signal content that makes sense to the recipient (Weizsäcker, 1971, p. 351).

Temporal and pragmatic nature of information

The basic component of the question about the nature of information is the question about how it exists. The answer to this question concerns several fundamental issues. It requires, first of all, a resolution of the question whether information is only connected to the area of human consciousness or, more generally, human cognitive activity; or whether it is an element of the physical world separate from consciousness; whether

it is the property of processes or structures (material, linguistic or consciousness); or whether it is a real, separate component of physical reality such as matter or energy.

Carl Friedrich von Weizsäcker, in trying to answer these questions, represents the view that information exists as an abstract component of reality, separate from matter and consciousness. He believes that "information is therefore not our momentary act of consciousness, but what this act of consciousness knows, something common, to otherwise so different, conscious individuals. So today we are beginning to get used to the fact that information should be presented as a third thing, independent of matter and awareness" (Weizsäcker, 1971, p. 79). A similar concept is also represented by Tom Stonier, who believes that information, having a real existence, is the property of the physical world and part of its internal structure (Stonier, 1990, p. 7-12; Buczkowska, 1999, p. 92). This idea that information can be an independent natural unit and have a real, independent existence came originally not from natural philosophers but from representatives of empirical sciences, namely communication engineers Alexander Graham Bell, Ralph Hartley, Claude E. Shannon (Nawrocki, 2003, p. 38). However, as representatives of empirical sciences, they did not pay much attention to the nature of this existence, thus not entering, according to their own methodology, into the area of philosophical analyses concerning the manner of existence of information. Information does not exist like single physical objects, experientially empiri-cal, but really exists in nature as part of its internal structure and its empirical property is theoretically cognisable. While looking for analogies to the way information exists, Weizsäcker refers to such philosophical concepts as Platonic idea or Aristotelian form. The author indicates two basic features as characteristic of the way information exists: immateriality and universality, both in relation to material things and to the content of consciousness. However, the immateriality of information does not mean that it is not cognisable. An example of such real existence can be information contained in the genetic code. Analysis of the status of information in the genetic code is also part of a reflection on the ontology of possible worlds and reveals a new form of a dispute between empiricism and platonism (Życiński, 1996, p. 65-79). Analysis of the status of information used by modern information sciences seems to lead to the position of modal actualism, proposed by Robert S. Stalnaker, Alvin Planting and Robert Adams. They represent the view that abstract objects exist in reality, even if they do not have specific exemplifications. This thesis can be successfully applied to information, which holds the status of an abstract object. "Contrary to the expectations of preformationists, there is no actualised eye colour or intellectual predisposition of the future human being in the DNA structures" – writes Józef Życiński. There is, however, coded information about a network of abstract references and cross-references, identifying actualisable potentials. Undoubtedly, actualisation is dependent on external physical conditions. (...) However, what is important for the issue at hand is that the contents of this code exist in reality as abstract instructions even if they do not have specific exemplifications at the level of living organisms" (Życiński, 1996, p. 72). Such an understanding of information, in the spirit of modal actualism, corresponds to the views of Weizsäcker, who considers information to be an abstract, although really existing universal component of reality connected with the form, structure, order of nature and its cognition methods. Information holds the status of ownership of material, energy or consciousness structures and manifests itself in processes in which these structures are created or mapped. This close relationship between information and the material-energy structures of nature shows that information is common in nature at every level of its organisation and is an essential element of the organisation of almost all its structures and processes (Buczkowska, 1999, p. 93).

For Weizsäcker, Shannon's concept is too narrow to understand the whole reality of the information process. The concept of information only makes sense in a pragmatic context, i.e. with regard to the nature of the information related to the recipient. According to Weizsäcker's concept, effective information is actual and related to a certain

