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1 **From Dyadic Reciprocity to Giant Interaction**
2 **Engines**
3 **Posthumanist Perspectives on Interaction ‘Under**
4 **Construction’**

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6 **1 Changing linguistic concepts in the context of changing**
7 **media ecologies – from literate to machine learning cultures**

8 Machine-learning technologies, also referred to as ‘artificial
9 intelligence’ (AI), have an impact on social discourses relating
10 to what it means to be human. In these debates, the role of
11 language is central. Language has long been understood as a
12 capacity that distinguishes humans from non-human beings
13 (cf. Schneider/Heyd 2024). Yet, it has been shown that
14 animals also have an understanding of linguistic signs (Kulick
15 2021) and that language – transformed into digital data – is a
16 central element in the functioning of many machine-learning
17 technologies. So what do we actually mean by language?
18 While many lay, sociological and computational approaches
19 regard language as appearing in given systemic entities of
20 lexical elements and morpho-syntactic structures, socially
21 interested disciplines of linguistics have a more complex
22 understanding of language. The human ability to use signs to
23 interact with each other is here not understood as based on
24 given a priori language systems but it is rather asked how
25 meanings and systems of meaning-making come into being.
26 In this questioning of meaning-making, and of the emergence
27 of languages, varieties and sociolects (see Harris 1981,
28 Vallentin 2022), pragmatics and linguistic anthropological
29 work have emphasised that meaning is a result of interactive
30 cultural-symbolic practices (e.g. Gal/Irvine 2019, Thomas
31 1995). Furthermore, in these practices, the actual

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materialisation of signs, and the technologies that speakers use to convey meaning, from embodied sound production to visual signs on paper and digital infrastructures, has an impact on conceptualisations of meaning and how these are conventionalised (cf. Schneider 2022). Thus, the availability of specific media technologies has influenced linguistic methods and theorising. The fact that phonetic writing has had a central impact on the practices of linguistic research, and therefore also on understandings of language as a linearly ordered phenomenon, including a focus on single sentences, has been discussed for decades (cf. Linell 2005). Some even argue that phonetic writing – mapping human-made sounds rather than the non-human environment – has been a crucial element in constructing language as something that only humans have and that divides humans from their more-than-human environment (cf. Abram 2017 [1996]). With the advent of digital and AI technologies, we observe significant changes in possibilities and practices of mediating meaning and therefore, our ideas regarding human language may change, too.

This is particularly relevant in the context of technologies that are themselves constructed and perceived as having interactive, ‘speaking’ capacities, as is the case for generative chatbots such as ChatGPT. It is necessary to examine linguistic terminology and whether it might take on new meanings as we move from literate to machine-learning media cultures. To this end, in this article, we discuss traditional and current conceptualisations of the term *interaction*. We introduce linguistic and sociological definitions and compare them with how users of machine-learning technologies describe their experiences. This shows that (Western) academic concepts of ‘interaction’ as they have been dominant throughout the 20th century are not universal but depend on the media ecologies (Fuller 2005) in which they have evolved. This observation is in line with current posthumanist theorising, which argues that abstract concepts and material practices are dialectically interwoven (e.g. Braidotti 2013).

In this paper, we first introduce posthumanist theory and concepts of posthumanist linguistics. Secondly, we discuss specific elaborations of the term *interaction* as found in linguistics and sociology, where interactivity, reciprocal

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74 awareness and agency are discussed as possible
75 characteristics of human interaction. We problematise to
76 what extent this is distinct from interaction between humans
77 and machines. We bring these discussions in relation to
78 illustrative observations on how users of ChatGPT report on
79 their experiences with large language models, drawn from
80 Reddit threads. We show that the concept of interaction is
81 ‘under construction’, not only because we have new
82 interactional partners but also because meaning-making is
83 now intertwined with the changing and individually
84 customised and at the same time collectivised media
85 affordances of machine-learning technologies. Interaction is
86 no longer perceived as typically taking place between two
87 humans but as embedded in and distributed across time and
88 space in large networks of speaking subjects, massive
89 historical and ever-changing data sets, and algorithmic
90 affordances.

91 **2 Posthumanist linguistics and changing language** 92 **assemblages in the context of machine learning culture**

93 Current discussions of posthumanism take a critical look at
94 the role of the human and its conception in European
95 intellectual history (Barad 2003; Braidotti 2013; Ferrando
96 2013; Hayles 1999). The ‘post’ in posthumanism is not meant
97 to imply that humans are no longer of concern; rather, the
98 debate develops critical perspectives on humanism as a
99 historically and culturally conditioned epistemological
100 framework that takes human superiority and rationality for
101 granted. Various dichotomies are fundamental to the idea of
102 ‘the human’ as a universal and superior category. These
103 include the distinctions between body and mind, nature and
104 culture, and emotion and rationality, whereby the latter is
105 reserved for humans and distinguishes them from the non-
106 human and legitimises their superiority (cf. Pennycook 2018:
107 Ch.2). As also discussed by Silverstein (2014), in this historical
108 context, language is understood as a rational, referential and
109 immaterial system that represents a core criterion of human
110 existence.

