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PROPOSAL OF A CYBERNETIC-SEMIOTIC^{K} MODEL OF COMMUNICATION

Abstract

The task we set for ourselves in this work is to build a model of interpersonal communication that would be useful in research and for educational purposes. Referring to the "seven traditions of communication research" (Craig, 2017), we focus on two aspects of communication: technical (cybernetic tradition, Shannon, 1964) and non-technical, mainly that which is related to the transmission of thoughts (semiotic tradition, Ajdukiewicz, 1975). The cybernetic aspect is indispensable in the description of communication: every communication must be a physical transmission. The semiotic aspect is also essential: every communication (interpersonal) must be a transmission of thoughts or evoke thoughts according to specific rules. We start by presenting a cybernetic communication model; then, we discuss selected semiotic^{k} components needed to build a cybernetic-semiotic^{k} model. Our research is about a specific model that considers verbal, nonverbal, and verbal-nonverbal (mixed) messages. To perform the task, we need to introduce modernized terminology. Such a model ultimately facilitates the construction of a typology of defective verbal, nonverbal, and mixed messages. We conduct our research from the perspective of communication theory and philosophy of language.

Keywords: communication, communication model, semiotics^{k}, cybernetics, message

1. Introduction and key terminology

In this paper, we present a communication model that combines the cybernetic and semiotic[k1] model into a single cybernetic-semiotic[k] model[2]. We synthesise based on (also Polish) research on communication, using Pierce's (1997) theory of signs together with Pelc's (1982) interpretation, Ajdukiewicz's philosophical remarks on verbal communication (1975), Shannon's (1964) cybernetic theory together with Pszczołowski's (1978) interpretation.

Although we begin by presenting the cybernetic (technical) model of communication, we devote particular attention to the semiotic model since this model is 'responsible'[3] for the non-technical conditions of clear (comprehensible) communication. Communication research requires the identification of a theoretical basis and the proposal of a research methodology. Communication models form the theoretical foundation, while the research methodology is determined by "traditions of research" (Craig, 2017) on communication.

In the beginning, we shall mention the difficulties in capturing the essence of communication. There is no consensus among researchers as to what communication is, and no uniform communication theory has been formulated to date. Craig recognises this: "Communication scientists disagree on a standard comprehensive theory of communication (...)" (Craig, 2016, 2068). The reasons for this stem from the complexity and diversity of the communication phenomenon.

The literature (in praxeology and communication theory) conceptualises communication very broadly—as occurring between individuals, between machines, between animals, between neurons (Pszczołowski, 1978, 81), as well as between an

[1] The subscript "[k]" refers to an extended understanding on communication theory grounds of the term with this subscript. Linguistic communication exemplifies this, from which elementary semiotic terminology is derived. This terminology shall be comprehended more broadly than the philosophical or linguistic understanding. We will conceptualise it to include verbal and non-verbal messages. This extended comprehension of semiotics, semantics, syntactics, pragmatics, logical rules, contextual rules and correctness is adopted from communication theory and denoted by the subscript "[k]". Understanding of this extension has been explained in point 3.

[2] The term "cybernetic-semiotic" is similar to the term "cybersemiotics" employed in the literature (Brier,2021). They, however, differ in meaning. Many researchers consider cybersemiotics (Brier, 2021) to be an interdisciplinary theory (or arguably even a field of study) based on which one can find "(...) the answer to the problem of creating an internally and externally coherent transdisciplinary theory of information, cognition, communication and interpretation (…)" (Vidales and Brier 2021, X). Cybersemiotics experts refer to Pierce's phenomenology (the authors do not make clear how they understand this term), semiotics and evolutionary philosophy in order to link them to biology, in particular ethology (a branch of zoology, which studies animal behaviour), autopoiesis theory (a theory concerning the ability of a system to reproduce itself), evolutionary theory and emergence theory (the theory of the emergence of qualitatively different forms as a result of the interaction of simpler forms) (Vidales and Brier, 2021, vii). Our research will not be conducted from this academic perspective. We will focus on a narrow view, on the grounds of communication theory, the cybernetic and the semiotic models.

