Digital inscriptions as material anchors for future action: multi-scalar integration and dynamic systems

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Adopting a dynamic, ecological perspective, the main function of language is regulating the life of a socio-cultural group. This is made possible by the achievement of a sufficient degree of cognitive and affective coordination between the interlocutors, whose interactions take place in the context of a normative world and assume the shape of sign-response cycles. In my case-study, I will first observe the development of a conflictive interaction in an Italian blog, arguing that it can be conceived as moving through different phases. Then, I will suggest that this sign-response cycle can be seen as fleshed out by the integration of three distinct time-scales. Further, I will underline the central role of digital inscriptions in this integration process arguing that, far from performing a merely symbolic function, they work as material anchors which enable the interlocutors to set future targets and plan their moves in order to reach them. Finally, I will propose that the evolution of digital interactions can be coherently explained in dynamic-systems terms.

Running header: Digital Inscriptions as Material Anchors for Future Action.

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Introduction: a dynamic, ecological approach to the study of language

Adopting a dynamic, ecological perspective, language is conceived as a primarily intersubjective process: its development depends on the cumulative experience of intentional agents (to be considered as irreducible body-mind couplings) in the physical and socio-cultural world, in a constant interplay which affects both poles of the dyad (cf. Johnson, 1987). Therefore, the main function of language is enhancing communication between individuals and, by so doing, regulating the life of a community (Reed, 1997, ch. 11).

In their study of speech perception, Worgan and Moore (2011) claim that spoken language should be investigated as an interactive phenomenon, where each individual is “an agent actively investigating their social environment” and the environment is defined as “a set of interaction affordances (…) each of which is perceived by the individual through a process of social kinesthesia” (p. 1104). Language is then to be seen as a facet of human behavior, constantly regulated by dynamic patterns (e.g. Raczaszek-Leonardi & Kelso, 2008; Raczaszek-Leonardi, 2010, 2013; Torre, 2013a, 2013b). In a conversation, each participant is characterized by full intentionality, manifested through self-to-other projection, cultural context, and anticipation, with the common ground shared by the interlocutors allowing the external signaling of internal states.

Against this background, social kinesthesia favors the establishment of a dialogical loop: self-projection and anticipatory dynamics cause the emergence of a set of shared interaction affordances, providing a potential for future action, to be fulfilled through co-action and conversation. Conversation is goal-oriented, with the purpose being selected from the available interaction affordances. Since there is always a certain degree of mismatch between the desired perceptual state and the actual level of perceptual attunement, the interlocutors are constantly revising and refining their state, influencing each other in a contextually situated perception-action cycle. Therefore, language is seen as a holistic, self-organizing “embodied coordinated system,” (Worgan & Moore, 2011, p. 1106) rather than a symbolically mediated stimulus-response exchange (cf. Thelen & Smith, 1994).

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While, from this perspective, it seems intuitively natural to focus on spoken language as the dialogical medium par excellence, the adoption of a dynamic, ecological approach can also represent an alternative to traditional perspectives on written language. Indeed, doing away with mainstream views of language as the result of the work of individual minds, a theoretical perspective which recognizes the status of language as a distributed, interactive process can prove adequate to explore the nature of writing as a resource which enables intersubjective activity. In the present contribution, I will focus on computer-mediated communication, illustrating the development of a verbal conflict in a blog as a case-study, in order to shed some light on the role of digital inscriptions in the interactive process.

In the remainder of the present paper, I will first outline the role of cognitive and affective coordination in language use, which always takes place in the context of a normative world, where a first action activates a norm, making a second action relevant, thus triggering a sign-response cycle (§2). Then, I will briefly introduce blogs and the blogosphere, concisely outlining (some of) the motivations which lead people to write in a blog, emphasizing that the quest for social visibility works as the leading thread among them (§3). Further, I will analyze a conflicting interaction in an Italian blog, showing that the conversation can be seen as moving through three phases, in a dynamic-systems fashion (§4). Next, I will argue that sign-response cycles in blogging are fleshed out by the integration of three distinct time-scales which underlie digital communication, focusing in particular on the function of digital inscriptions (§5). Finally, I will provide a brief summary of my study, suggesting the following conclusions: i) digital inscriptions work as material anchors for future action; ii) people integrate different time-scales by skills in optimally using and making sense of inscriptions in a relatively prescriptive world, where interaction emerges in phases; iii) the whole interactive process can be coherently explained in dynamic-systems terms (§6).