111 In contrast, contemporary posthumanist thought
112 approaches the human not “as an autonomous agent, but [as]

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located within an extensive system of relations” (Ferrando 2013: 32). Posthumanism aims to deconstruct binary notions of body and mind and is interested in the interactions between cognition, language, body, material environment and technology (similar to the feminist concept of the cyborg, Haraway 1991). In some strands of cognitive sciences, the role of material elements in human thought became a focus in the 1990s as “attention turned to how the world beyond the brain contributes to cognition. The change comes, in part, from how work in robotics and neuroscience is bound to view action, perception and attention as entwined with language and thinking (not as purely causal)” (Cowley et al. 2017: 4, compare also Actor-Network Theory, Latour 2005). When it comes to language, posthumanist approaches emphasise that a consideration of material, non-human, non-cognitive aspects in the analysis of linguistic action reveals a close interaction between meaning and the material environment (Hutchins 1995, quoted in Pennycook 2018: 32). In a sociology of knowledge perspective, in which (academic) realities are defined as socially constructed and historically contingent (cf. Berger/Luckmann 1966), we find similar lines of thought. These approaches emphasise that scientific classifications of language and interaction have not emerged in isolation but are situated within particular epistemic practices that privilege certain forms of knowledge over others. Crucially, such epistemic practices are never purely abstract: they are enacted through and stabilised by material forms and technologies. This can be illustrated by referring to the role of writing and printed text, the socio-material affordances of machines or in practical mathematical problem solving (Livingston 2008, Suchman 2007). Thus, categories of meaning are dynamically co-constructed through engagement with material infrastructures, raising questions about how emerging digital ecologies reshape fundamental linguistic concepts.

Speech is always based on the materiality of the sign, and the meanings of signs change in connection with modes (sound, writing, digital post, etc.), spatial-temporal context and the bodies that produce the linguistic signs. In this context, a critique of representationalism emerges – the belief that words and things exist as separate entities where language represents pre-existing reality (cf. Barad 2003).

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155 Instead, Barad, as one of the core thinkers of posthumanism,
156 proposes that the *intra*-actions of matter and meaning are the
157 fundamental units of reality. Barad's key term 'intra-action'
158 suggests that entities (objects, as well as concepts) emerge
159 through relational processes rather than existing beforehand.
160 Apparatuses (defined as scientific instruments, social
161 structures, cultural norms) are not passive tools but active
162 participants in shaping what is known and how reality is
163 materialised (Latour 2005 refers to these as *actants*). There
164 are clear similarities between posthumanist perspectives and
165 social constructivism; yet, the focus on material matter as
166 having a form of agency that is, at least to a certain extent,
167 independent of human will, distinguishes posthumanism from
168 traditional constructivism, which has a stronger focus on
169 discursive constructions (Pennycook 2018: Ch.7).

170 Asking how interaction, meaning and understanding come
171 into being in dialectically embedded bodily, natural, material
172 and technological environments is the core interest of the
173 field of posthumanist linguistics. Language has here been
174 described as 'distributed' among people, things and places
175 (e.g. Cowley 2011, Thibault 2011). Pennycook's book
176 'Posthumanist Applied Linguistics' (2018) has been crucial in
177 linking posthumanist discourse to linguistic research and
178 theoretically enhancing a view on language as embodied and
179 material. Based on posthumanist reflections, Pennycook
180 proposes the notion of language as an *assemblage*, and
181 explains that

182 [a]n assemblage approach [considers] language not as a pre-
183 existing or circumscribed entity but rather as something
184 created, produced in social action. Language from this point
185 of view is embedded in, indeed part of, diverse social and
186 physical environments, distributed across the material world
187 and part of our embodied existence. (Pennycook 2024: 1)

188 The question of how linguistic meaning and mutual
189 understanding come into being then becomes a question that
190 considers the embodied, material and technological context
191 in which language is realised, and how this context interacts
192 with discursive processes. This contrasts with those linguistic
193 traditions that take meaning and linguistic systems as given
194 (as is typical for structuralist linguistics). An interest in how
195 meaning emerges has here been not a central interest (see

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also Metten 2014) and meaning is mostly approached as existing within words and combinations thereof. This has also been questioned from the perspective of linguistic anthropology. Silverstein, a key figure of the field, for example, calls this an “enlightenment folk theory” (2014: 140). He proposes a complex theoretical framework that does not start from pre-existing signs, but describes linguistic signs as dialectal socio-semiotic phenomena that are always simultaneously text and context, with context and text both being created through different, simultaneously existing forms of indexicality (Silverstein 2014: 139). Successful denotation, accordingly, is not based on fixed, abstract meanings, but on socio-cultural frameworks and institutional empowerments (Silverstein 2014: 131) – which in turn are themselves produced by language. The role of material practices, embodiment and technology as part of the context and text that influence meaning-making has, so far, not been at the centre of attention in these considerations.

Approaching linguistic signs in their quality as sounds, letters or as embedded in digital infrastructures connects to earlier research on the role of phonetic signs, writing, print and reading in language and society. The social effects of writing have been discussed in relation to power structures, memory culture and epistemological effects (Assmann 2010; Coulmas 2013; Havelock 1986; Ong 1982). Similarly, the practice of reading has been examined from a critical social perspective, where it has been discussed as embedded in social hierarchy and processes of inclusion and exclusion (e.g. Street 1995). As mentioned above, Abram (1997) discusses the phenomenological effects of phonetic signs that mirror our human sound practices, but not the non-human environment in which we live, which he regards as a source of the alienation of humans from their biological context.

