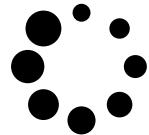


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Talking to Machines.  
Semiotic Analysis,

# Implications for Teaching and Media Literacy

by Pier Cesare Rivoltella Artificial Communication

Large Language Models  
Semiotics of AI  
New Literacies  
Prompt Engineering

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# Talking to Machines. Semiotic Analysis, Implications for Teaching and Media Literacy



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## Abstract

This article explores the implications of artificial conversation for teaching and Media Literacy. It does so by engaging with two theoretical frameworks: (1) Luhmann's communication theory, to conceptualize artificial communication in human-dialogical system interactions, and (2) the semiotic Theory of Audiovisual Conversation (TAC), to analyze its distinctive features.

From a Luhmannian perspective, Artificial Intelligence (AI) does not replicate human intelligence but rather human communication, prioritizing message comprehensibility over intentionality. TAC further clarifies artificial communication by outlining key elements such as knowledge transmission and enunciational attitudes, direct and indirect communication, the interplay of questions and answers,

and the distinction between attending and participating in a conversation.

These insights inform educational and media literacy practices, emphasizing the centrality of questioning, the role of prompt engineering, and the development of critical thinking, argumentation, and strategic communication skills as part of New Literacies.

Keywords

Artificial Communication  
Semiotics of AI  
Prompt Engineering

Large Language Models  
New Literacies

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# Artificial Communication

*Artificial Communication* is a book by Elena Esposito.<sup>1</sup> The title is a theoretical proposal: no longer to speak of Artificial Intelligence (AI) but, precisely, of Artificial Communication. The proposal is not insignificant. The idea of AI was at the basis of the so-called “Dartmouth Proposal,”<sup>2</sup> that is to design an artificial system capable of emulating the smarter behaviors of human intelligence, to build an AI in every way equal to the human one, if not more performing. We know how that went. Developments in AI research have made it possible to establish that so-called AI does not emulate human intelligence, but rather functions like the Chinese room in Searle’s famous mental experiment.<sup>3</sup> A man who knows English is locked in there. He has a handbook, written in English, containing rules for matching sets of Chinese ideograms with other sets of Chinese ideograms. From outside, a Chinese person introduces requests in Chinese ideograms into the room to which the English person, from inside the room, replies using the matching handbook. The impression might be that the person inside the room knows Chinese, whereas instead he merely applies rules without understanding a single word of Chinese. Beyond the debate that Searle’s article has raised,<sup>4</sup> it has the merit of establishing a point that marks the overcoming of the Dartmouth Proposal: it is possible to build an artificial system that can be efficient in its answers to our questions without understanding their

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1 E. Esposito, *Artificial Communication. How Algorithms produce Social Intelligence* (Cambridge MA: MIT Press, 2022).

2 The text of the Proposal, that usually is thought as the starting event of the research about AI, is: J. McCarthy, M.L. Minsky, N. Rochester, C.E. Shannon, “A Proposal for the Dartmouth Summer Research Pro,” August 31, 1955, <http://jmc.stanford.edu/articles/dartmouth/dartmouth.pdf>.

3 J. R. Searle, “Minds, brains, and programs,” *Behavioral and Brain Sciences* 3, no. 3 (1980): 417-457, <http://cogprints.org/7150/1/10.1.1.83.5248.pdf>.

4 P.M. Churchland, P.S. Churchland, “Could a machine think,” *Scientific American* 262, no. 1 (1990): 32-37; G. Longo, “Nella stanza cinese,” *Mondo digitale*, no. 43 (2012): 1-16, [https://mondodigitale.aicanet.net/2012-3/articoli/03\\_nella\\_stanza\\_cinese.pdf](https://mondodigitale.aicanet.net/2012-3/articoli/03_nella_stanza_cinese.pdf).

meaning. This means that such a system does not emulate human intelligence because it works at the syntactic level (the correspondences between series of ideograms) and not at the semantic level (the man in the room does not know Chinese).<sup>5</sup> In essence, intelligence is not artificial.<sup>6</sup>

The Chinese room experiment also suggests something else: an artificial system such as the one imagined by Searle, does not emulate human intelligence, but it certainly emulates our ability to communicate. This is where Esposito's proposal comes in, which rests on a premise: what do we mean when we talk about communication? And above all, can we speak of communication in the case of interaction with a system that does not understand what we are asking of it?