"semantic situation" (Müller, 1973, p. 334; Schüz, 1986, p. 180). There is a correlation between information and time, determined by a specific communication context. In defining the concept of infor-mation, Carl Friedrich von Weizsäcker puts less emphasis on quantifying information, as is the case with Shannon Schüz's technical information theory (1986, p. 178), but rather emphasises the pragmatic character of information. Shannon developed an information theory based on purely statistical assumptions about the source of the message (Mittelstrass, 1984, p. 242-244). In this sense, the concept of information was generally understood as a measure of the uncertainty of events. Shannon clearly used the term communication. Strictly speaking, Shannon's theory is not strictly information theory, but rather communication theory, be-cause information in this theory is assessed in terms of its transferability to the recipient by communication systems. This means that for Shannon information is a product. Shannon's theory was developed exclusively for optimal transmission of information that can be signalled through characters according to a code that has also been closely coordinated with the specific character of the transmission media (Müller, 1973, p. 334). Semantic and pragmatic elements of information are omitted in this theory. However, Shannon developed the first convincing theory on communication quantification. This information theory quantifies "actual communication – information as a commodity, but not information that provides actual information" (Müller, 1973, p. 334). We do not want to introduce the exact definition of information given by Shannon, but only wish to point out the difference in Weizsäcker's understanding of information and emphasize its temporal and pragmatic character in Weizsäcker's information theory.

Semantic-subjective context of communicating information

The concept of information and the associated concept of probability, which in the concept by C.E. Shannon was used as a basis for measuring the quantity of information, are closely related to human knowledge, i.e. are objectively conditioned by the subject.

Information concerns, firstly, a subject with specific knowledge of a subjective dimension. Information reduces the subject's ignorance. Secondly, information is also objective in the sense that it creates similar or the same effects in subjects with the same knowledge, acquiring new knowledge in the same manner. In Weizsäcker's view, information is also conditioned by time and situation. The conceptual meaning of information is that it becomes a measure of human knowledge, quantifies knowledge as a measure of its growth or as a measure of reduction of ignorance. An increase in knowledge and growth of knowledge depend on the state of the subject's knowledge, its so-called pre-knowledge. Such analyses allow Weizsäcker to distinguish between actual and potential information (Weizsäcker, 1992, p. 342-345; Weizsäcker, 1985, p. 171; Lyre, 2004, p. 62-65). He refers to quantitative theories of information, showing the limitations of these theories and postulating the necessity of link-ing entropy and negentropy as measures of information to the subjective scope of knowledge or ignorance of the recipient (Weizsäcker, 1985, p. 171). Information is actual when it reaches a specific subject in a specific semantic situation. It is therefore not an absolute and constant unit, but it is conditioned subjectively, situationally and objectively: temporally and spatially (Weizsäcker, 1985, p. 172). Potential information that is contained in its real carrier is a specific content, encoded in specific semiotic structures, requiring semantic-pragmatic actualisation by the recipient. Actualisation of potential information is done in the specific conditions of the recipient's subjective knowledge.

In view of such an approach, the question must arise as to how information, so correlated to the specific semantic situation, can be applied scientifically and quantified mathematically at all. Weizsäcker attempts to solve this dilemma by showing the relationship between information and objectified semantics. These relations are included in two basic theses:

1. Information is only what is understood (Information ist nur, was verstanden wird).

2. Information is only what information creates (Information ist nur, was Information erzeugt) (Weizsäcker, 1971, p. 351).

The first thesis underlines the link between information and the subject, the recipient of the information. A recipient who accepts information: SOS, SOS, SOS... the first time receives information that: "Someone at sea is in need"; the second time, they receive confirmation that they heard it right; the third time and every next time, they receive confirmation that the object sending the information has not sunk yet (Müller, 1973, p. 335). This example confirms the far-reaching relationship between information and the recipient's knowledge and the impossibility of clearly defining information without taking into account the subjective conditions of the recipient. In the semantic-pragmatic analysis of the concept of information Weizsäcker introduces two auxiliary concepts, namely: the concept of Erstmaligkeit (novelty aspect of information: first piece of information) and the concept of Bestätigung (confirmation aspect: next piece of information) (Weizsäcker, 1985, p. 94). These concepts allow not only for explanation of the essence of information, but also show the need for a semantic-pragmatic concept of information. Novelty (Erstmaligkeit) is a pre-requisite and constitutive feature of information. Confirmation (Bestätigung), on the other hand, is needed for the information to become knowledge for the recipient; whereas another confirmation may weaken the novelty value of the information. Information is only what is new to the recipient.

