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A medium-centered model of communication

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Abstract: The aim of this article is to form a new communication model, which is centered on the intermediate stage of communication, here called medium. The model is intended to be irreducible, to highlight the essential communication entities and their interrelations, and potentially to cover all conceivable kinds of communication of meaning. It is designed to clearly account for both verbal and nonverbal meaning, the different roles played by minds and bodies in communication, and the relation between presemiotic and semiotic media features. As a result, the model also pinpoints fundamental obstacles for communication located in media products themselves, and demonstrates how Shannon's model of transmission of computable data can be incorporated in a model of human communication of meaning.

Keywords: communication model, intermediality, meaning, medium, multimodality, nonverbal communication

1 Aim

There are many communication models. For almost a century, researchers from various fields have tried to capture the essential factual and theoretical entities of human exchange of information and meaning. Many successful and highly useful attempts have been made to describe and analyze the basic features of communication, and several of the most influential scholarly conceptualizations of the entities present within communication have taken the form of models (see Lanigan 2013). Nevertheless, the principal aim of this article is to expound a new model of communication. Given the plethora of extant theories, why is yet another communication model called for?

First, a new model is necessary because, in reality, existing models only take into account verbal meaning, while ignoring nonverbal. Whereas it is

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common to acknowledge that communication includes not only speech and other verbal media types, these admissions are chiefly nominal and have had no far-reaching consequences for how communication has been theorized. I claim that it is deceptive to assume that the communication of nonverbal meaning can be modelled by way of analogue-to-verbal meaning.

I also argue that in order to remedy these lacks we need a new communication model that methodically identifies the irreducible components of communication, systematically puts them in relation to each other, and – most importantly – thoroughly develops the transitional stage of communication, which is often called the “channel,” “message,” “contact,” or, sometimes, “medium.” I will try to demonstrate that although several existing models capture most of the essential communication entities in highly useful ways, some core features of communication have yet to be properly incorporated. I maintain that these features are best conceptualized in terms of mediality and with the aid of semiotics, thereby offering theoretical tools that are vital for pinpointing basic media similarities and differences and developing the material and mental aspects of mediality to a sufficient degree of complexity.

The task of a communication model is undoubtedly to offer, as lucidly as possible, a theoretical framework for describing, explaining, and analyzing processes of communication. While this must include an understanding of not only how communication is conceivable at all, but why communication is often not possible to fully realize, there are vital sides of the latter aspect that have not yet been properly investigated. The technological notion of noise has offered only limited possibilities to explain communicative limitations beyond physical disturbances; imperative as the concept may be in engineering information data, it becomes rather trivial when applied to communication of meaning. On the other hand, a well-developed notion of medium that includes both presemiotic and semiotic media traits offers the possibility to explain both how various sorts of meaning can be communicated, and why these various sorts of meaning cannot always be realized. Therefore, basic media dissimilarities that are vital for differing communicative capacities must be mapped.

The aim of this article is thus to delineate a model of communication that is centered on the notion of medium. A model should be understood as a clearly outlined cognitive scheme that is both described with the aid of language, and depicted as a diagram. A medium should be understood in a broad way as the intermediate stage of communication; thus the term *medium* here refers not only to mass media, but also media used in more intimate communication; not only media based on external technological devices, but also media based on corporeality; not only premeditated media, but also casual media; not only media

used for practical purposes, but also artistic media – and so forth. Furthermore, media may be involved in both two-way communication, which some might consider as “true” communication, and one-way communication, which might also be termed “expression”; Werner Wolf, for instance, wrote about “media of expression or communication” (1999: 37).

Seen from a different scholarly perspective, the goal of the article is to put studies of intermediality, which have a focus on interrelations among dissimilar media, within the broad frame of human communication of meaning. I propose that the most relevant means by which to frame the notion of medium is to conceptualize it in terms of communication. In other words, I take the ideas of communication and medium to be interdependent and mutually explanatory.

The outline of the article is as follows. I first deliver a rudimentary critique of a handful of well-known communication models. After that, I suggest a new, medium-centered model of communication. On the basis of a methodical exposition of its entities and their interrelations, I elaborate on some vital implications and possibilities of the new conceptualization. The article concludes with a brief account of possible expansions of the expounded model, and some closing remarks on the model’s distinctive traits.

2 Critique of old communication models

I will now present, and very briefly discuss and criticize, the most fundamental features of four classic communication models in order to establish some standard conceptions, and hence a few points of departure for reconceptualized methods of theorizing about communication. As it is impossible to cover all communication models that have seen the light of day, I have chosen influential models by Shannon (1948), Jakobson (1960), Schramm (1971), and Hall (1980) from areas such as technology, linguistics, communication studies, and cultural studies – the ideas of which can also be traced in later models. While all of these models aim to represent the basic traits of communication, they were created for different purposes, and must hence be compared with some caution – in particular, there is some distance between the area of technology and the other fields. In any case, it is certainly not my aim to dismiss the models as such. I have a deep respect for the scholars who formed them and I will actually use most of their substance; however, I do believe that several aspects must be modified and clarified in order to create a truly comprehensive model of communication of meaning.

2.1 Shannon

In “A mathematical theory of communication” (1948), Claude Shannon distinctly declared that “[t]he fundamental problem of communication is that of reproducing at one point either exactly or approximately a message selected at another point. Frequently the messages have meaning; that is they refer to or are correlated according to some system with certain physical or conceptual entities. These semantic aspects of communication are irrelevant to the engineering problem” (1948: 379). This clear account reveals that there is a fundamental discrepancy between the engineering problem and a meaning-centered approach to communication. Nevertheless, Shannon’s model (Figure 1) has also been very influential outside of technological circles, as it seems to provide a useful analogy between the engineering perspective and a humanities and social sciences viewpoint. This analogy is based on similar cognitive schemes that are structured around some sort of transmission from a source to a destination.