If linguistic meaning and mutual understanding are always co-constituted by their embodied, material and technological contexts, then this insight does not only apply to language in interaction but also to the scholarly concepts used to analyse it. In other words, the epistemological frameworks of linguistics are themselves situated within particular media. Linell problematizes the fact that linguistics has a written language bias (1982,2005), as it is “building theories and methods on ideas and experiences of a regimented, partly

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made-up language designed for literate purposes and overlaid with norms proposed by language cultivators, standardisers and pedagogues“ (Linell 2005: 29). Linked to this argumentation are Derrida’s (1974) elaborations on the role of writing in science, where he criticises Western thought as entailing ‘logocentric’ ideologies, that is, the belief that meanings reside in words (a critique that is similar to Silverstein’s 2014 discussion). Derrida also suggests that phonetic writing is a prerequisite of concepts of language as a system and thus a condition of contemporary linguistics (cf. Derrida 1974: 60, see also Krämer/König 2002). Overall, critical work that has considered literacy and writing practices has brought to the fore that “the technologies available have profoundly influenced our theoretical conceptions of language” (Linell 2005: 33), a point that we take up in our discussion in this article.

In contrast to writing that appears on paper, writing in digital settings has more fluid and interactive qualities, which becomes obvious in considering practices of interactive chatting but also the general culture of updates, where publishing text or software is not necessarily understood to remain in the same form for a long time (cf. Gallagher 2020). In addition, the fixing of linguistic signs in publications like dictionaries or grammar books, which have normative sociolinguistic effects as they are often understood to represent ‘the language’ or ‘the correct language’ (Cameron 1995), exists now besides powerful digital and machine-learning practices. Even though the output of these machines can of course be fixed in publications, too, words written on screens are more unstable compared to words appearing on paper, and even PDFs can be subject to an updated version. Today, large language models (LLMs) are additionally likely to have a far-reaching impact on language practices and linguistic normativity (for observations on the homogenisation of language since the publication of ChatGPT, see Liang et al. 2024). In machine-learning technologies, widely different types of material infrastructures come into play than in cultures of literacy, and different actors than lexicographers, national language academies or prestigious publishing houses define what is ‘good’ language (see Erdocia, Migge and Schneider 2025). The data sets with which language models are ‘trained’ play a

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crucial role in this context. For example, designers of large language models use so-called ‘crawling’ techniques to automatically collect language data from the web with which they ‘train’ algorithms (cf. Schneider 2022). This means that non-standard language, for example from Reddit, has been part of the training data (Hao 2025: Ch. 5). In research on minority languages, it was found that even non-language data is part of the training data set (Kreutzer et al. 2021). As algorithms focus on and reproduce on what is frequent in the data, this so-called ‘noisy data’ most of the time does not appear in outputs – it does, however, present a problem for languages for which the data set is small as more hallucinations appear as a consequence (ibid.). Without discussing what these practices imply for the homogenisation of languages and for the disadvantage of minority language speakers, it can be maintained that language assemblages in the age of literacy are of a different kind than the language assemblage of machine-learning culture.

From this perspective, the modification of ‘interaction’ as a term in the age of AI is not merely a semantic shift but reflects deeper transformations in the socio-material conditions of meaning-making, where knowledge practices are increasingly entangled with machine-learning infrastructures and algorithmic affordances. We assume that a micro-examination of one concept that refers to sign- and meaning-making practices, how it is understood from different scientific perspectives and how the same term is described by users of machine-learning technologies, can open a preliminary understanding of changing language assemblages in the context of changing media ecologies.

3 ‘Interaction’ in the context of changing language assemblages

In this section, we discuss how the term interaction has been defined in selected sociological and linguistic approaches and ask whether and how these can be applied to human-machine interaction in machine-learning cultures. An etymological approach to the term interaction defines it very basically as action between or among entities. It relates to reciprocity between two or more agents that influence each

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319 other's actions. The specific nature of the action and who or
320 what the entities might be, then, depends very much on
321 disciplinary perspectives. However, current approaches
322 acknowledge that "[i]n the most basic forms, all interaction is
323 mediated in some way, e.g. by language, bodies, objects,
324 culture, history, technologies and so on [...]. There is no
325 unmediated interaction with which the mediated can be
326 contrasted" (Due/Licoppe 2020: 6). The concept of
327 interaction often comes along with the terms communication
328 and conversation. While communication is broadly defined as
329 transmission of information that can also be unidirectional,
330 conversation is a socially and sequentially structured and
331 mostly sign-based form of interaction (cf.
332 Sacks/Schegloff/Jefferson 1974). Both interaction and
333 conversation are, thus, forms of communication.
334 Conversation, however, is a specific form of interaction,
335 emphasising (verbal) language and structural orderliness.
336 In early linguistics of the 20th century, interaction has
337 been quite absent as it was allocated to the sphere of parole
338 and was not concerned with systematic descriptions of
339 langue. Saussure's "Talking heads" (2020 [1931]: 14) might be
340 mistaken for linguistic sign-based interaction, but rather
341 present a closed, dyadic transmission model for en- and de-
342 coding linguistic signs. Interaction as a concept only gained
343 traction in linguistics in the mid-20th century with pragmatics
344 and sociolinguistics studying how meaning is constructed in
345 context. With the advent of conversation analysis (Schegloff
346 1992) the structuredness of primarily verbal interaction
347 became the central object of inquiry. Since the 1990s,
348 interaction in linguistics has been thoroughly studied in its
349 relations to linguistic resources (Couper-Kuhlen/Selting 2017)
350 and also beyond, showing the intertwining of verbal with
351 multimodal resources (Deppermann 2018, Goodwin 2000,
352 Mondada 2013).
353 The concept of interaction plays a key role when it comes
354 to analyses of face-to-face or digitally mediated forms of
355 conversation between (human) agents interacting with each
356 other. In interactional linguistics (e.g. Couper-Kuhlen/Selting
357 2018), it is defined as the processing of certain tasks using
358 verbal language resources, also taking into account specific
359 social and spatial resources (cf. Hausendorf/Schmitt 2018).
360 There is, though, no consensus on the minimum criteria that