The classical theories of communication, from Shannon and Weaver's Mathematical Theory of Information to Jakobson's Scheme,<sup>7</sup> are built on an intentional, mentalistic idea of communication: there is communication when someone intentionally encodes a message and transmits it for a receiver to understand. It is clear that a machine cannot be attributed communicative intentionality: if this were the reference theory, one would have to conclude that with a machine there can be no communication. Esposito's suggestion is to adopt Luhmann's Theory of Communication:<sup>8</sup> at its basis there is a non-mentalistic and non-intentional idea for which there is communication when a message is comprehensible to the receiver. In this case, as we understand, even if a machine cannot be attributed intentionality, if the messages it conveys are comprehensible, it is

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5 The semantics of our language depends on the use of the body and whether it is in context. This already explains why an AI system cannot develop a semantic understanding of language. And yet – as Giuseppe Longo points out in the article we referred to – it would be interesting to see what would happen if there were a robot in the room connected to sensors that would allow it to experience the outside world.

6 R. Cucchiara, *L'intelligenza non è artificiale* (Milan: Mondadori, 2021).

7 J. Fiske, *Introduction to Communication Studies* (New York: Taylor & Francis, 2010).

8 N. Luhmann, *Soziologische Aufklärung 6: Die Soziologie und der Mensch* (Opladen: Westdeutscher Verlag, 1995).

possible to say that there is communication between it and a human interlocutor.

Therefore, adopting the Luhmannian point of view, one can speak of artificial communication, meaning the interaction in natural language between a human actor and a machine trained to emulate human communication. What we continue to call AI is in fact nothing more than an artificial system that is taught to communicate with us. This theoretical perspective is all the more pertinent if we think that the most socially widespread applications of AI are generative systems based on Large Language Models (LLM), such as *ChatGPT*, *Google's Gemini* or *Claude 3*. These applications are named dialogical systems, or conversational agents,<sup>9</sup> and confirm the Chinese Room Hypothesis: in fact they interact with us by working on a syntactic and probabilistic basis from the dataset they have been trained on and the contextual data we provide to them. Otherwise, they would probably pass the Turing Test,<sup>10</sup> although this is not their goal: it is rather to develop the capacity to interact with human actors by assisting them in problem solving and in the management of professional and ordinary practices.

## The Audiovisual Conversation

What we have come to argue shows that the dream of designing an artificial system capable of talking with a human actor has now come true. Already in 1966, Joseph Weinzenbaum had realized a chatbot called ELIZA whose most famous script, *Doctor*, conversed via written text with an interlocutor simulating a therapeutic dialogue

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9 S. Hussain, S. Ameri, N. Ababneh, "A Survey on Conversational Agents/Chatbots Classification and Design Techniques," in L. Barolli, M. Takizawa, F. Xhafa & T. Enokido, eds., *Web, Artificial Intelligence and Network Applications. WAINA 2019. Advances in Intelligent Systems and Computing* (Berlin: Springer 2019).

10 A. Turing, "Computing Machinery and Intelligence," *Mind* 59 (1950): 433-460.

according to the Rogersian approach.<sup>11</sup> Many things have changed since that pioneering experience. Firstly, the adoption of LLMs and the increased computing power of computers have improved the performance of current chatbots in an unthinkable way compared to ELIZA. Secondly, Weizenbaum's goal was to make ELIZA pass the Turing test, i.e., to make the interlocutor not realize that he/she was talking to an artificial system; today, anyone interacting with a generative AI system knows that he/she is interfacing with a machine, so the problem is not to make the experience believable to the point of thinking that one is interacting with another human actor. Thirdly, as a consequence, the perspective of analysis changes: what we need to understand is how to make communication more effective, how to reduce the margin of error in the machine's response, how to circumvent the constraints imposed on the conversation by the rules contained in the dataset on to which the system was trained. It can be said that the reading plane shifts from that of the social psychology of communication and Human-Machine Interaction to that of the rhetoric and pragmatics of communication, focusing on conversational dynamics. Insofar as interacting with a generative system means working not only on a syntactic and semantic level, but above all on a pragmatic one, the idea we propose is that artificial communication takes the form of a real conversation. Let us try to see in what sense.

The dispositive of conversation has already been used by textual semiotics to explain the interaction between the text and its reader as a function of the actualization of meaning. Reference can be made in this regard to the TAC model that Gianfranco Bettetini<sup>12</sup> developed to

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11 J. Weizenbaum, "ELIZA - a computer program for the study of natural language communication between man and machine," *Communication of ACM* 9 (1966): 36-45, <https://doi.org/10.1145/365153.365168>.