[3] We use the "'...'" symbol to indicate that word used in the place of three dots has colloquial or metaphorical sense.

individual and a machine or an animal, or a thing or a state of affairs (Leathers, 2009, 142; Craig, 2017). In this article, we will not interpret communication so broadly. We recognise that the core of communication, particularly human communication, is the message and the activity of transmitting and obtaining it, in which at least two people are involved. We will not address some cases of non-verbal communication where information is received by observation per se (e.g. when the thought arises in the recipient's mind that there will be a thunderstorm when they see lightning).

"Message" is the pivotal term in our research. Depending on the communication model adopted, the word "message" can be understood as any message (colloquially), a physical signal, a physical stimulus giving rise to a physical effect (cybernetically), a sign representing an idea, governed by the rules of its use (semiotically), a tool of persuasion (politically), a signal eliciting interpretations (theoretically), a management tool (on the grounds of management theory), etc. Using the term "message" without a precise context may lead to confusion. In this work, we assume that a message is "(...) a physical object used to convey (...) information (...). Also, the content of the message so understood" (Saloni, 1993, p. 278).

Messages are divided into verbal, non-verbal and mixed. In this article, non-verbal messages shall be distinguished using italics.

Slurping soup, white smoke, etc., are not non-verbal messages, although they may be forms of such a message. Attaching thoughts to them results in the creation of a message. We allow the use of the phrase "*slurping soup* is a non-verbal communication" if you mean that slurping soup is a form of non-verbal communication 'carrying' the idea that such a form 'expresses' the slurper's delight in the taste of the soup. Suppose white smoke from the chimney of the Sistine Chapel is a form of non-verbal communication 'carrying' the thought that a pope has been elected. In that case, this form with this thought is a non-verbal message (*white smoke rising from the chimney of the Sistine Chapel*) to the recipient of this form. Further in the paper, we will employ abbreviations when writing that s*lurping soup, white smoke*, etc., are non-verbal messages, assuming that the occurrence of the forms slurping soup and white smoke in a communication activity is related to the corresponding thought. Without accompanying thought, they are just physical objects and not messages or forms of messages. All of this has to function within a particular communication system. The comments above also apply to verbal communications. An inscription or sound is a form of verbal communication if it is linked by convention in a particular communication system to a thought. Otherwise, they are just physical entities. The caption "The dog is barking" is a verbal message if it is accompanied by the thought of, for example, the animal being a dog, making a sound that is considered barking (excluding the barking of seals). The caption is not a verbal message if any thought does not accompany it.

We will use the term "model" when describing communication. A model is a representation that reproduces "(...) the whole or a fragment of reality already

existing (...) or not existing (...) in the particular case (...) of the reality that will be created in action" (Podsiad 2000, 522-523). The purpose of the (analytical) model is "(...) to expose those features of the prototype that are of interest to the researcher" (Saloni, 1993a, 338). We are interested in cybernetic and semiotic exposure[k]).

Various communication models have been put forward in communication theory (see Dobek-Ostrowska (2007, 107-125) for an overview). One can speak at least of a rhetorical (Aristotle, 2001), semiotic (Ajdukiewicz, 1975), phenomenological (Rogers, 2002), cybernetic (technical) (Shannon, 1964), socio-psychological (Hovland, 1953), socio-cultural (Whorf, 1982), critical (Horkheimer, 1987) and set theory (Stanosz and Nowaczyk,1976) models of communication, etc. [4] These models differ not only in their components but also in comprehension/understanding of these components.

To clearly bridge the cybernetic communication model with the semiotic one, we will first 'cleanse' both models of 'impurities'—from components belonging to various other models (traditions)[5]. Secondly, we will only list the components necessary and sufficient to describe the essence of these types of communication. Our aim is not to list all the components of the cybernetic and the semiotic models[k] but to capture the essence of both models.