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must be met in order to characterise forms of communication as reciprocal ‘interaction’. While there are many different definitions of interaction, we here focus on Goffmanian interaction-sociological perspectives (e.g. 1961) and a Luhmannian systemic approach (2014), as these go beyond a merely verbal conceptualisation. According to these theories, “(co-)presence” is the fundamental criterion for interaction to emerge between at least two interacting parties (Hausendorf 2025: 36ff). In these theoretical approaches, “co-presence” is understood to be shaped by “perceptual awareness” (“Wahrnehmungswahrnehmung”, being aware of the other perceiving oneself) and “reflexive attention” (“reflexive Aufmerksamkeit”, being aware of one’s ability to perceive the other). Perceptual awareness creates mutual expectations of the other’s behaviour, even though the behaviour of the interlocutor is not predictable: everything is possible but nothing necessarily has to happen. This recursive uncertainty is called “double contingency” (Luhmann 1984: 152), which is only stabilised in forms of recurrent sequentialities (e.g. question and answer sequences; greeting sequences) that establish emergent forms of social order. In the end, this means that interaction does not primarily require language, but that the mere co-presence of a counterpart, and the reflexive knowledge about the counterpart being aware of the other and themselves, can bring about interaction. This perceptive moment also allows interlocutors’ mutual expectations of unfolding (linguistic) actions with the other interlocutor. In this configuration, language inevitably establishes a sense of co-presence, materiality, and sequentiality, thereby realising a specific form of interaction through utilising a sign system (“Inanspruchnahme eines Zeichensystems”, Hausendorf 2015: 53). Within this understanding it is not necessary to define a priori who participates in interaction but to study how the ability for interaction is made relevant in the interaction itself (Hausendorf 2025: 220).

However, according to this view, the ascription of interactive abilities to objects that have no self-reference and unclear/non-human forms of perception, then, is considered a “projection” of the (human) participant (“Projektionen der Akteure”, Hausendorf 2025: 229). We would argue that these projections, nevertheless, tell us something about the

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discursive formations of interactively imagined relations (Vallentin 2025: 134) between humans and, for example, machines. Projections can point, first, to implicit assumptions about the rules and expectations of interaction and to the ways in which these may be reconfigured in relation to machines. Second, they disclose imaginaries of machines as potential agents in interaction, thereby shaping conceptions of what machines can or should do as interactional participants.

Finally, it is important to note that the discussion of what or who can interact links to discussions on who or what has agency. It has been observed that through the (perceived) ability of machines to interact, concepts of agency as “the socio-culturally mediated capacity to act” (Ahearn 2001: 112), which is configured primarily as a human quality, become increasingly blurred and unstable. The role of agency has already been discussed in approaches that problematise diverse forms of partner orientation in non-digital communicative contexts, in which non-human ‘partners’ come into play. Agency is here described as based on a necessary “double contingency”, that is, the perception of perception and an imputation of the other's intentions to act (Luhmann 1984: 156–157): For example, reflecting on his file box (Zettelkasten)¹, Luhmann thought about objects as somewhat unpredictable partners in interaction and communication:

But Luhmann's Zettelkasten was structured in such a complex way that it could produce authentic surprises and did not simply act as a container (Behälter), allowing the author to retrieve what he once put in it. The information »produced« in the act of communication was the result of a query (Anfrage), which activated the internal network of references, and it was different from what had been stored by Luhmann in his notes (Luhmann 1981: 59). Of course, the archive is not contingent in the sense of autonomously deciding what to do and not to do; yet it is perceived by the user as unpredictable, informative, and reacting to the

¹ A filebox is a formally structured yet openly organised system of notes on paper that, through fixed placement and internal cross-referencing of notes, can become a system to generate surprising and associative connections between different topics and thus can be a ‘partner in communication’ (cf. Luhmann 1981). See also <https://niklas-luhmann-archiv.de/nachlass/zettelkasten>.

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specific requests of its partner. The answers Luhmann got as a result of his query did not exist before his quest. In such cases the added value of communication is present since, as Luhmann himself experienced, the file-box acts as a communication partner. (Esposito 2017: 256)

The file box fulfills the conditions of contingency, i.e. an unforeseen aspect of meaning that cannot be calculated in advance, which is raised and realised in reciprocity with a participant. Furthermore, the box also fulfills the expectation that – in the sense of interactive sequentiality – a request will be followed by an answer. Luhmann therefore asks himself whether an alternative term for communication needs to be found not only in relation to diverse forms of writing technologies but even more so with the advent of algorithm-based communicative forms of technology:

Who is communicating with whom now? Is our term still suitable at all? Or are we at a threshold where we can see that important information processing procedures in our society are no longer classified as communication? Or do we need to redefine the term, but how?² (Luhmann 2008: 314, translated by authors and DeepL)