Although the mathematical substance of Shannon’s groundbreaking treatise will not be discussed here, he also offered useful explanations of the entities within his model. The *information source*, he stated, “produces a message or sequence of messages to be communicated to the receiving terminal” (1948: 380). It is vital to note that “message” here means quantifiable data of various kinds; it has nothing to do with meaning. Next, a *transmitter* is a technical device “which operates on the message in some way to produce a signal suitable for transmission over the channel” (1948: 381). The channel (represented by the tiny square in the middle of the visual diagram) “is merely the medium used to transmit the signal from transmitter to receiver. It may be a pair of wires, a coaxial cable, a band of radio frequencies, a beam of light, etc.” (1948: 381). Shannon furthermore explained that the *receiver* “ordinarily performs the

Figure 1: Shannon’s communication model (1948: 381).

inverse operation of that done by the transmitter, reconstructing the message from the signal” so that the message can reach its *destination*, which can be understood as a person or a thing (1948: 381).

Later in the article, Shannon elucidated the crucial notion of noise – a purely technical phenomenon, which is present when “the received signal is not necessarily the same as that sent out by the transmitter” (1948: 406). Nevertheless, this aspect of technological communication has also been found useful for later communication models focused on meaning.

Just one year after the initial publication of Shannon’s treatise, Warren Weaver (1998 [1949]) brought out a paper – together with a reissue of Shannon’s article and which, to a large extent, built on Shannon’s ideas – in which he discussed a broad definition of communication as “all the procedures by which one mind may affect another,” including “not only written and oral speech, but also music, the pictorial arts, the theatre, the ballet, and in fact all human behavior” (1998 [1949]: 3). While this excellent delineation of a broad notion of communication perfectly fits my purpose, Weaver unfortunately did not develop his comprehensive perspective at all, instead restricting his extension of Shannon’s model mainly to speech. Later in this article I will come back to some problems caused by the adaptation of an engineering model of communication to the humanities and social sciences.

2.2 Jakobson

Roman Jakobson’s communication model (Figure 2), presented in the article “Closing statement: Linguistics and poetics” (1960), crosses the border between linguistics and literary studies. His aim was to investigate language “in all the variety of its functions”; an exploration that “demands a concise survey of the constitutive factors in any speech event, in any act of verbal communication” (1960: 353).

Figure 2: Jakobson’s communication model (1960: 353).

Jakobson explained the factors in this succinct way:

The ADDRESSER sends a MESSAGE to the ADDRESSEE. To be operative the message requires a CONTEXT [that is] seizable by the addressee, and either verbal or capable of being

verbalized; a CODE fully, or at least partially, common to the addresser and addressee (or in other words, to the encoder and decoder of the message); and, finally, a CONTACT, a physical channel and psychological connection between the addresser and the addressee, enabling both of them to enter and stay in communication. (Jakobson 1960: 353)

These constitutive factors are arranged in a scheme that, like Shannon's and all other models discussed in this article, presupposes a movement from left to right. It is clear that the outer ends of Shannon's and Jakobson's models seem to roughly correspond to one another. Jakobson's notion of contact can also be understood to approximately correspond to Shannon's notion of channel (the contact was described by Jakobson as "a physical channel" [1960: 353]). Furthermore, both researchers used the term *message* to refer to entities that may seem to have much in common. However, on closer inspection the differences appear to dominate: in Shannon's model, the message consists of quantifiable data which form an entity that is transmitted; in Jakobson's model the message appears to be an intermediate (meaningful) entity that is in close relation to the contact. Jakobson's two factors "context" and "code" are unmistakably linked to meaning production, and do not have any equivalences in Shannon's model.

Jakobson clearly declared that his research object is language, which makes his investigation less useful for the construction of a broader communication model. Another problem is that his article contains no serious efforts to define or discuss the six constitutive factors of his scheme at any length. Nevertheless, Jakobson's model stresses elements that are imperative for communication of meaning, and has been prominent within its research fields.

2.3 Schramm

In "The nature of communication between humans" (1971, earlier version 1954), communication scholar Wilbur Schramm suggested that "the communication process consists of information-processing organized around a shared orientation to certain signs" (1971: 22). His point of departure was that "the communication relationship includes three elements" (1971: 15), which together form an ascetic model consisting of the communicator (A), the message (m), and the receiver (B; Figure 3).

Figure 3: Schramm's communication model (1971: 23).

While Schramm discussed many things in his oft-quoted article, these three elements are central. Interestingly, he argued that “nothing really passes from A to B”; A, the communicator (which must be understood as a person) “encodes a message as best he can in signs,” and then B, the receiver (another person) “reads a message into those signs” (1971: 22). The merit of this approach is that the interpretive activity of the receiver is clearly demarcated. Schramm stated that “it is just as meaningful to say that B acts on the signs, as that they act on B” (1971: 22) – this is why the arrow between m and B points in both directions.

To my mind, the main problem with Schramm’s model is that he (like Jakobson) did not really scrutinize the notion of message. He clearly tied it to the notion of signs, which is a step towards a more complex understanding of the in-between element of communication. At the same time, he almost seems to substitute “message” with “signs” when pinpointing the intermediate element: whereas the “message” is actually circumscribed as two messages (the communicator “encodes a message,” the receiver “reads a message,” and “nothing really passes from A to B”), the “signs” appear to be a more stable intermediate unit according to Schramm’s explanation.

In spite of its merits, Schramm’s communication model becomes rather messy, I think. On the one hand, he explicitly argued that nothing passes from communicator to receiver, and furthermore implied that the receiver’s message is not the same as the communicator’s, although they share the same signs; on the other hand, he stated that “it is *messages*, not ideas or thoughts, that pass from communicator to receiver” (1971: 9). Consequently, the message is confusingly understood as both something that is situated between communicator and receiver, and something that passes from communicator to receiver. It is my impression that Schramm conflates two entities that should be kept separate in a lucid communication model.