Cognitive and affective coordination in a normative world

In order to achieve successful communication, it is necessary that the interlocutors attain the maximum level of alignment of their attentional systems. This implies that they have to efficiently use the linguistic, para-linguistic, and non-linguistic affordances offered by the environment in order to reach an optimal degree of cognitive and affective coordination\(^1\). Restricting the focus to language (for practical reasons), it seems reasonable to follow those scholars who claim that this is indeed its main purpose. As an example, Verhagen (2005, 2008) argues that the most basic function of language is argumentative rather than informative.

On this view, appropriate linguistic constructions can be chosen to establish a coordination relationship between the interlocutors and regulate their joint attention toward particular objects or situations. For instance, according to Verhagen (2005, p. 92), the primary function of finite complement clauses is to assess a common object of attention, while the matrix clause provides an epistemic stance on that assessment. Adhering to this view (Verhagen, 2005, pp. 105-107), the following utterances can be distinguished on the basis of their different argumentative strength:

(1) It was scheduled for 4pm.
(2) I think it was scheduled for 4pm.
(3) Someone said it was scheduled for 4pm.

Each of them constitutes a coherent answer to the question, **will we be in time for the launch?** In both (1) and (2) the speaker and the addressee are engaging in cognitive coordination with respect to the same object of conceptualization. Nevertheless, in (3) the onstage conceptualizer is neither the speaker or the addressee, but a third person, whose perspective is temporarily endorsed by the speaker. In this case, the cognitive coordination between the two conceptualizers is indirect.

On the basis of the linguistic behavior of a number of constructions, Verhagen argues that the linguistic system is tightly integrated with the specific human abilities to coordinate cognitively with others. Consistent with dynamic and ecological perspectives in linguistic theory (e.g. Cowley, 2007; Fusaroli & Tylén, 2012; Sinha, 2009; Zlatev, 2008), he also states that understanding certain grammatical phenomena requires a view

\(^1\) It is important to highlight that coordination does not necessarily correspond to cooperation. For instance, successful deception needs a considerable degree of dyadic coordination.
of language which relates the function of grammatical elements and constructions to the intersubjective dimension of human cognition and action, suggesting that structure, function, conventionality, and context should be studied in parallel.

While Verhagen’s point on cognitive coordination is intuitively sound, it seems relevant to underline that communication also displays an important affective dimension: emotional attunement is crucial for coordination. Following Worgan and Moore (2011), the emotional states of the interlocutors define the set of interaction affordances available in the environment, influencing their behavior. The emotional value associated to each expression can be used to (at least try to) manipulate the addressee’s attentional system, and increase their level of coordination. Since the evaluation of the affective import of each linguistic construction is strictly subjective, one can never be 100% sure of the addressee’s response to their choice. Nevertheless, it seems reasonable to hypothesize that expectations at the emotional level drive an individual’s choice of the expressions, contributing to shape the dialogue (cf. Madsen, this issue, on the influence uncertainty and temporality exert on subjectivity).

It is also crucial to stress the fact that the interlocutors do not engage in a process of cognitive and affective coordination “in the void,” but against the background of a normative world, which imposes itself on people. While norms cannot – strictly speaking - determine people’s conduct, it seems plausible to argue that belonging to a social group entails one's awareness of a certain set of rules and conventional behaviors. This implies that norms organize social interaction, providing “formally ritualized patterns of behavior, which bring relatively predictable effects on others in the social realm” (Enfield, 2011, p. 286). Language, as a social institution, is inherently normative (e.g. Itkonen, 1997, 2008; Zlatev, 2007; cf. also Port, 2010; Tomasello, 2009); consequently, when individuals from the same community engage in verbal communication, they have some expectations on the development of the interaction. In particular, unless they have special reasons not to do so, they will normally expect their interlocutor(s) to be cooperative in the respect of the norms (e.g. Moll & Tomasello, 2007). Enfield and Sidness (in press) argue that, in a linguistic exchange, it is possible to observe a prospective dimension, where a first action activates a norm, making the doing of a second action relevant (cf. Sperber & Wilson, 1995) and “noticeably absent if not present,” and a retrospective dimension, which allows the first speaker to see if and how they have been understood. In other words, a communicative move triggers a sign-response cycle, where the relation between action and response is crucial in defining them both (on the past-present-future continuum, see Madsen, this issue; Thibault, this issue). From this perspective, the choice of specific linguistic constructions is both determined by (and embedded in) the situated context and inherently grounded in historically established socio-cultural practices (cf. Madsen, this issue; Pedersen & Steffensen, this issue).