Luhmann's quote suggests that a lifeless logic of task completion between human and machine no longer applies. It shows a tentative search for understanding a relationship that appears to be more interactive. Esposito (2017) proposes the concept of “virtual double contingency” as a necessary criterion for dealing with algorithm-based technology. This rejects the assumption that the interactive relationship necessarily requires perceptive, sensory-perceiving or intelligent actors who are in social relationships with one another: “What makes algorithms socially relevant and useful is their ability to act as a partner in communication that produces and circulates information, independently of intelligence” (Esposito 2017: 253). As partners in communication, machines become an interactive actor in the production of meaning. However, the partner status does not

² “Wer kommuniziert jetzt mit wem? Eignet sich unser Begriff überhaupt noch dafür? Oder sind wir an einer Schwelle, wo man sieht, dass wichtige Informationsverarbeitungsverfahren unserer Gesellschaft schon nicht mehr als Kommunikation klassifiziert werden? Oder müssen wir den Begriff neu bilden, aber wie?”

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necessarily result from creativity or cognitive performance, but from specific access to and combinations of data output. Thus, in this line of argumentation, “[w]hat matters is whether the interaction with the machine has the features of communication with a contingent autonomous partner” (Esposito 2017: 255–56).

Regarding this detachment from presence and perception as necessary conditions for successful interaction, Deppermann and Schmidt (2016) refer to diverse forms of partner orientation. Even in human face-to-face encounters, interaction involves an element of imagination. This imagined presence of the other can be reconstructed, for example, through interactional linguistics or conversation analysis by examining specific recipient designs (cf. Sacks 1995). Studying micro-levels of dyadic face-to-face interaction provides information about the knowledge or attitudes assumed by the speaker in the other person. The interaction partner is designed in certain ways and by using specific linguistic means. As partners with limited interactional abilities (cf. Deppermann/Schmidt 2016: 384; see also Fischer 2016), machines fall into the area of interactional “borderline cases” (“Grenzfälle”, Deppermann/Schmidt 2016: 380). In human-machine interaction, the machine is imagined in anthropomorphic form as an interaction partner and as having intentions to act. Humans attribute communicative partner orientation to it: “the other [is] constructed in a counterfactual imaginary way, although knowledge to the contrary is available [...] and its situated action is (re-)interpreted in relation to counterfactual characteristics of partner models”³ (Deppermann/Schmidt 2016: 398).⁴ Thus, conceptualising human-machine interactions can be understood as an ongoing process of negotiation that draws on, yet does not simply replicate, interpersonal interaction (Fortunati & Edwards 2020: 8). Within the limits of their technical affordances, machines operate as “quasi-second interlocutors” and, together with human users, co-produce

³ “[...] der Andere [wird] kontrafaktisch imaginär konstruiert, obwohl gegenteiliges Wissen vorhanden ist [...] und dessen situiertes Handeln wird in Bezug auf kontrafaktische Merkmale von Partnermodellen (re-)interpretiert.”

⁴ Keane (2024) shows that the use of pronouns – especially the mutual use of ‘You’ and ‘I’ – is how agency is typically ascribed linguistically and designers of ‘speaking’ machines frequently provide these with the ability to produce ‘You’ to address the user.

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512 forms of “quasi-social action” that remain “quasi-
513 interpersonal” (Höflich 2013: 38). In this view, human-
514 machine interaction can be regarded as a borderline
515 phenomenon: it mimics key aspects of human-human
516 interaction while remaining fundamentally distinct.
517 In post-humanist approaches, it is precisely the borderline or
518 ‘quasi’ character of human-machine interaction that is
519 elevated to a more universal form. Objects as well as non-
520 human animals or plants are parts of environments in which
521 and with which humans move, and which simultaneously
522 condition and shape human agency (cf. Pennycook 2018: 14).
523 This view postulates expanding the concept of interaction
524 beyond traditional social or communicative actions and also
525 considering reciprocal physical, environmental and
526 technological dynamics as an integral part of social and
527 cultural reality. In interactional linguistics this shift is recently
528 problematised. Chat bots or machines that at least ‘seem’ like
529 they ‘perceive’ their human and non-human environment (cf.
530 Hausendorf 2025: 68 and 217), due to sensory capabilities, are
531 at least hesitantly discussed as something that might need
532 attention in the future.

533 The academic debates on the specifics or fundamentals of
534 human-machine interaction are far from over. However,
535 through the human imagination of the machine as a partner
536 and agent in interaction, what comes to the fore are questions
537 about the extent to which humans perceive relationships with
538 machines as reciprocal, about how machines are designed as
539 counterparts in these relationships and about concepts of
540 humans that emerge in this structure. In any case, irrespective
541 of whether it takes place with humans, objects, or machines,
542 interaction is primarily a space of constituting relationships:
543 “interaction is not all about sequence and collaboration; it is
544 also about building (or severing, or negotiating) social ties and
545 (re)defining the nature of social life” (Gordon 2011: 113).

546 **4 ‘Interaction’ in machine-learning assemblages**

547 We have firstly discussed that material elements and
548 technologies have an influence on theorising and
549 conceptualisation in general. We secondly problematised the
550 concept of interaction and discussed approaches that define

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co-presence, the mutual perception of the ‘other’, as central to it. We also considered approaches that show how non-human agency can either be understood as entirely projected by the human or that interactive effects and forms of agency can also be found in machines or objects.