2.4 Hall

My last example of influential communication models is that presented by Stuart Hall in “Encoding/decoding” (1980, earlier version 1973); a model that was designed to be used primarily within cultural studies. Hall argued, convincingly I think, that there are a few “*determinate* moments” in the complex communications system: the moments of “encoding” and “decoding” and the “message form” (1980: 129). Although these three determinate moments are part of “the social relations of the communication process as a whole” (1980: 129) they must necessarily be highlighted, as Hall’s visual diagram of communication (Figure 4) makes clear.

Figure 4: Hall's communication model (1980: 130).

As the diagram shows, the moments of encoding and decoding (notions that we recognize from both Jakobson and Schramm) are also called “meaning structures” 1 and 2. Remarkably, Hall avoided putting entities such as communicator and receiver at the end-points of the diagram, which makes his model special and productive; it is suggested that communication both starts and ends with (non-identical) meaning structures.

The drawback of Hall's way of modelling communication is that he used an abundance of terms to suggest, rather than specify, the contours of his central notions. The central entity in his model – the third determinate moment – is called “programme as ‘meaningful’ discourse” in the diagram (program should be understood in the sense of television program – television being his main example of communication), and “‘meaningful’ discourse” is only one out of many terms that seem to aim at the same target. Hall wrote about the central entity as the “objects” of communication: “meanings and messages in the form of sign-vehicles” that are organized “through the operation of codes within the syntagmatic chain of a discourse” (1980: 128). Further on in his text, one finds wordings such as “symbolic vehicles constituted within the rules of ‘language’” (1980: 128); “message form” (1980: 129); “encoded messages in the form of a meaningful discourse” (1980: 130); and “discursive form” (1980: 131).

Thus, without being very precise Hall circumscribed semiotic issues with the aid of terms such as *sign-vehicle*, *code*, *symbolic vehicles*, and, later on, *iconic signs*. I judge this to be a decisive move in the right direction if the aim is to create a broad communication model that is suited to all kinds of communication, including nonverbal. However, Hall's complex account of communication entails some problems. He actually used the term *message* in relation to all three determinate moments (1980: 130), which makes his text somewhat obscure. He furthermore focused on television, and yet emphasized that communication is

inscribed into “the discursive rules of language” (1980: 130), and constantly used the terms *code* and *reading* of television. Although these terms, together with terms such as *text* and *language*, were commonly used during the 1970s and 1980s to denote concepts other than verbal sign-systems, the conceptual framing of Hall’s arguments is clearly primarily linguistic.

In opposition to such an account, I argue that meaning is about much more than language and symbolic codes based on conventions (for more detailed and wide-ranging critical discussions of different notions of code, see Cobley 2013). Signs of similarity (icons) and signs of contiguity (indexes) also create meaning. I agree with Hall only partly when he states, referring to Umberto Eco, that “[i]conic signs are ... coded signs too – even if the codes here work differently from those of other signs” (1980: 131–132). I believe he is right to the extent that there are probably no “pure” icons that are not mixed with symbols in some way; nevertheless, the core of iconic meaning-production (similarity between sign and object) fundamentally differs from the core of symbolic meaning-production (habitual or conventional connection of sign and object). Therefore, iconic (and indexical) meaning-production cannot accurately be understood in terms of codes; all three sign types – icons, indexes, and symbols – must be appreciated as profoundly different ways of creating meaning (also when mixed), and cannot be subsumed under each other.

3 A medium-centered model of communication

I will now suggest a new means of modelling communication of what is traditionally called meaning. My proposed model consists of what I take to be the smallest and fewest possible entities of communication and their essential interrelations. If one of these entities or interrelations is removed, communication is no longer possible; thus, the model is irreducible. I submit that three indispensable and interconnected entities can be discerned:

1. Something being transferred.
2. Two separate places between which the transfer occurs.
3. An intermediate stage that makes the transfer possible.

3.1 The three entities of communication in earlier models

The first entity, “something being transferred” was referred to as the *message* by Shannon. However, as Shannon’s *message* is clearly defined as computable data, it cannot be equated to what is supposed to be transferred during the

communication of meaning. Jakobson also used the term *message* to capture the transferred entity, but did not delineate the notion underlying his term. Schramm vacillated between two incompatible arguments: that there is no such thing as an entity being transferred, and that the transferred entity is a “message” – not ideas or thoughts. In another publication, however, he stated that a “concept” must be reproduced in order to obtain communication (Schramm 1955: 133). Hall was also rather vague when he implied that “meaning” is transferred in communication. Instead of clearly stating that communication is about transferring meaning, he emphasized that “meaning structures 1” and “meaning structures 2” may differ; there are degrees of “symmetry” and degrees of “understanding” and “misunderstanding” (1980: 131). In other words: if there is transfer of meaning in communication, this involves transformation of meaning. Hall’s contention is certainly feasible.

While the second entity, “two separate places between which the transfer occurs,” arguably consists of two units, they can only be outlined in relation to each other. Shannon termed them “information source” and “destination,” pointing out that the destination may be either a thing or a person; it might thus be inferred that the source may also be understood as either of these things. However, given that Shannon’s model deals with the transfer of computable data, it is difficult to see how the destination can be a person; in order to deal with the activity of human beings in Shannon’s model, stages that connect computable, physical data and mental significance must be added at the outer ends of it. In order to really reach *into* a person, the raw data of the transferred (so-called) message must be perceived and interpreted. On the other hand, for Jakobson and Schramm, who both reasoned (albeit slightly hesitantly) in terms of messages consisting of meaning rather than computable data, it is less problematic to circumscribe the two places as persons. Whereas Jakobson’s terms are *addresser* and *addressee*, Schramm prefers *communicator* and *receiver*. Finally, Hall avoided outlining the two separate places between which the transfer occurs as persons; in fact, he avoided pointing to such places at all. However, his notion that “meaning structures” are to some extent transferred implies that such meaning structures indeed need to be located at places that are capable of holding “meaning” – which must be understood as the minds of human beings.