12 G. Bettetini, *La conversazione audiovisiva. Problemi dell'enunciazione filmica e televisiva* (Milan: Bompiani, 1984).

explain how the filmic and audiovisual text concurs with the viewer in the production of meaning.

An audiovisual or literary text is always the result of the work of an author, an Empirical Transmitting Subject in the flesh: this is the case for Alessandro Manzoni with his *The Betrothed (I promessi sposi)*, or for Jean-Luc Godard with *Pierrot le fou*. The target of this work is a reader/viewer, an Empirical Receiving Subject, who appropriates it, inevitably in another time, different from the one in which the author produced it. This implies that between these two subjects, the author and the receiver, there can be no direct interaction, as there would be if they were co-present and talking to each other. This is what the audiovisual conversation has in common with the artificial conversation: for different reasons, neither of them imagines that the direct dialogue between these two subjects could be possible.

However, both author and reader have at their disposal within the text two symbolic instances that Bettetini calls Enunciator and Enunciatee (Fig. 1): the first is expressed through enunciational marks such as the titling, the editing choices, the color, the use of the camera; the second takes the form of a real symbolic prothesis that can materialize in the text either through a linguistic choice

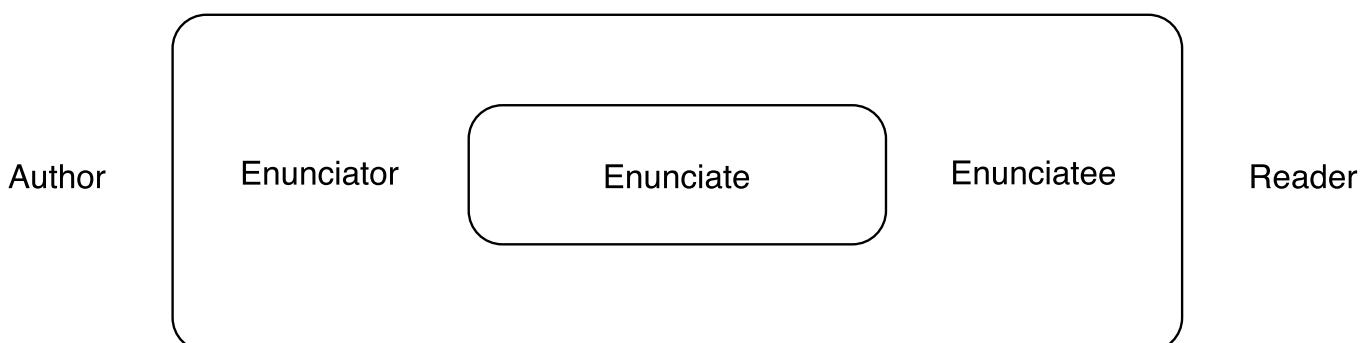


Fig. 1 – Scheme of Audiovisual Conversation, G. Bettetini, *La conversazione audiovisiva*, 100.

(as, for instance, in the case of the subjective shot<sup>13</sup>) or by dislocating itself in one or more characters (in Hitchcock's *Dial M for Murder*, for instance, detective Karaman is our double and gives substance on screen to our "interpretative moves"). The conversation, impossible between author and reader in the flesh, takes place at this level within the text: it is a symbolic interaction between enunciational instances.<sup>14</sup>

We will not analytically reconstruct here the forms that textual conversation can take. We limit ourselves to drawing attention to three aspects which, as will become clear in the next section, are functional to our analysis. These are: the "exchange of knowledge" of which the text is the place; the "symbolic interaction" that takes place in the text; the ways in which the reader can take part in the conversation.

A text always transfers knowledge: there is always a content, something to be known. This knowledge can be distributed in the text through different enunciational attitudes and two main communication choices.

Three types of enunciational attitudes can be distinguished: informative (e.g. in information programs such as a news program, or a documentary), narrative (in fiction), persuasive (in advertising).<sup>15</sup> Grasping the enunciational

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13 F. Casetti, *Inside the Gaze: The Fiction Film and Its Spectator* (Bloomington: Indiana University Press, 1999). The subjective shot shows the spectator what is happening by making his gaze coincide with that of the character who at that moment is the spectator's surrogate at the intradiegetic level.