2. The cybernetic aspect of communication

In the literature on communication theory (Fiske, 1999; Dobek-Ostrowska, 2007) or praxeology (Pszczolowski, 1978), many proposals have been made for a model for the technical transmission of communication. These proposals are generally relatively well recognised and, in essence, similar—they refer to Shannon's (1964) model (e.g. Griffin, 2003, 56-58). Many contemporary researchers link this understanding of communication to cybernetics: "Cybernetic metadiscourse discusses communication in terms of information source, receiver, channel, noise, redundancy, feedback, network and related terms that have been absorbed into ordinary language as a somewhat technical-sounding vocabulary for discussing communication" (Craig and Xiong, 2022, 17, see also 9).

[4] Seven research traditions are usually distinguished: rhetorical, semiotic, phenomenological, cybernetic, socio-psychological, socio-cultural, critical, (Griffin, 2000, 54-68; Craig, 2016). These traditions are not precisely distinguished, e.g. the socio-psychological tradition contains semiotic components, those concerning at least the use of context.

[5] There is one source of misunderstanding that is noteworthy. Kulczycki (2012) cites Shannon's cybernetic model, Weaver (1964) as an example of a transmission communication model, recognising the part written by Shannon and the part written by Weaver (which reaches out beyond technical issues) as a whole. If we associate the cybernetic model with only technical components, then we should write about Shannon's cybernetic model (1964). If we associate the cybernetic model with non-technical (e.g. semantic) components, then we should write about Shannon's particular cybernetic model, Weaver (1964) or the cybernetic-semantic-persuasive model of communication.

The creator of the cybernetic model, Claude Shannon, employs the term "communication" in a technical context: "During transmission or at one of the terminals, the signal can be disrupted by noise. This is illustrated by the diagram in Fig.1: the noise source acts on the transmitted signal from its generation to the reception of the signal" (Shannon, 1964, 34). The schematic model of communication presented in *The Mathematical Theory of Communication* (1964) adapts the following form:

"source of information→transmitter→signal→□→received signal→receiver→destination
↑
message source of message noise message" (Shannon, 1964, 34).

We consider the words "message" and "noise" to be commentary (addendum) to the technical diagram. The "→" arrow indicates the direction of communication.

More elaborate cybernetic models are in the literature (Pszczołowski 1978, 81). We do not aim to list as many components of cyber communication as possible but seek to capture those components that are relevant to technical communication while maintaining its technical 'purity'. The information, encoder, and decoder need not be purely technical in nature. Information can be related to the content, understood, e.g. biologically (something perceived by receptors) (Pszczołowski 1978, 81). Encoding and decoding, however, can be combined with semantic or grammatical rules.

We can present the cybernetic (purely technical) model of communication simply by listing only the following components (based on the diagrams provided by Shannon (1964, 34) and Pszczolowski (1978, 81)): signal, transmitter, channel, and receiver. Recalling non-technical components can produce a model that is not 'purely' technical (technical-only components do not form it). This simplified scheme of the cybernetic model would read as follows:
"transmitter (a device that transmits a signal)→channel (a device that transfers a signal)→signal (the physical thing that is transmitted))→channel →receiver (a device that receives a signal)".
This scheme is insufficient to describe, even in a simplified form, the activity of communicating between people. It requires an addendum.

3. The semiotic aspect of communication

Many scholars in communication theory (e.g. Kulczycki, 2012) believe that going beyond the cybernetic (transmission) approach "(...) should entail the use of a semiotic apparatus" (Kulczycki, 2014, 207). Other researchers have written similarly (e.g. Fiske, 1999): "The emphasis should not be on communication as a process, but on the generation of meaning in communication. When one person communicates with another, the latter always more or less understands what the former's message means. For communication to occur, a message composed of signs is a must. The message stimulates

the receiver to create their own meaning, which will be somehow related to the meaning contained by the sender at the beginning of their message" (Fiske, 1999, 59).