The third entity, “an intermediate stage that makes the transfer possible,” might seem to correspond to Shannon’s “channel,” or what he (only once) called “medium.” Shannon’s channel is a material unit, such as a pair of wires or a band of radio frequencies, which are capable of transferring computable data. However, although such units may certainly be involved in the transfer of meaning, they are not the central entities that connect two places in which

meaning can be located. In Shannon's own words, the channel is merely a medium for transmission of a signal, so I submit that it is not a crucial point of transition. Again, the other three communication models, which were designed to address mental significance, offer better ways of understanding this intermediate stage of meaning communication. Jakobson's "contact" notably incorporates both a material and a mental aspect; it was described as "a physical channel and psychological connection between the addresser and the addressee" (1960: 353). As noted earlier, Schramm used the term *message* to represent not only the transferred entity, but also the intermediate stage of communication (the message seems to be understood as something that is both "transferred" and "transferred through"). Importantly, however, Schramm described the transmitting message not only as a material entity – such as "a letter" – but also as "a collection of signs," thus indicating the capacity of the material to produce mental significance through signs (1971: 15). Hall also emphasized the semiotic nature of the intermediate stage of communication. His term for this entity was '*meaningful* discourse'; however, as noted above, his terminology is generally rather incoherent, resulting in uncertainty about the more precise nature of the intermediate stage.

3.2 The three entities of communication in a medium-centered model

Regarding the first entity, "something being transferred," there is certainly a point in Schramm's notion that no ideas or thoughts are transferred in communication. As Hall indicated, transfer of meaning is very likely to entail change of meaning; this modification may be only slight, or more radical. Nevertheless, I claim that communication models cannot do without the notion of something being transferred. If there is no correlation at all between input and output there is simply no communication, given the foundational idea that to communicate is "to share"; thus, a concept of communication without the notion of something being transferred is actually nonsensical. However problematic it may be, the notion of something being transferred must be retained and painstakingly scrutinized, instead of being avoided. Although this is not the place for such an in-depth examination, I think it is clear that the transferred units or features certainly cannot be confined to distinct and consciously intended conceptions, and perhaps not even to "ideas" as Schramm understands them.

My suggestion is to use the term *cognitive import* to refer to those mental configurations that are the input and output of communication. The notion that I want to suggest using this term is clearly closely related to notions captured by

terms such as *meaning* and *ideas*, although the term *cognitive import* is perhaps less burdened with certain notions that a term such as *meaning* seems to have difficulties getting rid of; meaning is often understood to be a rather rigid concept of verbal, firm, definable, or even logical sense. Cognitive import should be understood as a very broad notion of meaning that is relevant to a wide range of media types. It is imperative to emphasize that although cognitive import is always a result of mind-work, it is not always possible to articulate using language; hence, communication, according to my proposed model, cannot be reduced to communication of verbal or verbalizable meaning.

The second entity, “two separate places between which the transfer occurs,” is most often construed as two persons. However, this straightforward notion is not precise enough for my purposes. As it is imperative to be able to connect mind and body to different entities of the communication model, one must avoid crude notions such as that of Jakobson’s addresser–addressee and Schramm’s communicator–receiver. These notions give the impression that the transfer necessarily occurs between two persons consisting of minds and bodies and with a third, separate, intermediate object in the middle, so to speak; an intermediate object in the form of a “message” that is essentially disconnected from the communicating persons. It is better to follow Hall’s implicit idea that communication occurs between sites that are capable of holding “meaning.” Weaver’s description of communication as something that occurs between “one mind” and “another” is simple and right to the point.

My suggestion is to use the terms *producer’s mind* and *perceiver’s mind* to refer to the mental places in which cognitive import appears; first, there are certain mental configurations in the producer’s mind and then, following the communicative transfer, there are mental configurations in the perceiver’s mind that are at least remotely similar to those in the producer’s mind.

Most researchers referred to in this article have either explicitly or implicitly recognized that the third entity, “an intermediate stage that makes the transfer possible,” is in some way material. As stated succinctly in a recent publication, any act of communication “is made possible by some form of *concrete reification* of the message, which, at its most elementary level, must abide by physical laws to exist and take shape” (Bolchini and Lu 2013: 398). Furthermore, Schramm and Hall clearly discussed the intermediate stage in terms of signs. In line with this, I suggest that the intermediate entity connecting two minds with each other is always in some way material, although it clearly cannot be conceptualized only in terms of materiality. As it connects two minds in terms of a transfer of cognitive import, it must be understood as materiality having the capacity to trigger certain mental responses.

My suggestion is to use the term *media product* to refer to the intermediate stage that enables the transfer of cognitive import from a producer's to a perceiver's mind. As the bodies of these two minds may well be used as instruments for the transfer of cognitive import, they are potential mediators of media products. I propose that a media product may be realized by either non-bodily or bodily matter (including matter emanating directly from a body), or a combination of these. This means that the producer's mind may, for instance, use either non-bodily matter (say, a written letter) or her own body and its immediate extensions (speech and gestures) to realize media products. Furthermore, the perceiver's body may be used to mediate media products; for instance, the producer may realize a painting on the perceiver's skin or push her gently to communicate the desire that she moves a bit. In contrast to influential scholars such as Marshall McLuhan who conceptualize media as the "extensions of man" in general (McLuhan 1994 [1964]), I thus define media products as "extensions of mind" in the context of communication. As being a media product should be understood as a function rather than an essential property, virtually any material entity can be used as one.