14 About enunciation, enunciate, enunciators and enunciative instances, cfr.: A.J. Greimas, J. Courtés, *Semiotics and Language. An Analytical Dictionary* (Bloomington: Indiana University Press); J. Coquet, *Le discours et son sujet I. Essai de grammaire modale*, "Semiosis," (Paris: Klincksieck, 1984); Id., *Le discours et son sujet II. Pratique de la grammaire modale*, "Semiosis," (Paris: Klincksieck, 1985); G. Manetti, *La teoria dell'enunciazione* (Siena: Protagon, 2008); G. Manetti, "Fino a che punto soggettività ed enunciazione sono nozioni interconnesse e inscindibili? Le due concezioni di enunciazione," in M. Leone, I. Pezzini, eds., *Forme della soggettività* (Rome: Aracne, 2013); A. Fumagalli, "Da Pierce a Benveniste: gli indicatori e la teoria dell'enunciazione," *Semiotiche* 2 (2004): 31-48.

15 In fact, it's rare that these three attitudes would be present in se. Usually it is possible to recognize hybrid attitudes in the texts: one can inform with a persuasive attitude (as happens in certain shouted information, or in certain very sided reconstructions of investigative journalism) as one can inform by narrating (as happens in certain television formats, i.e. real TV programs). For the purposes of our analysis, we limit ourselves to reasoning about basic attitudes without considering all the variables that can intervene to make the picture very complex.

attitude of a text is important: the possibility of correctly perceiving the knowledge at stake depends on it.

There are basically two choices of communication: direct communication (when the text informs/tells/persuades through the narrative and the vicarious actors) and indirect communication (when communication occurs through the staging of the textual conversation). If I have to narrate 9/11, I can resort to a documentary like *The 9/11 Tapes: Chaos in the Sky*, by Alex Kiehl: in this case, the communication is direct, because the reconstruction passes through the words of the protagonists and the last telephone calls of the victims, discretized by the American authorities in 2012. But I can do as Ken Loach did in his episode of *11'09"01 September 11*, that is to build a parallel montage between two 9/11s, the one in New York and the other one in 1973, the date of the military golpe in Chile. Here the communication is indirect: the narrative construction and the enunciational device set up a provocative thesis, namely that both of them are the fault of American imperialism. If we now come back to the conversation between Enunciator and Enunciatee within the text, we can see how it takes place through the question-answer dynamic, involving four elements: the question, its preconception, its fulfilment, the answer.

Combining these four elements, one can identify as many situations in which the interrogative instances can be set (Fig. 2):