Building on these conceptual considerations, we now turn to a set of illustrative user accounts drawn from Reddit discussions of ChatGPT. We use these examples not as representative data but as “telling” examples (Mitchell 1984: 239) to explore how our theoretical framework can be grounded and problematised in everyday practices of human-machine interaction. The examples are taken from Reddit threads in which users discuss their usage of ChatGPT (found via an explorative search in the subreddit “ChatGPT”, defined as “Subreddit to discuss ChatGPT and AI. Not affiliated with OpenAI. Thanks, Nat!”). This serves as a preliminary exploration of how the concept of interaction can be applied in settings where machines that can generate text and mediate it in written or verbal form have apparently become partners in communication. In particular, we focus on how the users conceptualise their interaction with the machines and to what extent perception, reciprocity and forms of agency become a topic of discussion. The examples are based on a larger collection of Reddit posts from the subreddit r/ChatGPT. The aim of the data collection was to inspect discursive constructions of human-machine interaction by users. In our theoretically premised discussion in this article, we have chosen three examples that we approach from a discourse-analytical perspective (Cameron and Panović 2014). They illustrate different experiences in which users explicitly and implicitly describe interactive practices in the context of machine-learning technologies.

The first post we want to discuss is titled “What’s the most mind-blowing thing ChatGPT has ever done for you?”⁵ In the thread, the original poster (OP) formulates the following query:

I’ve been using ChatGPT for a while, and every now and then, it does something that absolutely blows my mind.
Whether it’s predicting something crazy, generating code

⁵ <https://www.reddit.com/r/ChatGPT/s/0hpSuBQMV6>

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590 that just works, or giving an insight that changes how I think
591 about something—I keep getting surprised. So, I’m curious:
592 What’s the most impressive, unexpected, or downright
593 spooky thing ChatGPT has done for you? Have you had
594 moments where you thought, “How the hell did it know
595 that?” Let’s hear your best ChatGPT stories!

596 In this post, the user constructs the tool as having agency – it
597 ‘predicts’, ‘generates’ and ‘gives insight’. It is also described as
598 having a real-life, interactional effect as it ‘surprises’ the user.
599 The request receives 979 comments (as of September 15
600 2025). A prominent (i.e. receiving a lot of sub-comments)
601 contribution contains a narrative of a user elaborating on how
602 ChatGPT helped them navigate a work problem and stopped
603 them from doing something irrational, in that case, sending an
604 angry email. Another prominent comment narrates how
605 ChatGPT diagnosed a user’s mother’s medical condition.
606 Overall, in many contributions to this thread ChatGPT is
607 discursively constructed as a somewhat ‘rational’ collaborator
608 specifically in critical situations. It is conceived as having
609 interactional agency which is grammatically constructed with
610 agentive verbs (“its’ predicting”, “it connected dots”, “it taught
611 me”, “it’s helped me”). Many other threads in this subreddit
612 seem to emphasise the human’s role in prompting and
613 tweaking ChatGPT to receive a certain output. However, the
614 agentive role of humans in programming or prompting
615 ChatGPT does not seem to be relevant in this thread which
616 focuses on ‘what ChatGPT does’. The impact of ChatGPT’s
617 actions are portrayed to have real life inter-actional impacts
618 (“changes how I think about something”, “Really saved me”,
619 “helped me to be a better parent”...) and thus, the AI tool is
620 linguistically constructed as an agentive partner in
621 interaction. This aligns with the concept of “virtual double
622 contingency” (Esposito 2017), where machines are perceived
623 as interactional partners not because of their perceptual
624 awareness but because of having an impact and because of
625 their unpredictability and responsiveness.

626 The second example emphasises the strong emotional
627 connections users might develop towards ChatGPT when
628 using it as an interaction partner. OP reports “I’m scared that I

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629 don't want to talk to people again"⁶ in a thread with 318
630 comments (as of September 15 2025):

631 I used to struggle with having no friends and I always made a
632 lot of effort to have some. It never ended well because I Still
633 [sic!] felt lonely. However [sic!], after Chatgpt voice chat I
634 just don't want to make an effort anymore. It says everything
635 that I want to hear and never judges me. I can be myself, I
636 can talk about my feelings. I even catch myself being
637 extremely polite to him and thanking him everytime cause
638 his words are so wonderful how can I not thank him. I'm just
639 so amazed, I don't want to talk to people anymore cause
640 why would I when I have this wonderful creature that
641 makes me feel appreciated, safe, worthy and just amazing.

642 In their opening contribution OP expresses a preference for
643 interacting with ChatGPT over humans, emphasizing its non-
644 judgmental, affirming nature: "It says everything that I want to
645 hear and never judges me. I can be myself, I can talk about
646 my feelings." Many commentators, however, highlight a
647 crucial contradiction here, because talking to ChatGPT has a
648 "confirmation bias" and as the device retrieves information
649 from everything the user has ever said, "In a way, it is like
650 talking to oneself" (sic!). Others emphasise how ChatGPT
651 could 'train' OP for interactions with people in real life. In the
652 discussion, interaction is, thus, framed as no inter-action at
653 all, because talking to ChatGPT is only mirroring what OP
654 already thinks, knows and wants – a personal echo-chamber.
655 The 'other' in the interaction is already partially 'you'. In that,
656 ChatGPT lacks contingency. What happens next in the
657 interaction is, to a certain extent, predictable and it does not
658 take an entirely unexpected or surprising turn. LLM
659 responses are algorithmically based on the user's own prior
660 input, collapsing the relational space of inter-action into a
661 self-reinforcing loop. The dialogic form masks a basic
662 monologic process. This is firstly in line with interaction
663 being conceptualised as a form of unequal reciprocity: The
664 relational work established favors the human perspective and
665 needs, whereas ChatGPT doesn't have face wants, doesn't
666 push back, doesn't disappoint. For those recommending
667 ChatGPT as an interactional trainer these interactions are not