Weizsäcker's second thesis states that information produces information. This does not mean, of course, that it happens immediately and directly. This process does not happen only when, as Weizsäcker claims, the recipient becomes the grave of information, which makes it impossible to verify the information in any way. This term is also used to construct a measure of information. Concepts expressing the semantic-pragmatic approach to infor-mation serve not only as qualitative information theories, but also as a basis for constructing quantitative information theories. Weizsäcker shows the function of the dependence of the quantity of information on the qualitative determinants of the subject's knowledge, as shown in the concepts of "novelty" and "confirmation". The recipient achieves the quantity of infor-mation that is contained in the space defined by "novelty" and "confirmation" (Lyre, 2004, p. 59). Each piece of information broadens the recipient's semantic space. Construction of new semantic levels and circles takes place through confirmation of new information. While analysing Weizsäcker's information concept it is easier to see how his pragmatic-semantic approach to information perfectly complements Shannon's syntactic information concept. The compact conceptual structure proposed by Weizsäcker seems to successfully combine Shannon's syntactic concept with the semantic and pragmatic aspect of information, show-ing the three-dimensionality of information and the need for integral syntactic-semantic-pragmatic approaches to information analysis. Such integral approaches allow for theoreti-cal and practical interdisciplinarity in the study of the essence and role of information in nature and social space.

Analysis of information by means of the pragmatic concepts of "novelty" and "confirmation" also opens up a possibility of combining and using information theories in communication theories. In most communication processes, there is a feedback, enabling interaction in which the recipient becomes the sender and vice versa. The more perfectly information produces information, the more difficult it is to distinguish between the recipient and the sender. Recipient and sender become relative elements in the process of information communication. The first attempts to apply the theory of information (from the late 1940s) to sociological theories of communication took place in the early 1950s. Such a model of communication was already proposed by Wilbur Schramm in the 50s in his model of communication based on mutuality of experience (Schramm, 1995, pp. 131-146).

Persuasiveness of information – information as in-formation

In his attempt to understand and define information C.F. von Weizsäcker refers to Latin terminology. He notes that the word "information" includes the terms "form" and "formation". It reminds us that the Latin word informare means to shape, to form. It defines information as a measure of formlessness. "Information is thus a way of giving form to mat-ter or putting matter into form", i.e. putting content into form (in-formation) (Weizsäcker, 1971, p. 85-86; Buczkowska, 1999, p. 82; Weizsäcker, 1971, p. 167; Weizsäcker, 1985, p. 347). This syntactic interpretation serves as a basis for Weizsäcker's analysis of the nature of information and, consequently, for highlighting the semantic importance of the information. Therefore, informing means giving matter (content) a form (information) understood in the Aristotelian sense. "The form is (...) what we get to know in things, it is their form, structure, aspect expressed in concepts" (Buczkowska, 1999, p. 83). The notion of form, although it is a basic concept for C.F. von Weizsäcker, is not precisely defined by him, but rather is more intuitively presented in the "matter – form" juxtaposition (Buczkowska, 1999, p. 83). In this approach to information as a form, the wide scope of this concept is revealed. Weizsäcker, referring to the analogy between information and form, also shows the relation between information and linguistic form, a communication, which is the information carrier. It follows that information should not be identified with a communication nor linguistic form, but it should also be recognised that information is inseparably connected to form, code, character system. Weizsäcker tries to say that information cannot be considered unilaterally, either only from the syntactic side or only from the semantic side. Understanding information as a form not only shows its formal character, but also shows the close relationship between information and the material content which cocreates it, thus also revealing its semantic-pragmatic character. The attempt to understand information in the category of form brings Weizsäcker closer to Shannon's classic definition and shows the relationship between information syntactics and its semantic-pragmatic aspect.

The analogy between information and form allows us to see other aspects of information theory. First, it brings information theory closer to communication theory. Form as an information carrier serves communication processes. In this way the transition from information to communication takes place. Secondly, it shows the relation, interesting from the point of view of philosophy, between information and the concept of matter and consciousness, which are polar concepts in the philosophical tradition. Information is neither matter nor consciousness. However, in the process of information transfer, a certain relationship is created between the object and the subject, between the material object and the subject and consciousness. Thirdly, this analogy also confirms and shows the distinction between actual and potential information. It also shows and implies the relation between the material object as e.g. the carrier of information and the subject and the consciousness that decodes it. The content contained in a specific form becomes information for the recipient thanks to semantics, which in turn is the fruit of knowledge created through information (Lyre, 2004, p. 52-70).