3.3 A medium-centered model

An advantage of using the term *medium* is that its etymology leads to rather neutral basic notions, such as middle and interspace; a possible disadvantage is that it has actually been used to refer to many different entities and phenomena in various research areas. It has certainly been applied before in communication models, but to the best of my knowledge it has not yet been tied to a developed concept that takes into account all those fundamental qualities that are vital for a proper understanding of the intermediate stage of communication. In fact, no such concept has been presented to date (see, for instance, the overview in Crowley 2013).

Before attempting to present the contours of this concept, I will display my newly developed communication model in the form of a visual diagram (Figure 5) and elaborate on some of its implications. Construing this diagram from left to right, the act of communication starts with certain cognitive import in the producer's mind. Consciously or unconsciously, the producer forms a media product, which may be taken in by some perceiver. The media product makes possible a transfer of cognitive import from the producer's mind to the perceiver's; this is a transfer not in the strong sense that the cognitive import as such passes through the media product (which lacks consciousness), but in the sense that there is, in the end, cognitive import in the perceiver's mind that bears some resemblance to the cognitive import in the producer's mind.

Figure 5: A medium-centered model of communication.

The visual diagram contains the three entities of communication circumscribed above:

1. Something being transferred: cognitive import.
2. Two separate places between which the transfer occurs: producer's mind and perceiver's mind.
3. An intermediate stage that makes the transfer possible: media product.

Additionally, it displays four essential interrelations among these entities:

1. An act of production "between" the producer's mind and media product.
2. An act of perception "between" the media product and the perceiver's mind.
3. Cognitive import "inside" the producer's mind and the perceiver's mind.
4. A transfer of cognitive import "through" the media product.

3.4 The four interrelations of communication entities in a medium-centered model

I will now elaborate on these interrelations, especially the fourth one. The notion of media product, which was only rudimentarily demarcated above, and the question how cognitive import may be transferred through a media product, are essential for any attempt to understand the core of communication.

The first interrelation, "an act of production 'between' the producer's mind and media product," is always initiated by the producer's mind and always, to begin with, effectuated by the producer's body. Sometimes this primary bodily act immediately results in a media product, for instance, when one person begins talking to another person who is standing beside her: the speech emanating from the vocal chords constitute a media product that reaches the perceiver directly. At other times the primary bodily act is linked to subsequent stages of production, and it is not unusual for the primary bodily act to be connected to a broad range of actions and procedures before a media product comes to be present for a perceiver. For instance, talking through a

telephone often requires manual handling of the telephone in addition to the activation of the user's vocal chords, and always requires constructed, technological devices that are suitable to transmit the initial speech to another place, in which the actual media product is constituted – that is, the speech that can be heard by the perceiver. Similarly, a child drawing a picture for her father who is sitting at the same kitchen table only has to perform, in principle, one primary bodily act in order to create a media product that is immediately available for the perceiver. However, if the father is in another place, additional stages of actions and procedures must be added: the drawing may be posted and physically relocated, or scanned and emailed, after which it appears in a slightly transformed way as a media product that is mediated by a computer screen. The act of production may thus be simple and direct, as well as complex and indirect. It may furthermore include stages of storage.

The second interrelation, “an act of perception ‘between’ the media product and the perceiver’s mind,” is always initiated by the perceiver’s sense organs and always, to some extent, followed by and entangled with interpretation. Interpretation should be understood as all kinds of mental activities that somehow make sense of the sensory input; these activities may be both conscious and unconscious, and are no doubt already present in a basic way when the sense impressions are initially processed. Thus, compared to the potentially extensive act of production, the act of perception is brief and very quickly channeled into interpretation, which of course occurs in the perceiver’s mind. Nevertheless, the type, quality, and form of sensory input provided by the media product, and actually taken in by the perceiver’s sense organs, are absolutely crucial for the interpretation formed by the perceiver’s mind.

A comparison of meaning-oriented communication models, such as the one that I propose here, and Shannon’s model of transmission of quantifiable data, may give the impression that the acts of production and perception are equivalent to the entities and processes that Shannon calls “transmitter”/“signal” and “received signal”/“receiver.” However, the production and perception of media products involve complex and entangled corporeal and cognitive processes that cannot properly be reduced to analogies of mechanical processes. Therefore, Weaver’s suggested extension of Shannon’s model to the area of meaning only works on a rather superficial level. Whereas in an engineering context it may well be true that “The *receiver* is a sort of inverse transmitter, changing the transmitted signal back into a message” (Weaver 1998 [1949]: 7), the act of perception cannot accurately be described as an inverse act of production, unless one is satisfied with a very rudimentary analogy. The creation of cognitive import, or meaning, requires much more than an unbiased perception of the raw material qualities of the media product; it is not a

process of reproduction of computable data, but rather one of interpreting perceived sensory configurations. Although this problem is not entirely neglected by Weaver, he did not scrutinize it at any length. Furthermore, leaving the claims of Weaver aside, it must be noted that the act of production often actually involves the producer's acts of perception and interpretation of the emerging media product, which brings the two acts closer to each other. Rather than saying that the act of perception is an inversion of the act of production, which makes the relation between the two acts resemble a purely material transmission, one must say that the act of production and the act of perception are related in an act of material and mental transmission, including transition.

Even if one notes that there is a shallow analogy between Shannon's model of communication of computable data and meaning-oriented communication models, it is more useful to observe that Shannon's model might actually be incorporated as part of the act of production in my proposed model. Whereas some acts of production do not require external technological devices, others do. As the elementary examples of person-to-person speech and telephone calls demonstrated, it may be the case that a primary bodily act immediately results in a media product, while at other times the primary bodily act is linked to subsequent stages of production involving external technology which ultimately result in a media product that is presented to the perceiver. Needless to say, Shannon's model and mathematical theory has proven exceptionally useful for the engineering of the non-corporeal stages of production, while it is largely irrelevant for the corporeal and mental stages of production.