To date, philosophers have most often formulated the semiotic communication model of communication (primarily verbal communication). Following Ajdukiewicz (1975): "It is regarded as one of the main functions of speech, namely that it serves to convey, or communicate, the speaker's thoughts to the listeners of their speech. Indeed, individual A making some utterance that individual B hears usually provides a basis for figuring out what kind of thoughts individual A is having at that moment" (Ajdukiewicz, 1975, 25). Ajdukiewicz identifies (objective) thought with meaning (Ajdukiewicz, 1975, 30). Elsewhere, he also mentions the "basis for figuring out", formed by a common vocabulary and common rules for relating (applying) the vocabulary components. Language is described "(...) by the resource of its expressions and (...) by the attribution to them of (not always explicit) specific meanings" (Ajdukiewicz, 1975, 23).

In sum, Ajdukiewicz (1975) distinguishes the following components of the semiotic model: the person making the message (the sender), the person receiving the message (the receiver), the "basis for figuring out" and thought.

Other semiotically relevant components are worth adding to this model, whereas those listed above will benefit from further clarification. The author and addressee should be mentioned in the semiotic model. A new (or at least re-conceptualised) component—the message, which consists of the thought (content) and the physical carrier of the thought (form)—should be introduced into the model. Indeed, in the semiotic communication model, it is essential to note that a message is constructed not only of physical form but also of thought. Communication should involve the transmission of thoughts, or at least it should evoke thoughts. Thought, therefore, is an essential component of communication. A message contains a thought that refers to a specific piece of reality. In this sense, the message is also a sign that is, in the semiotic sense, 'entangled' in networks of rules. Moreover, a message is such a sign, which can be verbal or non-verbal. To include verbal and non-verbal communication in the semiotic model, we need to modify the terminology (concerning the vocabulary and the rules for using the components of the vocabulary). The terminology employed until now only applies to language (in other words, verbal communication), which is insufficient to describe non-verbal and verbal-non-verbal (mixed) communication.

In the semiotic model, we will therefore consider the five basic components of communication: author/addressee, thought, sign, dictionary and rules for using the dictionary components. The components will be discussed further in the paper. We shall begin with the questions of the author, addressee and thought. A message must have an author (its creator) and an addressee (someone to whom the author is directing the message). Including the sender (when its role is reduced to just sending the message) and the receiver (when it is reduced to just receiving the message) is less critical.

A message is formulated to convey something. This something is the content of the message — thought. The content of the message may be mundane (e.g. giving the time of a train departure or 'conveying kindness' *with a smile*), or it may be important—it may represent a common good (e.g. the content of a national anthem or a museum specimen). Thought can be understood psychologically—as subjective thought, the state of mind of a particular person, or it can be understood philosophically—as objective thought, expressible in communication, particularly in language (Frege, 1977, 65), thought the mind of a particular person can access that.

Colloquially, the content of a communication can be said to be a specific message or information (Czeżowski, 1968, 11). This paper, further to this colloquial understanding, conceives this thought as something that corresponds to Frege's *Sinn* (*Sense*), in which case it is "(...) a common property of the many, and not merely a component or modification of a single psyche. It can hardly be denied that humanity possesses a common treasure of thought, handed down from generation to generation" (Frege, 1977, 65). Dummett (2010, 134-145) interprets *Sinn* similarly. *Sinn* belongs to the world of culture. Ajdukiewicz (1975, 30) argues the same.

According to our research, *Sinn* 'belongs' to a group of individuals using the same dictionary and the same rules of dictionary use, i.e. using the same communication system. It is an objective thought in the area of the community of the dictionary and the rules of use of the components of the dictionary. Thought is also psychological 'in nature', as it can be given to the author and addressee. Thought does not occur independently; thought is in the author and the addressee.