Structure-making potential of information

It is worth noting that in Weizsäcker's concept information is not simply a form or structure, but a related factor, and what is more – as Buczkowska notes – a factor determin-ing some observed form or structure of processes or objects perceived sensorially (Bucz-kowska, 1994, p. 90). The structure and dynamics of natural processes depends on infor-mation elements contained in them and determining them (Weizsäcker, 1971, p. 95). Information is therefore the principle by which structure is created. In this sense, information is a structure-making factor. Information holds the dynamism of creation. It determines the elements of the structure and the relations between them. This understanding of information is particu-larly evident in analyses of information in the field of biology (Ott, 2004, p. 86-124). The processes of formation and development of living

organisms constitute actualisation of po-tential information contained in their biological information structures (Ott, 2004, p. 200).

Information contained in the genetic code is an instruction determining the formation of these structures under certain conditions (Życiński, 1996, p. 70-73). The dynamism attributed to information is one of its basic properties. Information, as a dynamic element, is related to the process of transmission. Weizsäcker explains that information creates information, produces information. In the process in which the information is transmitted, some kind of structure is created or reinforced. This approach confirms Weizsäcker's basic thesis concerning nature and the manner in which information exists, claiming that it is, besides matter and energy, the third universal, dynamic and structuring element of reality. The structure-making character of information reveals its dynamism. Information is transmitted in an actual manner in dynamic processes, and its transmission is connected to a certain transformation consisting in increasing or changing the order of the structure which is the recipient of information (Buczkowska, 1994, p. 94-98). The result of the process of information transmission is creation or change of the recipient's structure. This change in the recipient is also a certain process. Weizsäcker sees this dynamic aspect of information as its manner of existence (Weizsäcker, 1971, p. 93). Information connected to a structure in a static sense exists only as potential information. Information in the actual sense is inseparably connected to the process in which it is transmitted with the use of appropriate carriers (Weizsäcker, 1985, p. 347; Lyre, 2004, p. 62-65). Transmission and actualisation of potential information presupposes the existence of communication processes which, according to Shannon's theory, feature specific elements and a specific structure. The basic elements of this structure are: receiver and sender, specific form as a carrier and channel of information transfer, and dynamism of information encoding and decoding. The carrier, as a necessary condition for transmission of information, acts as a dynamic link between the sender and the recipient. The choice and character of the information carrier depends on the systems exchanging information and the processes actualising it. Each natural process has natural, inherent carriers of information, e.g. impulses, vibrations, material objects or their physical characteristics. Man also introduces and uses formal semiotic-syntactic structures in the processes of information transfer. These include linguistic structures. In Weizsäcker's view, language, understood very broadly as any formal structure enabling communication, is a necessary form combining actual and potential information (Buczkowska, 1994, p. 97). Such a concept reveals the necessity of cognitive communication between three aspects of information: semiotic-syntactic, semantic and pragmatic; moreover, the concept also reveals the structural unity of these three dimensions of information. In this way, we go back to the basic subject of our analyses, which shows the need to take into consideration the three-dimensional perspective of information analysis. The terminology introduced by Weizsäcker, his proposal to objectify the semantics of information and to take into account the three basic and irremovable aspects of information, its syntactics, semantics and pragmatics, makes it possible to develop a common, interdisciplinary concept of information of an operational nature and allows for the creation of a platform connecting quantitative and qualitative information theories.

Conclusion

Weizsäcker's concept, which served as the main context of our analyses and references, introduced the concept of information into the sphere of social communication and media sciences. Information, as a dynamic element, is connected to the process of its transmission and as such constitutes a necessary element of social and media communication processes, as well as entropy and evolution, structural and organisational processes of reality, processes of change in the structures of information reception. In other words, information becomes a necessary element explaining the phenomena of changes in nature and social life as meas-ured by the concept of entropy, which defines

the processes of change over time. This aspect of information shows its quantitative and objective character. The quantitative and dynamic aspect of information shows it as a real component of reality in the same sense as matter and energy. Information does not exist in the physical world separately, without any connection to matter or energy. It cannot be separated from processes and structures in a physical way, it can only be separated as a result of certain abstraction processes (Buczkowska, 1994, p. 104). This process of discovering information, uncovering its structures and carriers, shows the need for subjective concepts. Information is also semantic and subjective in nature, becoming a necessary, objective element of measuring knowledge or ignorance of subjective recipients in communication processes.