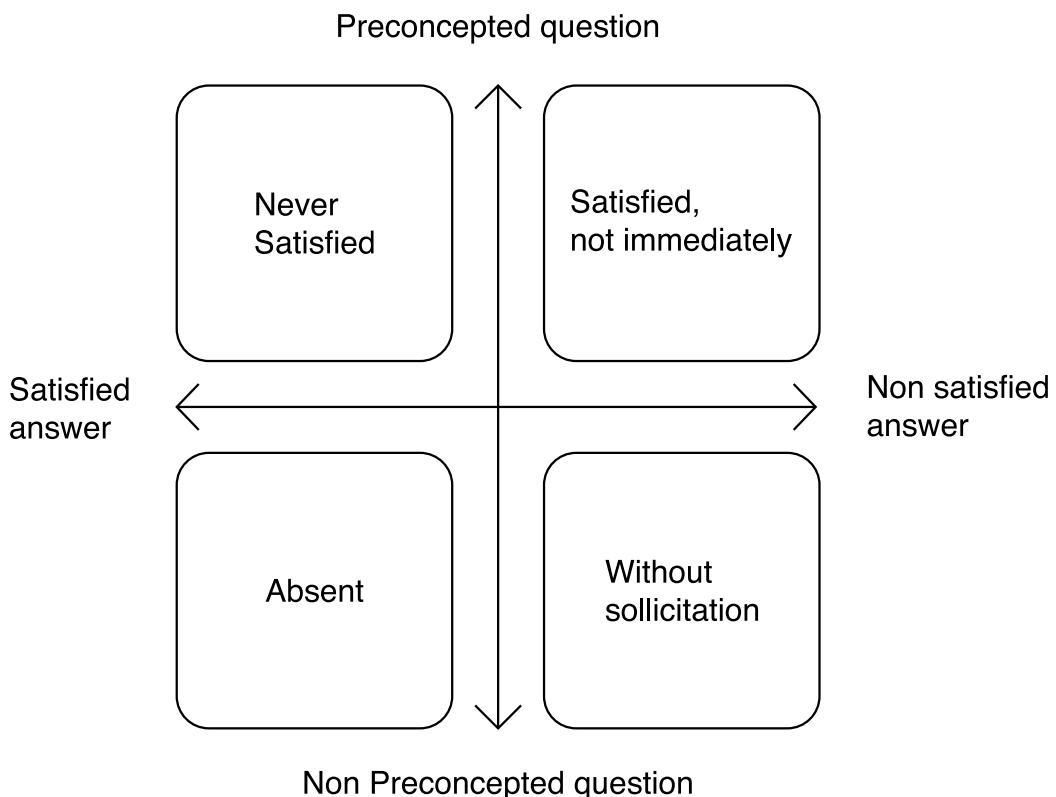


Fig. 2 – Framework of questions/answers in textual conversation

1) satisfied, not immediately. In the case of the aforementioned *Dial M for Murder*, Hitchcock immediately shows us Steven Taylor's plan to murder his wife, Emily; the question is whether and when Inspector Karaman will be able to discover it; the answer is kept in suspense until the end of the movie;

2) never satisfied. Here the cases can be twofold. The first is when the answer can only be retrieved outside the text, as happens in the prequels with regard to events or characters already known from the sequel (just think of the *Hobbit* trilogy in relation to *The Lord of the Rings* saga). The second case is when the response is never retrievable:

it happens in all open works, in the avant-gardes, in directors such as, among others, Buñuel or Wenders;

3) fulfilled without having solicited them. These are the cases in which the text provides answers without having raised questions, or says too much (informational redundancy):<sup>16</sup> think of Christopher Nolan's *Inception*, how the demarcation between dream and reality, the theme of the film, is made the subject of explanatory dialogues between characters and repetitions on the axes of narration and visualization;

4) absent, as absent is the answer. This is the case with Stanley Kubrick's *2001: A Space Odyssey*, a metaphysical film characterized by the prominence of music and the absence of dialogue, as well as the iconic presence of some symbolic elements, such as the black monolith hovering in space throughout the diegesis. In a case such as this, the reader grasps the incomprehensibility of the text on a strictly diegetic level, recognizes its gaps; finding neither pre-constituted questions nor suggested answers, he is led to produce reflection from the text by asking his/her own questions and trying to look elsewhere for the answer.

A final mention must be made of the two ways in which the Reader can dispose himself towards the text (Fig. 3).

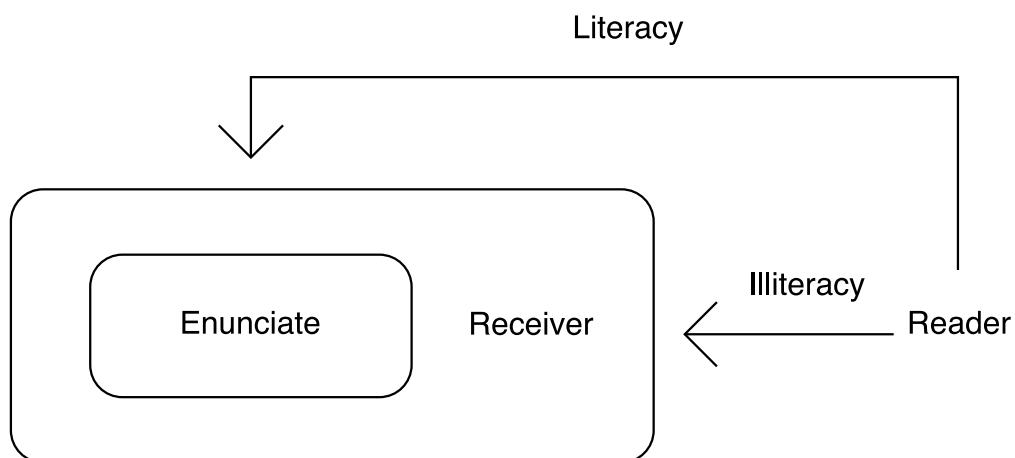


Fig. 3 – *The two ways of Reader's participation*, G. Bettetini, *La conversazione audiovisiva*, 103.

16 M.P. Pozzato, "Estetiche della ridondanza in letteratura, cinema e musica di consumo contemporanei," *Actes Sémiotiques* 122 (2019): 1-19, <https://dx.doi.org/10.25965/as.6250>.

In the first one, he/she can watch. This mode is characteristic of an external gaze at the text, which may or may not be desired. It materializes the renunciation of the dialogical game: the reader does not accept the text's invitation, probably not even noticing it. Typical of distracted consumption, this attitude remains on the other side of the textual conversation: attending implies not interacting.