We shall proceed to discuss the message issue as a semiotic sign. The message in the semiotic model is understood as a sign in the sense expressed by Peirce (1997), (for a commentary on this understanding of the sign, see. Pelc (1982)). A message can consist of either a single character or multiple semiotic characters. In this sense, a sign is "(...) something that replaces something else in some respect or role" (Peirce, 1997, 131).

A sign is always accompanied by some 'referential' thought, leading to something external (real or fictional). "For some, broadly defined signs are all objects, events and phenomena that—when perceived by someone—allow them to think about what they indicate or mean. Accordingly, signs include both symptoms, i.e. states of affairs, events, phenomena and processes, as well as proper signs, signs in the narrower sense, namely symbols and iconic signs, i.e. (...) individual things (...)" (Pelc, 1982, 141).

Following Peirce (1997), we divide signs into symbols (conventional signs, referring based on convention), iconic signs (signs referring based on similarity), and indicative signs (signs referring based on natural relationships: causation or co-occurrence between the indicator and what it refers to, e.g., *lightning* is an indicator of a thunderstorm, and '*distracted eyes*' are an indicator of nervousness).

Such a sign theory enables the inclusion of non-verbal and verbal-nonverbal messages in research using the cybernetic-semiotic model and verbal messages. Verbal, non-verbal and mixed messages are the signs described in this way. Verbal messages are only sign symbols. Non-verbal messages, on the other hand, can be sign symbols (e.g. *a box lying in the street*), sign indicators (e.g. f*ootprints of deer hooves in the snow*), or sign icons (e.g. *a photograph of someone's face in a passport during passport control*).

We shall now discuss dictionary issues and the rules for using it. To include verbal and nonverbal messages in the communication model, we need to extend the vocabulary's terminology and the rules for using its components.

The terms "dictionary" and "dictionary use rules" will only describe verbal communication. We will refer to the set of components of verbal messages as a "dictionary" (including names (e.g. "dog"), functors (e.g. "barks") and operators (e.g. "for everyone")), (Borkowski, 1977, 20). We will refer to the collection of components of non-verbal messages (e.g. *sniffing*) as a "quasi-vocabulary". The dictionary and quasi-dictionary make the dictionary^{k}.

The rules for using the components of verbal messages are at least semiotic rules. Semiotic rules are comprised of semantic, syntactic, and pragmatic rules. The rules for using nonverbal messages and messages that are composites of verbal and nonverbal messages are quasi-semiotic rules. Quasi-semiotic rules are composed of quasi-semantic, quasi-syntactic, and quasi-pragmatic rules. Semiotic^{k} rules include semiotic rules and quasi-semiotic rules.

Semantic^{k} rules include semantic rules and quasi-semantic rules. The components of the dictionary (the components of the verbal message) and the verbal messages themselves relate (perform a semantic function) by a semantic rule that is a convention (e.g. based on a baptismal act, the name "Adam" is employed). Non-verbal messages relate to and perform a quasi-semantic function by convention (e.g. *white smoke from the chimney of the Sistine Chapel* 'means' that a pope has been elected), the law of nature (e.g. *lightning* refers to a thunderstorm), cultural law (e.g. it is an accepted custom that the *author of a painting signs their work*), similarity (e.g. based on the similarity of *the face of a person showing an identity card* and *the face of the person in the identity card* the identity of the person is established). A deictic definition is also a semantic^{k} rule based on combining conventions, e.g. the verbal message "This is *N*" and the non-verbal message—*pointing gesture* ↓ (Walentukiewicz, 1988).

Syntactic^{k} rules include syntactic rules and quasi-syntactic rules. Syntactic rules establish syntactic relationships between components of the vocabulary (components of the verbal message) and syntactic relationships between the verbal messages themselves. Such rules are grammatical rules. Quasi-syntactic rules establish relationships between non-verbal messages (e.g. the co-occurrence rule of *smile* and *kindness*) and between non-verbal and verbal messages based on a co-occurrence rule based on

cultural laws (e.g. *being late* and saying "I'm sorry"), or natural sciences (e.g. *looking straight ahead* and *personal advantage*; see Leathers, 2009, 81).