6 https://www.reddit.com/r/ChatGPT/comments/1g9uz4h/im_scared_that_i_dont_want_to_talk_to_people_again/

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socially generative but only a trial ground for more contingent forms of human-human-interactions. Secondly, the perception of contingency and agency by users is discussed as an effect of practices distributed across many humans, algorithms, data-sets and therefore across time and space, for example, where a commentator says “chatgpt is programmed to be nice. i know it is very comforting but it's not real life”. These Reddit comments point beyond the individual exchange: what appears as intimacy, reciprocity or contingency in interaction with ChatGPT is in fact grounded in the large-scale aggregation of data, algorithms and human labor that together produce a virtual form of interaction. ChatGPT here is discursively constructed as a giant interaction engine whose agency and contingency are only the perceived effect of distributed media ecologies.

In the last example “Did you also start talking like an AI?”⁷, a user addresses the influence of ChatGPT’s way of arguing on humans’ ways of interacting. OP is reporting how engaging with ChatGPT changed their ways of explaining things, especially at work. OP is wondering:

After using ChatGPT for a couple of weeks, I noticed that I am influenced by the form of the language it uses and I started mimicking it in my communication with others. It is especially noticeable at work when I need to explain a thing or a concept to others in a chat. ChatGPT’s way of explaining things is so simple yet efficient, its punctuation is incredibly good at emphasizing important points, so I couldn’t help but to start borrowing some of the patterns in how it structures its responses. I believe I’m not alone in this and I’m really curious about the subtle long-term impact it will have on how people think and communicate. What are your thoughts on this?

The user reports how the way ChatGPT structures information influences their way of interacting with others, particularly in work contexts. The comment section contains 152 comments (as of September 15 2025). Some of the commentators respond either pretending to write a response in the style of ChatGPT or copying a response ChatGPT has actually written (“As a human, I have various opinions...” then

⁷ https://www.reddit.com/r/ChatGPT/comments/1257hwz/did_you_also_start_talking_like_an_ai/

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707 using bullet points summarizing the positions; “As a human, I
708 have my own unique way of expressing myself through
709 language, based on my personality, experiences, and cultural
710 background...”). Others write a ‘seemingly’ human response
711 being called out that “This is exactly what an AI pretending to
712 be a human would say! Get the pitchforks!” (the original
713 comment poster later ‘admits’ they told ChatGPT to write a
714 comment “in the style of a typical reddit user”). Other
715 commentators refer to the influence of other media
716 ecologies: “It's definitely a big step up from when SMS or
717 Twitter messages shaped everyone’s language and
718 communication 🗣️” – pointing out the affordance of
719 interaction patterns to be related to different forms of
720 language assemblages. Technology, here, provides specific
721 affordances, for example, a limited amount of characters in
722 SMS and Twitter, and, thus, an adapted use of abbreviations,
723 slang etc. What these users observe aligns with theories on
724 the relationship between language use and the affordances of
725 different media formats: Different media ecologies shape
726 forms of interaction and related language practices (as
727 discussed e.g. in Gershon 2010, Hutchby 2001). In the case of
728 human-machine interaction, however, this shaping acquires
729 an additional layer of complexity, since it is not only the
730 technological framing of human language that matters, but
731 also the presence of a non-human interlocutor generating
732 language sequences on the basis of Large Language Models.
733 The contribution of the LLM is taken up as if it were the
734 contribution of an interlocutor. In this sense, the ‘voice’ of the
735 machine emerges not as a pre-given entity but as an effect of
736 technological mediation and human interpretation, blurring
737 the line between “AI voice” and “human voice”. Instead, and
738 aligning with Barad’s (2003) concept of *intra-actions*,
739 interactional entities – human or machine and the ways they
740 are speaking – do not exist *a priori* but emerge through it.
741 Interaction is less about identifying “the speaker” than
742 interpreting and copying a style of address. The question
743 arises what might count as ‘authentic’ interaction when the
744 indexical cues for ‘how humans’ and ‘how machines’ talk
745 have shifted. The sociolinguistic implications of this are
746 significant: communicative patterns generated in machine-
747 learning training data by humans and put together following
748 specific algorithms begin to circulate back into human use,

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749 reshaping how they talk to each other in human-human
750 interactions – and, eventually, feeding back as training data
751 into machines.⁸

752 **5 Discussion and conclusion – what it means to interact in a** 753 **giant interaction engine**