It is a different case when, on the other hand, the Reader agrees to participate. Participation implies playing along, interacting with the text. This can happen in two ways. The Reader can play the game in a naive way: he/she does not recognize the brands of utterance present in the text, adapts to the program of use devised for him/her by the Enunciator; so the Reader falls into the traps of the Enunciator, and identifies with the Receiver. Differently, the Reader can play along to discover the Enunciator's moves, his/her reference encyclopedia allows him/her to discover the traps the text is littered with, and it is from recognizing them that he/she derives the pleasure of reading. The difference between these two attitudes is the difference that separates naive reading (illiterate) from critical reading (literate).

## The Artificial Conversation

The analysis of TAC model has enabled us to identify a number of elements in the light of which we can try to build a hypothesis for the interpretation of artificial conversation: the transmission of knowledge with the relative enunciational attitudes;<sup>17</sup> direct and indirect communication;

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17 It might be interesting to analyze the utterance of artificial communication with reference to the enunciational operations: the enunciational *débrayage*, identifying in the artificial conversation the "inverted" marks that make the Enunciator (Reader) and the Enunciatee (Author) recognizable; the enunciative, describing the ways in which the artificial conversation is objectified, creating what Bertrand called the referential illusion in the *narrateur-narratoire* relationship; the *ébrayage* that follows the first two operations and determines a return to the enunciational instance. Cf. J. Fontanille, "Des simulacres de l'énonciation à la praxis énonciative," *Semiotics* 99, no. 1-2 (1994): 185-197.

the possibility of combining question and answer; the difference between attending and participating.

If we begin by reflecting on the enunciational attitudes, we can see that in the case of artificial conversation the informational attitude prevails: a dialogical system does not express opinions, it is only capable of assertions, paradoxically even if it is hallucinating.<sup>18</sup> Likewise, the possibility of a persuasive attitude must be ruled out: the AI does not feel emotions, it cannot be attributed strategic intentionality. As for the narrative attitude, it can assume it, but only on demand: it depends on the interlocutor and how he/she has organized his prompt.

As for communication, it is definitely direct: it passes from the discourse that the dialogic system elaborates, even if the informational and non-narrative cut prevents the imagining of vicarious actors. Indirect communication can be reconstructed by an expert interlocutor: it depends on the staging, i.e. the organization of the *dictum*; in the communication of a dialogical system, at this level, it is possible to recognize a fixed pattern, that is recursiveness (e.g. in the case of *ChatGPT*, the conversational phase is opened by a synthetic definition, proceeds through a more analytical articulation by points, concludes with a synthesis).

Thus, we come to the decisive point: the question-answer dialectic. Here the relevant fact is that the question is not preconstructed by the AI, but by the interlocutor. This means that, with respect to the textual conversation, an inversion of the enunciational roles occurs. In fact, if we assume that the “author” of the text is the AI and that the reader that cooperates with it in the production of meaning is the human subject, it is easy to observe how the Enunciator is in the conversation the symbolic instance of the

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18 A hallucination, in the case of AI, is a situation in which the system returns an output that is not based on factual reality. There can be several reasons for this: from the complexity of the neural networks of which the system is made up, which ends up producing a malfunction, to the lack of meaningful data in the dataset on which the training was carried out.

Reader (and not of the Author) while the Enunciatee is the symbolic instance of the Author, i.e. the AI. In textual conversation, in fact, the text is prearranged by the Author: the Enunciator is his/her symbolic instance; the questions in the text are preconstituted by him/her; the enunciational moves are all aimed at drawing the profile of a Enunciatee within the text that suggests to the Reader a program of use. In the artificial conversation, on the other hand, the questions that prompt the production of the text are preconstituted by the Reader (who thus acts as the Enunciator) and through them one aims at obtaining a certain type of answer from the AI: the Enunciator's enunciational moves are also in this case aimed at constructing the profile of the Enunciatee, who however in this case coincides with the AI, i.e. the Author. In essence, it is the Reader who inscribes a program of use for the AI in the conversation (Fig. 4).