The set of pragmatic[k] rules includes pragmatic rules and quasi-pragmatic rules. Examples of pragmatic rules include, among others, rules for using context, logical rules, and rules for correct communication (which applies to verbal communication). Examples of quasi-pragmatic rules are rules of quasi-contextual use, rules of quasi-logic and rules of quasi-correct communication (applicable to non-verbal communication and communication in which verbal and non-verbal messages co-occur). Context use rules and quasi-context use rules are formed by context[k] use rules, which establish the circumstances to be considered when interpreting the components of a verbal message and the (whole) verbal message and non-verbal message: who uses the message, to whom it is sent, the time, the place where it is delivered, etc. Logical rules and quasi-logical rules form the logical[k] rules. Logical rules apply, for example, to the avoidance of contradictions or inconsistencies between components of verbal messages (e.g. a talkative taciturn), between verbal messages (e.g. a message consisting of contradictory sentences: "I accept the thesis without reservation", "And at the same time I entirely reject").Rules of quasi-logic apply to verbal and non-verbal message combinations (an example of their violation is when *a laughing examiner* says that the examinee has failed the exam) and non-verbal message combinations (e.g. *smiling* and *looking at the ceiling* cannot co-occur). Rules of correct communication and rules of quasi-correct communication form the rules of correctness[k]. The rules of correct communication are concerned with maintaining the conditions for good verbal communication (e.g. "keep it short", "to the point", etc.; Grice, 1975). In contrast, the rules of quasi-correct non-verbal and mixed communication 'recommend' behaviour appropriate to the communication situation, e.g. *do not laugh* during an exam when giving an oral answer.

Following the above comments, we conclude as follows: in the semiotic[k] model, it is indispensable to consider the author since the author is the creator of thought. It is also indispensable to consider the addressee, as the addressee is the recipient of the thought, which is only addressed to him or her by the author.

Thought cannot be overlooked, which is the purpose of the communication message. The dictionary[k] (for verbal or non-verbal communication) and semiotic[k] rules for the use of dictionary[k] components must not be neglected.

The components of messages and the messages themselves can be signs: symbols (conventional signs, referring based on convention), iconic signs (signs referring based on similarity), and indicator signs (signs referring based on natural relationships: causation or co-occurrence between the indicator and what it relates to, e.g. *lightning* is an indicator of a storm, *destructed eyes* are an indicator of nervousness).

We introduce symbols ("???") in the scheme to replace physical elements that are not expressible in the semiotic[k] model.

According to these remarks, a simplified scheme of communication in semiotic terms, considering verbal or non-verbal messages, would be represented as follows: "author (owned thought)→author's choice: elements from dictionary^k and semiotic^k rules for expression of thought)→???? ('???' symbols replace the technical components of the message)→addresser's choice of thought based on dictionary^k and semiotic^k rules)→addresser (thought evoked)".

4. The cybernetic-semiotic aspect of communication

The emphasis in the cybernetic model is placed on signal transmission. If the physical form of the message can be a signal, the cybernetic model's most significant advantage is that it considers the physical form of the message. Without technical correctness, the message would be ineffective. Cybernetic correctness is the first and indispensable condition for any communication, including interpersonal communication. The disadvantage is that many important aspects of communication cannot be considered based on this model, e.g. non-technical (non-cybernetic) circumstances affecting the understanding of the message (semiotic^k aspect) are omitted.

The most significant advantage of the semiotic^k model is that it includes such important components in the expression of a message as the author and addressee, the content of the message (thought) and other circumstances affecting the understanding of the message. Importantly, verbal, non-verbal and mixed ('full' communication) messages can also be included in the model. On the other hand, the disadvantage is that the technical aspect of the message in communication, an aspect without which a correct understanding of the 'full' message would be impossible, is completely ignored. The cybernetic and semiotic^k models are clearly complementary, at least to some extent.