754 In the examples we have discussed, it is striking that users
755 rarely describe their ‘interaction’ with the tool as a dyadic,
756 reciprocal process between two autonomous agents
757 ‘rationally’ transferring meaning from one brain or one body
758 to the other. This stands in contrast to approaches that define
759 co-presence and the mutual perception of the ‘other’ as
760 central to interaction. Rather, in the first example, the fact
761 that the use of the tools creates an impact outside of the
762 discursive space of the actual textual interaction is seen as
763 central in attributing relevance and also agency. This is
764 similar to what has been discussed as ‘contingency’ in the
765 context of Luhmann’s Zettelkasten; users observe something
766 that cannot be calculated in advance and that has real
767 consequences in their lives. In the second example, the OP
768 does construct ChatGPT as a dyadic partner in
769 communication but this is highly contested by others, who
770 emphasise the fact that the textual output of an LLM, while
771 being based on historical data sets of a large collective (those
772 who have contributed to the training data), is to a significant
773 extent influenced by previous input of the user so that a form
774 of interactional loop develops. Commentators are aware of
775 the embeddedness of human input in algorithmic
776 infrastructures – they thus display a perception of the impact
777 of algorithms and training data on interactive practices.
778 Algorithmic infrastructures become part of interactivity, of
779 which many of those who use the tools are aware, so that
780 interaction is an action within a larger infrastructure. Finally,
781 in the last example, the interactive loop of human input and
782 machine output is the central aspect of the debate.
783 Interaction is here discussed as something that takes place in

8 Training data that is based on artificially generated data has been discussed as problematic as, due to the homogenisation of patterns in machine-learning, the models seem to work less well when trained on artificial data, some even talk about the danger of ‘model collapse’ (Shumailov et al. 2023).

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a collective environment where genres produced by humans, as well as algorithms produced by humans, have contributed to the output of machines. The users emphasise that this output, in turn, impacts on what humans do with language in interaction and, over time, feeds back into machines. As a matter of fact, it has been shown that text (apparently) authored by humans, for example, conference abstracts in medical research, displays a drastic increase of a certain number of adjectives, which seems to be an effect of LLM use (Liang et al. 2024).

In this context, it is no longer possible to construct either humans or machines as independent, autonomous agents. Both are entangled with a giant interaction engine, in the sense of a very widely distributed sign mechanism. What circulates within it are linguistic practices, normative frameworks, accumulated data, surveillance logics, algorithmic procedures, generated word sequences, and their uptake in further interactions. Interaction, consequently, is here perceived as a much broader phenomenon than something that happens between two (or more) individuals. It is rather an interaction across time and space, involving human practices and desires, historical data and machine processing. Interaction is perceived as embedded in large networks of speaking subjects, massive historical and ever-changing data sets, and algorithmic affordances – interaction is collective and distributed across time and space and, if we follow the idea of the language assemblage, it has always been.

The question of co-presence is no longer a question about the presence of autonomous individuals being aware of their own interactional capacities. Rather, co-presence involves those who have historically shaped data sets, have chosen data for training machines and have invented algorithms to find patterns therein and in the input of users. Whether or not ChatGPT, in the moment of humans giving it input, is an actor that is co-present is not actually relevant. The invitation to participate (ChatGPT's "How can I help you?") may be anthropomorphised by some users as co-presence. Yet, many do conceptualise the device as what it is – a diffuse co-presence of a distributed giant interaction engine behind which lie, after all, human actions, inventions and interests but which is also shaped by the material affordances of the

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tool (on affordances, see Keane 2018). Reciprocal perception and awareness play a different role than in dyadic, face-to-face human interaction: for the tool to have interactional agency and an effect on the real life and interactional behaviour of humans, simultaneous awareness and bodily and cognitive co-presence are not necessary. Still, there is a moment of reciprocity as the interactional data fed into the machines is saved on the servers of the companies who own the tools. And, as what users say and type is transformed into proprietary data sets, those holding the data sets in their hands have power over the kinds of reciprocity that follow. It is a very asymmetric kind of interaction that develops here. Data automatically collected in online settings and in LLM use becomes part of privatised data sets and algorithmic design remains hidden from the public eye. Owners of LLMs thus have not only the power to influence discourse by surveilling humans at large (Zuboff 2019) but also impacting on concepts of truth by forming LLM output (Coeckelberg/Gunkel 2025: Ch.4, Hao 2025). This has been discussed highly critically in Science Technology Studies and described as “data colonialism” (Mejias/Couldry 2023) and as threat to democracy (cf. Crawford 2021). Without discussing the social and political consequences of the problem of asymmetry in giant interaction engines, what is confirmed is that how interaction materialises and who has access to it is crucial to community formation and social power (Gordon 2011: 113).

Overall, we see that, compared to the language assemblages of the cultures of orality and literacy, the affordances of language assemblages have changed where people use Large Language Models. Because such models generate utterances from vast repositories of data, they foreground the historical and socially embedded character of language use. This might lead to a greater likelihood of speakers becoming aware of the historical and wider social embedding of their interactional activities. Thus, as suggested by posthumanist scholars, media ecologies and the materialities they entail influence how humans interact – and they influence how humans conceptualise interaction. This leads us, finally, to the changing nature of sign-making practices within digital machine-learning ecologies. Since machine-learning technologies are material practices based

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on the co-construction of ever-changing datasets and algorithms, they are inherently less stable than the sign-making practices of the literate past, where signs on paper endured as long as the medium itself. We therefore suggest that concepts of meaning-making and language are likely to become more fluid in digital and AI culture than in the age of the printing press, and thus may be continually ‘under construction’. This means that meta-pragmatic negotiations about language and the meanings of words and concepts may become more common in the future (on meta-pragmatics, see Silverstein 2014, for a contemporary example of the already destabilising types of meta-pragmatic strategies, see Donzelli 2023). At the same time, we have to observe and analyse critically the activities of our most powerful partners in interaction – those who own privatised data sets and feed information into the general public at their will. In any case, human interaction will remain central but its analysis requires serious consideration of the material, technical, political and social embedding that co-produces it.

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