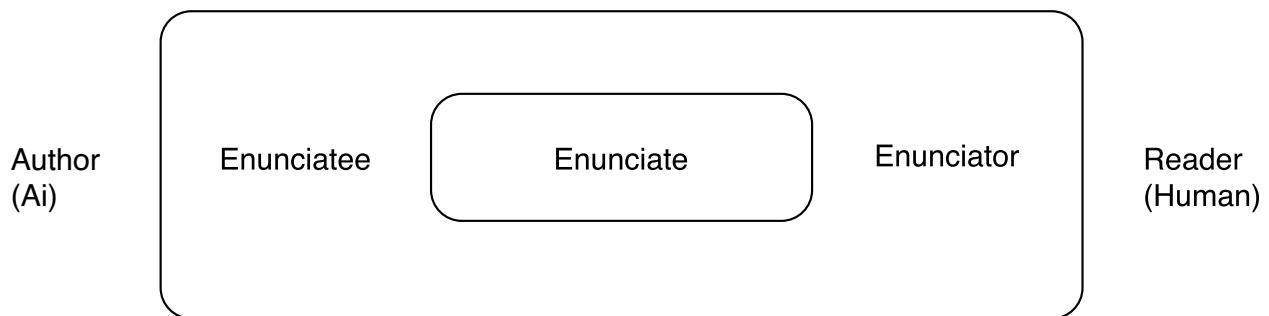


Fig. 4 – *Scheme of Artificial Conversation.*

Of the four possibilities of correspondence between question and answer identified in textual conversation, in artificial conversation only two occur: that in which the question is not answered (although this is rare, because dialogic systems are usually trained to answer anyway) and that in which it is answered even if not prompted (informational redundancy is frequent in dialogic systems' answers and often the answer, in whole or in part, exceeds

the request because syntactic coherence may result in a semantic mismatch).

A final mention should be made of the posture of the interlocutor. Artificial conversation cannot be attended to, it must be participated in: without a question to initiate the exchange, no conversation would be initiated and therefore the participation of the human actor is always required. It is on the modes of participation that one must reflect. As in the case of audiovisual conversation, it is possible that participation is naive or expert. Naive participation can occur in two behaviors: the tendentially passive acceptance of everything that is returned by the dialogical system in response to one's questions; the recourse to linear, poorly analytical, non-strategic modes of interaction. In contrast, expert participation is critical and strategic. We will return to these elements in the next concluding section.

### **Impacts on education: authority effect, primacy of demand and prompting**

The analysis of the semiotic functioning of the artificial conversation has been useful in order to fix some aspects that now allow us to make the last step: to understand the implications on education and Media Literacy. We will reason around three main elements.

We have seen, first of all, that in artificial conversation an informative and direct communication prevails. AI does not narrate and does not aim to persuade; what it gives back has an assertive character that supports an informative attitude.<sup>19</sup> In other words, the organization of the response, its structure, the references that often characterize it, confirm the idea that it has been provided on a solid basis, an idea that is, moreover, authorized by the

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19 Without the possibility of developing it, we only mention here the possibility of taking up the concept of isotopy and showing what semantic devices and redundancies AI uses to give a coherent and assertive character to its communication.

knowledge that there are precise references behind the dialogic system, such as a dataset composed of billions of texts or the Web. All this can encourage what mass communication theory called the “authority effect,”<sup>20</sup> alluding by this to the authority acknowledged by the viewer to the mass media in relation to their status as apparatuses responsible for communication in public space. In this sense, one was prepared to accord certain credibility to the large national newspaper (“Corriere della Sera said so”) or the prime-time news program (“TV news said so”) on the basis of its mere institutional nature. The information attitude of AI can encourage something similar: “ChatGPT said it.” This is the so-called oracular effect of AI,<sup>21</sup> i.e. the temptation to think that it has an answer for any question, and that this answer is correct.

Here we grasp a first important aspect, especially in terms of Media Literacy. The answers of a dialogic system depend on the data on which it has been trained. These data are inevitably culturized and it is difficult, when setting up a dataset, to neutralize the biases it contains. To give an example, it will be very different to train a system on data all from Chinese sources, or to choose Euro-Western sources. In the case of *ChatGPT*, it has repeatedly been pointed out that it responds based on the model of a 40-year-old, white, East Coast, progressive North American. Thus, what appears to be information in the answer to our questions may contain biases of race, religious belief, cultural affiliation, or be built on stereotypes.<sup>22</sup> Add to this, as we mentioned earlier in this article, the possibility of AI

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20 S. Littlejohn, K. Foss, *Theories of Human Communication* (Long Grove: Waveland Press, 2010).

21 G. Roncaglia, *L’architetto e l’oracolo. Forme digitali del sapere da Wikipedia a ChatGPT* (Rome-Bari: Laterza, 2023).

22 C. Panciroli, P.C. Rivoltella, “Can an Algorithm be Fair? Intercultural Biases and Critical Thinking in Generative Artificial Intelligence Social Uses,” *Scholé. Rivista di Educazione e Studi culturali* 61 (2023): 67-84.

hallucinations.<sup>23</sup> The consequence of this is the need to develop critical thinking, a topic that has always been at the center of Media Literacy Education's reflection, which is to be updated to the new requirements of Data Literacy and AI Literacy.<sup>24</sup> In the case of interaction with AI, even more than with traditional and digital media, what Umberto Eco<sup>25</sup> pointed out about the relationship of direct proportionality between the reader's textual encyclopedia and the broadening of critical awareness and interpretative choices applies.