The quest for social visibility in the virtual niche

Nowadays, blogs have become an important communication medium. Indeed, over the last fifteen years they have gained more and more popularity, as they are used as quick and user-friendly tools to share different kinds of information. A blog can be characterized as “an online genre that enables self-presentation and usually incorporates social tools which support participation and conversation” (Luzón 2011, p. 518), while the blogosphere can be seen as “a social environment in which users play a central role in creating content and disseminating information.” (Gonçalves, Almeida, dos Santos, Laender, & Almeida, 2010). In other words, blogs can be considered as computer-enabled social spaces, where users can present themselves in a way to create impressions in others; actually, as pointed out by da Cunha Recuero (2008), some bloggers increase their popularity through their performance. As a result, they strengthen and increase the resources linked to the possession of a durable network of relationships of mutual acquaintance and recognition.

da Cunha Recuero’s (2008) interviews with Brazilian bloggers reveal that people are moved to start a blog by the general goal to gain social visibility, which materializes in the creation of a personal space to interact and share knowledge with other people, trying to gain authority and popularity. As a matter of fact, blog users often publish information on the basis of the perception of the reputation they believe they will gain. One of the strongest indicators of a user's level of popularity is the quantity and content of the comments on their posts. Indeed, the tones of the replies they receive play a role on the material they choose to publish later on, to maintain and possibly improve their status within the community4.

4 Again, this factor emphasizes the importance of historicity and previous experience in regulating human perception
The type of interaction which arises in blogs is peculiar, compared to other kinds of communication, because of a specific feature of this particular medium: (relative) anonymity. As Luzón (2011) emphasizes, this property of blogs makes it possible for bloggers and users to perform operations of impression management (cf. Goffman, 1972), in order to display themselves in a way they judge to be optimal. Moreover, as Hookway (2008) points out, blogs can be seen as a peculiar type of personal diaries, written for an implicit audience which can also intervene, triggering a process of co-production. Anonymity plays a role in the emergence of social conventions which differ from other kinds of communication: for instance, it downsizes the pragmatic notion of face, allowing people to lose inhibition and gain confidence.

While the blogosphere may be intuitively dismissed as an example of artificial and/or “peripheral” communication, the popularity of this virtual reality is increasing to such a strong rate that it seems realistic to see blogs as quickly becoming part of blog-user's lives. From this perspective, it seems appropriate to investigate the dynamics which regulate social interaction in this increasingly important ecological niche.

Sign-response cycles in the Italian web: a case-study on blogging

The data illustrated in the case-study outlined below were extracted from the comments to a column by the Italian journalist Marco Travaglio, published on November 14, 2006 on the political newspaper L’Unità, and re-posted in Alberto Biraghi's One More Blog (www.onemoreblog.it/archives/013428.htm) on the same day. Travaglio's bitter article deals with the issue of the complete lack of shame displayed by a number of people in the public eye in Italy, ranging from magistrates and politicians (of all fronts) to football managers and showgirls. The column is basically a list of “big names” - explicitly associated to the specific controversy they have been involved in - who have the audacity to snipe at others and/or complain about the problems of the country. According to Travaglio, if Italians want to have a chance to “rescue” their country, they should first of all rediscover the sense of shame and behave accordingly. While most comments support the journalist’s opinion, it is also possible to find some users who criticize the article.

In the following lines, I will consider the interaction between two specific users who take opposite stands: Moreno, a sharp detractor of Travaglio’s, and Adimant, a lively supporter of the journalist’s. I will explore the strategies of attention-manipulation employed by the discussants to support their views and prevail on their opponent, assuming a better position in the niche. Since the users of this blog are generally rather well-spoken, I will often underline the interlocutors’ stylistic choices in the attempt to gain authority and popularity. Importantly, it is possible to observe that this sign-response cycle moves through three different phases, whose succession displays a clear change in the interlocutors’ attitude toward each other, showing an increasingly asymmetrical relationship. Consider the following chunk posted by Moreno at the beginning of the interaction:

(4) Travaglio punta l'indice accusatore sul Tizio di turno, dimenticando che Caio o Sempronio che gli stanno attorno fanno esattamente la stessa cosa.