Above, I refuted the idea that the "destination" in Shannon's model can be understood as a person, and that an act of perception must be added if his model is to be applicable to communication of cognitive import. Consequently, the solution is to understand the entities of Shannon's model as potential parts of the act of production in my suggested model, with "destination" seen not as a person but as a thing: the media product. This material entity must clearly be perceived and interpreted by the perceiver's mind if communication of cognitive import is to be achieved.

The third interrelation among the entities of communication, "cognitive import 'inside' the producer's mind and the perceiver's mind" will only be briefly commented upon here. Clearly, one cannot state, without intricate implications, that there is a certain amount of confinable cognitive import inside a mind, and it is undoubtedly difficult to judge the actual extent of similarity between the two amounts of confined cognitive import in the two minds. Deciding this in a more precise way is probably beyond the reach of known research methods. However, I find the notion that the transferred

cognitive import is only one part of the producer's and the perceiver's minds unproblematic; the cognitive import is "inside" the minds in the respect that it is closely interconnected with a multitude of other cognitive entities and processes and, in the end, with the total sum of mental activities in general that surrounds it.

The fourth interrelation, "a transfer of cognitive import 'through' the media product," is central for my arguments in this article. So far, the media product has simply been described as the entity of communication that enables a transfer of cognitive import from a producer's mind to a perceiver's mind; a material entity that has the capacity of triggering mental response. In order to give a somewhat more detailed account of this notion, the very capacity itself must be scrutinized.

Of course, the transfer of cognitive import is only partly comparable to other transfers – such as, for instance, the transfer of goods between two cities by train. The cognitive import transfer is not a material transfer, but a mental transfer with the aid of materiality. In one respect it can be compared to teleportation, the transfer of energy or matter between two points without traversing the intermediate space: the cognitive import is indeed transferred between two points (two minds), and, contrary to the transfer of goods, it does not traverse the intermediate space. Nevertheless, as the transfer depends on the media product it may reasonably be said to go "through" it. The media product is actually neither a neutral object of material transfer, like a freight car, nor an intermediate space without effect, as in teleportation; it constitutes a crucial stage of transition, not only transmission.

At this stage of the account it is necessary to introduce a distinction between media products and what may be called *technical media* or, to be more precise, *technical media of distribution of sensory configurations*. I have emphasized that media products are material entities; however, media products need technical media in order to actually be realized. Technical media are material devices, either simply present in the producer's mind's environment or more or less crafted, that cause media products to physically manifest in the world. They are entities that have the capacity to display media products and make them available for the senses of the perceiver; they distribute sensory configurations (Elleström 2010: 30–37; Elleström 2014b: 47–56). For instance, Harold A. Innis (1950) has emphasized the importance of technical media such as stone, clay, papyrus, and paper for the historical development of communication – more specifically writing – and society at large. More modern technical media include electronic screens, and sound waves produced by loudspeakers. All these different kinds of physical entities are necessary conditions for making media products discernible.

The distinction between media product and technical medium is clearly theoretical, rather than being a distinction between two different kinds of material entities. On the contrary, the technical medium is a prerequisite for the physical existence of a media product, and in a communicative situation the perceiver identifies only one object or phenomenon. The distinction is needed in order to demonstrate the difference – and mutual interdependence – between, for instance, a television program (a media product) and a television set (a technical medium). A technical medium such as a television set (which actually consists of two kinds of technical media: a flat screen that emits photons and loudspeakers that set the air into pulsation) may realize several different media products (many television programs). Conversely, a media product such as a television program can be realized by many types of technical media (not only television sets but also, for instance, computers, which also consist of a screen and loudspeakers). Sometimes the media product and the technical medium are virtually inseparable, as in the case of an oil painting.

Above, I suggested that media products may be realized by either non-bodily or bodily matter, or any mixture of these. In other words, there are external technical media (non-bodily devices such as screens and ink on paper) and there are internal technical media (bodies, parts of bodies, or physical phenomena emanating directly from bodies). I furthermore suggest that all media products can be analyzed in terms of four kinds of basic traits, which might be called *media modalities* (Elleström 2010).

Three of these modalities are presemiotic, which means that they cover media traits that are involved in signification – the creation of cognitive import in the perceiver's mind – although they are not semiotic qualities in themselves. The presemiotic traits concern the fundamentals of mediation, which is to say that they are necessary conditions for any media product to be realized in the outer world by a technical medium, and hence for any communication to be brought about.

The three presemiotic modalities are the material modality, the spatiotemporal modality, and the sensorial modality. Media products are all material in the plain sense that they may be, for instance, solid or non-solid, or organic or inorganic, and comparable traits like these belong to the material modality. It is also the case that all media products have spatiotemporal traits, which means that such products that do not have at least either spatial or temporal extension are inconceivable; hence, the spatiotemporal modality consists of comparable media traits such as temporality, stasis, or spatiality. Furthermore, media products must reach the mind through at least one sense; hence, sensory perception is the common denominator of the media traits belonging to the sensorial modality – media products may be visual, auditory, tactile, and so forth.

Of course, these kinds of traits are not unknown to communication researchers. Hall (1980), for instance, discussed the two sensory channels of television; David K. Berlo (1960) highlighted all five external senses; and Schramm at least briefly mentioned that “a message has dimensions in time or space” (1971: 32). However, thorough understanding of the conditions for mediation requires systematic attention to all three presemiotic modalities. It is clear that cognitive import of any sort cannot be freely mediated by any kinds of material, spatio-temporal, and sensorial traits. For instance – to take some blatant examples – complex assertions cannot easily be transferred through the sense of smell, and it is more difficult to effectively transfer detailed series of visual events through a static media product than through a temporal media product.