A second interesting element for the purposes of didactic action is the primacy of the question. We have seen how the enunciational roles, in the case of the artificial conversation, are reversed: it is not the Author (the AI) who pre-formulates the questions, but the Reader (the human actor). This means that the formulation of the question becomes particularly important, and that the quality of the answers depends on the communicative strategy of the human actor. By communicative strategy we mean the possibility of forcing an answer by circumventing the constraints contained in the dataset, or deepening communication through the adoption of pragmatic devices, just as would happen in a conversation between human actors. This opens up space for the recovery of the rhetorical

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23 On 11.06.2024, I asked *Chat GPT* version 3.5: "Can you tell me something about Chiara Panciroli's work as an engineer?." He replied: "Chiara Panciroli is an Italian engineer also known for her work as a science populariser. She holds a degree in engineering from the Politecnico di Milano, one of the most prestigious technical universities in Italy. Her work as an engineer has mainly focused on civil and structural engineering. Panciroli has worked on various construction and infrastructure projects, contributing to the design and supervision of complex structures. Chiara Panciroli is known for her commitment to science dissemination. She has used online platforms and social media to make complex engineering and science concepts accessible to the general public, promoting the importance of scientific knowledge in everyday life." Now, Chiara does not have an engineering degree, she is an educationalist, she works on museum education and the use of digital in educational environments, she has never done science popularization or designed sustainable buildings. It is correct to point out that *ChatGPT*, version 4.0, on the same date, corrects the prompt indicating that Chiara Panciroli is not an engineer but a pedagogist.

24 P.C. Rivoltella, "Critical Thinking in the Data Age. New Challenges," in A. Marchetti, G. Riva, eds., *Humane Robotics. A multidisciplinary Approach toward the Development of Humane-centered Technologies* (Milan: Vita e Pensiero, 2022): 327-342.

25 U. Eco, *The limits of interpretation* (Bloomington: Indiana University Press, 1991).

tradition as a function of prompt engineering:<sup>26</sup> framing the problem of prompting from the rhetorical situation entails reducing the loss of creativity and critical thinking that is one of the risks of adopting dialogic systems. As Hadi et al. note: “However, with rhetorical prompt engineering students will learn foundational attributes of effective writing such as understanding the purpose of content, exigence, and main subject of reference. Composing prompts will help them set meaningful expectations from automatic content generation. The ability to look for missing elements in the output will help them critically evaluate the output leading to more impactful writing studies research.”<sup>27</sup> It should be noted that the old computer scientist adage, ‘Garbage out, garbage in,’ is confirmed with regard to what we have come to argue, and how in essence everything depends on us: the measure of the success of an artificial conversation is the rhetorical and pragmatic intelligence of the human interlocutor on which the control and outcome of the exchange largely depend.

This last observation brings us to our final consideration. We have already said that one cannot attend an artificial conversation: one must participate. And we have also seen that this participation can be naive or expert. Expert participation is likely to be that of an interlocutor who, by virtue of an extensive reference encyclopedia, critically relates to the AI’s answers and has advanced prompting skills. From this point of view, prompting imposes itself to all intents and purposes as one of the New Literacies that

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26 N. Ranade, M. Saravia, A. Johri, “Using rhetorical strategies to design prompts: a human-in-the-loop approach to make AI useful,” *AI & Soc* (2024), <https://doi.org/10.1007/s00146-024-01905-3>.

27 M. Hadi, R. Qureshi, A. Shah, M. Irfan, A. Zafar, M. Shaikh, N. Akhtar, J. Wu, S. Mirjalili, “A survey on large language models: applications, challenges, limitations, and practical usage,” *TechRxiv*, 2023, <https://www.techrxiv.org/users/618307/articles/682263-large-language-models-a-comprehensive-survey-of-its-applications-challenges-limitations-and-future-prospects>.

the current communication scene requires. It must reflect what we have elsewhere termed Post-Media Education.<sup>28</sup>

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28 P.C. Rivoltella, “La conversazione artificiale. Per una Post-media Education,” in S. Moriggi, ed., *Postmedialità. Società ed educazione* (Milan: Cortina, 2023): 17-33.

# **AN-ICONOLOGY**

## **History, Theory, and Practices**

### **of Environmental Images**

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