However, Weizsäcker's concept is not a terminologically and methodologically refined concept of information. It is more a set of problems and proposals for solving them than a refined theory. It needs many terms and expressions to be further refined. However, the author's original suggestions concerning the nature of information, according to which information is considered to be a universal, dynamic element of reality, universal in relation to the concepts of consciousness and matter, are highly valuable. The combination of information and linguistic form brings information-related research into the field of language and its essence. Information understood from the point of view of a human being – as a cognitive subject – is primarily the state of knowledge or rather a change in the state of knowledge. In this context, it is worth quoting Michał Heller's reflection, presented at the 8th Krakow Methodological Conference dedicated to the issue of the relationship between information and understanding. He pointed to a phenomenon in which people are flooded with information but lack understanding. "When the quantity of information collected on Earth" – says Michał Heller, referring to Lem's idea – "exceeds the critical value, the Earth will explode. A good metaphor: if there is no balance between information and understand-ing, it is not the Earth, but our culture that may explode. Let's do everything we can to pre-vent this from happening" (Heller, 2005, p. 296). The dynamism of information and its basic semantic-pragmatic property is that information modifies the structures of knowledge resources, above all reducing ignorance. The transformation of the growth of information into knowledge is achieved through the processes of thinking, through understanding, which in the era of mass information becomes more and more scarce goods.

References

BATESON G. (1983), Ökologie des Geistes. Anthropologische, psychologische, biologische und epistemologische Perspektiven, Frankfurt am Main.

BUCZKOWSKA J. (1994), Funkcje znaku a przepływ informacji, w: M. Lubański, Sz. Ślaga (red.), Z zagadnień filozofii przyrodoznawstwa i filozofii przyrody, t. 14, War-szawa, s. 71-79.

BUCZKOWSKA J. (1999), Uwagi o pojęciu informacji, „Studia Philosophiae Christianae", 35 (1999), s. 89-104.

DROŻDŻ M. (2010), Dromologia newsa – szybkość a informatywność i obiektywność, w: M. Palczewski, M. Worsowicz (red.), News i dziennikarstwo śledcze wobec wyzwań XXI wieku, Łódź, s. 25-52.

DROŻDŻ M. (2006), In-formacja – semantyczno-pragmatyczny aspekt informacji, w: Wyzwania racjonalności, pod red. S. Wszołka i R. Janusza, Kraków 2006, s. 226-242.

GÓRECKI H. (2006), Teoria informacji, Łódź.

HELLER M. (2005), Zakończenie Konferencji, w: M. Heller, J. Mączka (red.), Informacja a rozumienie, Tarnów, s. 296.

JADACKI J.J. (2003), Analiza pojęcia informacji, Warszawa.

JANIK J.A. (red.) (1996), Nauka, religia, dzieje. Co to znaczy realnie być? VII Seminarium Interdyscyplinarne w Castel Gandolfo 8-10 sierpnia 1995, Kraków.

KHATAM I., SHAFIEE A. (2015), Objective information in the empiricist view of von Weizsäcker, https://arxiv.org/pdf/1510.03725.pdf (20.02.2020).

KRALLMANN D. (2001), Die naturwissenschaftliche Perspektive auf Kommunikation, w: D. Krallmann, A. Ziemann, Grundkurs Kommunikationswissenschaft, München, s. 21-46.

KRALLMANN D., ZIEMANN A. (2001), Grundkurs Kommunikationswissenschaft, München.

LUBAŃSKI M., ŚLAGA SZ. (red.) (1994), Z zagadnień filozofii przyrodoznawstwa i filozofii przyrody, t. 14, Warszawa.

LUBAŃSKI W. (1974), O pojęciu informacji, „Studia Philosophiae Christianae", 10 (1974), s. 73-99.

LYRE H. (2002), Informationstheorie. Eine philosophisch-naturwissenschaftliche Einführung, München.

LYRE H. (2004), Quantentheorie der Information. Zur Naturphilosophie der Theorie der Ur-Alternativen und einer abstrakten Theorie der Information. Mit einem Geleit-wort von Carl Friedrich von Weizsäcker, Paderborn.