The fourth modality is the semiotic modality, which covers media traits concerning representation rather than mediation. Whereas the semiotic traits of a media product are less palpable than the presemiotic ones, and in fact are entirely derived from them, they are equally essential for realizing communication. The mediated sensory configurations of a media product do not transfer any cognitive import until the perceiver’s mind comprehends them as signs. In other words: the perceived sense data are meaningless until that are understood to represent something through unconscious or conscious interpretation. This is to say that all objects and phenomena that act as media products have semiotic traits by definition. By far the most successful effort to define the basic ways in which to create meaning in terms of signs is Charles Sanders Peirce’s foundational trichotomy icon, index, and symbol.

In brief, Peirce held that signs (often called *representamens*) stand for objects – a relationship that results in interpretants in the perceiver’s mind (CP 2.228 [c.1897]). This is a mental process, although both *representamens* and objects may be (or be connected to) external elements or phenomena; however, the interpretant is always in the mind. My notion of cognitive import created in the perceiver’s mind corresponds with Peirce’s notion of interpretant.

Hence, the media product can be understood as an assemblage of *representamens* that, due to their qualities (material, spatiotemporal, and sensorial traits), represent certain objects (that are available to the perceiver), thus creating interpretants (cognitive import) in the perceiver’s mind. Peirce’s three basic sign types are defined on the basis of the *representamen*–object relationship and can be understood as fundamental cognitive abilities. Icons stand for (represent) their objects based on similarity; indexes do so based on contiguity; and symbols rely on habits or conventions (CP 2.247–2.249 [c.1903]; Elleström 2014a: 98–113). I take iconicity, indexicality, and symbolicity to be the main media traits within the semiotic modality, which is to say that no communication occurs unless cognitive import is created through at least one of the three sign types (icons, indexes, and symbols).

Again, semiotics is certainly not unknown in communication research. Among the scholars quoted in this article, Schramm clearly related to some basic semiotic features. For instance, he accurately noted that “it is just as meaningful to say that B [the receiver] acts on the signs [the message], as that they act on B” (1971: 22). Indeed, the mind of the perceiver is very active in construing the signs of the media product. In addition, Hall spoke in terms of semiotics, although with a distinct linguistic bias, which I have already criticized. On the whole, I judge that semiotic approaches to communication based on the tradition of Ferdinand de Saussure, which downplay the role of iconicity and indexicality, have been harmful to the development of theory that also embraces non-verbal communication. Peirce’s semiotic framework is much more fruitful as it incorporates sign types that work far outside of the linguistic domain.

Furthermore, my emphasis here is on the notion that a semiotic perspective must be combined with a presemiotic perspective. Communication is equally dependent on the presemiotic media modalities and the semiotic modality. What we take to be represented objects called forth by representamens, or signs (objects such as persons, things, events, actions, feelings, ideas, desires, conditions, and narratives), are results of both the basic features of the media product as such (the mediated material, spatiotemporal, and sensorial traits) and of cognitive activity (resulting in representation). While signification is ultimately about mind-work, in the case of communication this mind-work is fundamentally dependent on the physical appearance of the media product – although some representation is clearly more closely tied to the appearance of the medium, whereas other is more a result of interpretation, and hence the context of the perceiving mind.

As with presemiotic traits, the semiotic traits of a media product offer certain possibilities and set some restrictions. Obviously, cognitive import of any sort cannot be freely created on the basis of just any sign type. For instance, the iconic signs of music can represent complex feelings and motional structures that are largely inaccessible to the symbolic signs of written text; conversely, written symbolic signs can represent arguments, and the appearance of visual objects, with much greater accuracy compared to auditory icons. Flagrant examples like these are only the tip of the iceberg in terms of the (in)capacities of signs based on similarity, contiguity, and habits or conventions, respectively. Therefore, communicative transfer of cognitive import through a media product is made possible – but also fundamentally limited – by the semiotic traits of the medium.

In line with this proposal, it is appropriate to bring the notion of noise back into the discussion. Shannon’s idea that signal disturbances in communication can be conceptualized as noise has been picked up by many researchers engaged in communication of meaning. The basic phenomenon of disruptions

that occur on the way from the producer's to the perceiver's mind is clearly relevant to the transfer of cognitive import. Schramm, for instance, noted that noise is "anything in the channel other than what the communicator puts there" (1955: 138). For instance, speech can be disturbed by other sounds and a motion picture can be disrupted because of material decay or censorship. Noise in this sense occurs in both the act of production and the act of perception. In my visual model of communication (Figure 5), this noise is shown as disruptions in the arrow representing transfer of cognitive import – both before and after the transfer through the media product – reflecting the unsatisfactory conditions of production and perception.

The problem with the notion of noise when applied to communication of meaning is that it might imply that complete absence of noise would bring about complete transfer of cognitive import – as in the case of technical transmission of computable data – which is clearly not the case. The technological notion of noise is simply not sufficient to understand communication of cognitive import. According to Hall, "distortions" or "misunderstandings" are also due to, among other things, "the asymmetry between the codes of 'source' and 'receiver' at the moment of transformation into and out of the discursive form" (1980: 131).

This is definitely a step in the right direction in terms of offering a more complex notion of possible disruptions in the communication of cognitive import. However, it does not provide a more complete view of restraining factors in the transfer of cognitive import. It must also be emphasized that creators of media products generally do not have access to, or do not master, more than a few media types. Consequently, they often cannot possibly form media products that have the capacity to create cognitive import in the perceiver's mind that is similar to the cognitive import in their own mind. Therefore, I argue that perhaps the most important restraining factors of communication are to be found in the basic presemiotic and semiotic traits of the media products.