In our work, we adopt a cybernetic-semiotic^k 'point of view' and recognise that a message is a sign consisting of a physical carrier (form) and a thought (content), a sign 'belonging to' the dictionary^k and governed by the semiotic^k rules of its use. In other words, thought is expressed in a communication system, based on the signs of the dictionary^k (for verbal or non-verbal communication) and the rules for their use^k.

The message appears only to the author and the addressee (because the message's component is thought and psychological in nature). The cybernetic-semiotic^k model should also consider that the author is the source of the thought and the form of the message. It must also be considered that the addressee is primarily the recipient of a form addressed by the author only to them to evoke a relevant thought. The transfer of thoughts to the 'outside' is only possible if the author employs a physical medium (a form of message). The form of message must be a conventionally accepted physical object linked to the content. The author of the message must know that a given form of message evokes, on the grounds of a specific vocabulary^k (for verbal and non-verbal message) and specific semiotic^k rules this and not another thought. The addressee must

be competent to evoke this and not the other thought based on this and not the other form of message[6].

Following these remarks, we propose to adopt the following scheme of the cybernetic-semiotic^{k} model of communication, including verbal, non-verbal and verbal-nonverbal messages:
"author (thought held)→author's choice of message form for the thought (form and thought = message formulated by the author using the dictionary^{k} (for verbal and non-verbal message) and semiotic^{k} rules)→transmitter (technical devices)→channel (e.g. paper, ink)→form of the message (e.g. inscription on paper)→channel (e.g. paper, ink)→receiver (technical devices)→addressee's choice of thought for the received form of the message (form and thought = message created by the addressee using dictionary^{k} (for verbal or non-verbal message) and semiotic^{k} rules)→addressee (thought evoked)".

The form is the carrier of content for someone who knows the dictionary^{k} and the rules for using^{k} dictionary^{k} components (who knows the communication system that is the basis for building the message). From the form of the message, the content of the message can be determined, using the appropriate communication system (in this sense, the form is the physical carrier of content).

The form of the message should be distinguished from the communication channel. The form of the message is the physical carrier of the thought (e.g. the inscription). On the other hand, the communication channel is the physical medium of the physical form (e.g., a piece of paper and ink).

This model is not closed; additional rules can be included. For instance, the ethical rule of message use states that the author and addressee are responsible for the quality of the message. Their errors produce message defects and are communication errors.

Summary

The cybernetic model emphasises the physical (technical) aspect of communication. The semiotic^{k} model emphasises the semiotic aspect. From a semiotic^{k} perspective, communication is based on a system of signs. It aims to convey thought via physical form. This is achieved through the use of characters that are governed by established rules^{k}. Each of these models separately impoverishes the description of communication activities. Combined, however, they convey a broader perspective on the communication process in general.

[6] If we assume that the message created by the author and the message created by the addressee are identical in content and form, then we could accept (based on a mental shortcut) the thesis that the same message is transmitted from the author to the addressee. Then, in the communication scheme below, we could assume that it is not the form of the message that is transmitted, but the entire message. A greatly simplified scheme would look like this: "author→message→addressee".

We recognise that the cybernetic-semiotic[k] model presented in this article carries limitations. Not all aspects of the communication process are covered in this model, e.g. the types of concepts and their impact on communication processes are not included. The consequences of discarding numerous 'responsibilities' that burden the human being as the main 'doer' of the message and to whom the message is directed (their competence to participate in the communicative activity) were also not addressed. Despite these limitations, the model can serve as a research tool.

It can be employed by researchers constructing communication rules (designing communication), by researchers describing communication as well as by individuals who are participants in communication. It is particularly important to note that the cybernetic-semiotic[k] perspective allows for a unified and systematised 'view of full' communication, encompassing verbal, non-verbal and mixed communication. This model's usefulness, including theoretical, could be observed by trying to build a single typology of errors in transmitting all types of messages. A proposal for such a typology will be presented in a separate publication.

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