LYRE H. (2014), Carl Friedrich von Weizsäckers Philosophie des Geistes, Magdeburg, https://philpapers.org/archive/LYRCFV.pdf (20.02.2020).

MAZUR M. (1970), Jakościowa teoria informacji, Warszawa.

MITTELSTRASS J. (red.) (1984), Enzyklopädie Philosophie und Wissenschaftstheorie, Band 2, Mannheim, Wien, Zürich.

MÜLLER A.M.K. (1973), Die präparierte Zeit. Der Mensch in der Krise seiner eigenen Zielsetzungen. Geleitwort Helmut Gollwitzer, Einführung Wolf Häfele, Stuttgart.

NAWROCKI W. (2003), W poszukiwaniu istoty informacji, w: J.J. Jadacki, Analiza pojęcia informacji, Warszawa, s. 37-62.

OTT S. (2004), Information. Zur Genese und Anwendung eines Begriffs, Konstanz 2004.

PALCZEWSKI P., WORSOWICZ M. (red.) (2010), News i dziennikarstwo śledcze wobec wyzwań XXI wieku, Łódź 2010.

SCHARF J.-H. (red.) (1972), Informatik. Vorträge anläßlich der Jahresversammlung vom 14 bis 17. Oktober 1971 zu Halle (Saale), Leipzig.

SCHRAMM W. (1995), Information theory and mass communication, "Journalism Quarterly", 32 (1955), s. 131-146.

SCHÜZ M. (1986), Einheit des Wirklichen. Carl Friedrich von Weizsäckers Denkweg, Pful-lingen.

SHANNON C.E. (1948), A Mathematical Theory of Communication, „Bell System Technical Journal, 27 (1948), s. 379-423; 623-656.

SHANNON C.E. (2000), Ein/Aus. 0 1. Ausgewählte Schriften. Kommunikations- und Nachrichtentheorie. Kryptologie, Schaltkreise, PCM und Entropie, Berlin.

SHANNON C.E., WEAVER W. (1949), The Mathematical Theory of Communication, Chicago.

STEFANOWICZ B. (2004), Informacja, Warszawa.

STONIER T. (1990), Information and the Internal Structure of the Universe, London.

WEIZSÄCKER C.F. VON (red.) (1973), Information und Imagination, München.

WEIZSÄCKER C.F. VON (1985), Aufbau der Physik, München.

WEIZSÄCKER C.F. VON (1971), Die Einheit der Natur, München.

WEIZSÄCKER C.F. VON (1974), Erstmaligkeit und Bestätigung als Komponenten der pragmatischen Information, w: E.U. von Weizsäcker (red.), Offene Systeme I, Stuttgart, s. 82-113.

WEIZSÄCKER C.F. VON (1972), Evolution und Entropiewachstum, w: J.-H. Scharf (red.), Infor-matik. Vorträge anläßlich der Jahresversammlung vom 14 bis 17. Oktober 1971 zu Halle (Saale), Leipzig, s. 515-530.

WEIZSÄCKER C.F. VON (1999), Große Physiker, München.

WEIZSÄCKER C.F. VON (1972), Information und Evolution, w: J.-H. Scharf (red.), Informatik. Vorträge anläßlich der Jahresversammlung vom 14 bis 17. Oktober 1971 zu Halle (Saale), Leipzig, s. 531-535.

WEIZSÄCKER C.F. VON (1992), Zeit und Wissen, München.

WEIZSÄCKER E.U. VON (red.) (1974), Offene Systeme I, Stuttgart.

WEIZSÄCKER E.U. VON, WEIZSÄCKER C.F. VON (1972), Wiederaufnahme begrifflichen Frage: Was ist Information? w: J.-H. SCHARF (red.), Informatik. Vorträge anläßlich der Jahresversammlung vom 14 bis 17. Oktober 1971 zu Halle (Saale), Leipzig, s. 535-555.

Wyzwania racjonalności (2006), pod red. S. Wszołka i R. Janusza, Kraków.

ŻYCIŃSKI J. (1996), Ontologia światów możliwych, w: J.A. Janik (red.), Nauka, religia, dzieje. Co to znaczy realnie być? VII Seminarium Interdyscyplinarne w Castel Gandolfo 8-10 sierpnia 1995, Kraków, s. 65-79.