Many exceedingly complex factors are clearly involved when the perceiver's mind forms cognitive import. My proposed model highlights one cluster of crucial factors in particular: media products have partly similar and partly dissimilar material, spatiotemporal, sensorial, and even semiotic traits, and the combination of traits to a large extent – although certainly not completely – determines what kinds of cognitive import can be transferred from the producer's mind to the perceiver's mind. Songs, emails, photographs, gestures, films, and advertisements differ in various ways concerning their presemiotic and semiotic traits, and hence can only transfer the same sort of cognitive import to a limited extent. In my diagram (Figure 5), this communicative restriction is shown as disruptions in the arrow representing transfer of cognitive import as it passes through the media product.

4 Possible expansions of the model

Many important aspects of communication could and should be added to my suggested model, which outlines only the smallest and fewest possible entities of communication and their essential interrelations. While I believe that the model is irreducible, it is certainly expandable. Below, I will briefly comment upon some of the most urgent possible developments.

4.1 The formation of the producer's and the perceiver's minds

The most important issue that has not been properly addressed is the question of how the producer's and the perceiver's minds are formed or constituted by surrounding factors. In addition to its innate basic capacity to perceive and interpret mediated qualities, the mind is inclined to form cognitive import on the basis of acquired knowledge, experiences, beliefs, expectations, preferences, and values – preconceptions that are largely shaped by culture, society, geography, and history. It is clear that this concept is immensely important for the outcome of communication. The perceiver's mind acts upon the perceived media product on the basis of both its hardwired cognitive capacities and its attained predispositions; evidently, the cognitive import that was stored in the mind before the media product was perceived has a significant effect – to various degrees – on the new cognitive import formed by communication.

As this is a widely recognized fact that has been extensively theorized in various ways, I have bracketed it in my outline of the new model. Others, such as Jakobson and Hall, have given it more attention. Jakobson discussed it in terms of “a CONTEXT [that is] seizable by the addressee, and either verbal or capable of being verbalized” (1960: 353). Context is no doubt important for all kinds of communication, although I think it is a mistake – even for a restricted focus on verbal communication – to say that the context must be verbalizable in order to be relevant. Hall distinctly emphasized the “social relations of the communication process as a whole” and the “frameworks of knowledge” (1980: 129–130), and discussed them in detail. These and other issues that are central to the formation of meaning in a broad context have been minutely scrutinized within the research area of hermeneutics.

4.2 Perceiver's mind becomes producer's mind

Another way of developing the model is to highlight the fact that in real communicative situations the perceiver's mind is very often also a producer's

mind. On the basis of the cognitive import generated by an initial media product, the perceiver becomes a producer in creating another media product (of the same or another kind) that reaches another perceiver's mind, thereby forming new cognitive import that is more or less similar to that in earlier producers' minds. Hence, a communicative chain is formed.

4.3 Perceiver's mind becomes producer's mind and producer's mind becomes perceiver's mind

When the communicative chain involves only the initial producer and perceiver constantly changing roles and forming new media products (of the same or another kind), we have two-way communication. The creation of new media products in two-way communication is often conceptualized as feedback, which may result in the creation of cognitive import that is either rather constant or significantly developed.

4.4 Producer's and/or perceiver's mind are actually several minds

It is furthermore often the case that media products are either produced or perceived, or both, by several minds. For instance, a film is normally both produced and perceived by more than one mind. A plenary talk is produced by one mind but perceived by many. An unsuccessful theater performance may be produced by many minds but perceived (from the right position) by only one.

4.5 Producer's and perceiver's mind are one and the same

Finally, it may be the case that the perceiver takes in her own media product. Although I would not say that pure thinking is communication (as suggested by Berlo 1960: 31), perception of one's own media product created earlier may mean that the mind tries to construe cognitive import on the basis of the media product, rather than on the memory of what one had in mind on the occasion of production. In this case, a transfer of cognitive import actually occurs through a media product from one mind to another, in the sense that the mind, when perceiving the media product, is in a different state compared to that during production. The effort of writing a scholarly text is a good example of this sort of internal communication: sometimes, alas, communication fails when one cannot understand one's own words written the day before.

5 Conclusions

The irreducible model of communication presented in this article, with its clearly defined entities and interrelations among entities, has several advantages. It avoids the widespread but notoriously indistinct notion of message that generally conflates communicative entities. As a model of the transfer of cognitive import from one mind to another through a media product, it allows for a refined pinpointing of the minds and bodies of the communicators in separate parts of the model (which does not in any way rule out the important fact that mind and body are profoundly interrelated). Its features also make it possible to incorporate Shannon's model of the transmission of quantifiable data as a possible part of the act of production, instead of using it as a vague analogy for human communication. Furthermore, by avoiding the notion of code as a collective formula for meaning creation, it has the capacity to deal with all sorts of cognitive import, not only verbal or other symbolic significance.

The heart of the proposed model consists of the media product. Although the true complexity of this intermediate entity has only been hinted at, some rudimentary clarifications have shown the way. In order to understand the modes of existence of media products, a distinction between media products and technical distribution media must be made – technical media being the necessary conditions for making media products discernible. Media products are always material, although they have capacities for making a certain mental impact; in other words, they have both presemiotic and semiotic qualities. A methodical, bottom-up conception of material, spatiotemporal, sensorial, and semiotic media traits paves the way for avoiding blunt and misleading dichotomies such as “text” vs. “image” or “verbal” vs. “visual.” Instead, basic media similarities and dissimilarities can be analyzed in a more refined way, which makes it possible to more sharply discern the obstacles of transferring cognitive import among minds – which goes far beyond the more trivial phenomenon of noise.

Finally, the medium-centered model of communication is designed in such a way that it is compatible with communicative features that can be added to the irreducible entities and their interrelations. It can also be developed to account for serial communication, and communication among more than two minds, thus incorporating all conceivable kinds of human communication.

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