“Travaglio points the blaming index on Tom, forgetting that Dick or Harry who are around him do exactly the same thing.”

Here, Moreno argues that Travaglio blames people self-righteously, and almost randomly. The user here employs some metaphors and sayings, choosing them properly in order to support his arguments. He is using a moderately assertive tone, and his style is quite educated. Compare with Adimant’s reply below, though:

(5) Travaglio non punta l'indice su nessuno in particolare, al massimo punta l'indice sui fatti e comportamenti e finora, qui, nessuno di voi riesce a smentire una sola delle cose che dice. Saranno anche ovvie, ma è l'unico ad avere le palle di dirle e non ha ancora trovato nessuno in grado di ribattere.

“Travaglio does not point the index on anybody in particular, at most he points the index on facts and behaviors and at present, here, none of you has been able to disprove any of the things he said. They might be

and action (see Cowley, this issue).

5 Here, the adjective virtual is used to mean “mediated by electronic equipment.”

6 “In Technorati’s State of the Blogosphere 2008 report (see http://technorati.com/blogging/state-of-the-blogosphere), the statistics are impressive: 133 million blog records have been indexed since 2002, and 900,000 blog posts are recorded every 24 hours.” (Gonçalves, Almeida, dos Santos, Laender, & Almeida, 2010, p. 42).
obvious, but he is the only one to have the balls to say them and has not found anybody able to reply, yet.”

The user exploits the same figurative expression to undermine Moreno's opinion, underlying Travaglio's merits and emphasizing that his opponents could not disprove what he says. Although his style is overall more polished than Moreno's, it can be noticed that it is also somewhat more aggressive. This constitutes a link with the following stage of the interaction. Indeed, after a while, the discussion becomes considerably more heated, as can be observed in Moreno's outburst below:

(6) Al manipolo di sepolcri imbiancati che mi attacca suggerirei di andare in tribunale o alle forze dell'ordine e denunciare tutti questi scandalì che tanto vi turbano gli animi e vi indignano. (…) Travaglio in Italia è un inutile postulante che qualcuno ritiene un eroe.

“To the bunch of bigots who attack me, I'd suggest that you go to the court or the police and report all these scandals which disturb your souls and make you indignant so much. (…) Travaglio in Italy is a useless beseecher who somebody considers a hero.”

Here, Moreno “raises his voice”, blaming users who oppose his view to be bigots and challenging them to report the things they deem as unacceptable to authorities, also adding that Travaglio is a useless beseecher. Although he is using a polished Italian, with some elegant expressions, he clearly becomes more emotionally involved, which can be counter-effective, because it can easily lead to inconsistencies. As a matter of fact, later on Moreno admits to have witnessed illegal affairs, without denouncing because, in his opinion, it does not solve anything. This exposes him to other users’ criticisms, to which he again replies aggressively, calling his opponents “mafioso”, ultimately triggering Adimant's harsh reaction. Consider the chunk below:

(7) Dal mio punto di vista sei complice, proteggi il tuo orticello e ti difendi dando del mafioso a me ed Anto. La vera mentalità mafiosa è la tua. (…) sei allineato con un sistema mafioso e ne trai i tuoi benefici, te li tieni e possibilmente stai zitto invece di predicare bene e razzolare (molto, ma molto) male.

From my point of view, you are complicit, you safeguard your little field and defend yourself calling Anto and me “mafioso.” The true mafia mentality is yours. (…) You are aligned with a mafia system and you get your benefits from it; then, keep them and possibly shut up rather than speak well and do (very, very) bad.”

Adimant overtly accuses Moreno of supporting a corrupted system for his own interest, and of rejecting accusations by resorting to insults, also accusing his opponents of his own “sins”. Moreover, Adimant invites the interlocutor to practice what he preaches or at least keep quiet. Here, Adimant shows to be upset and adopts a very aggressive approach. Nevertheless, unlike his opponent, he combines this attacking attitude with a careful choice of words and, especially, with an elegant use of idiomatic constructions and speech formulae. This strategy seems to be paying off, as Moreno becomes more conciliatory:

(8) Guarda che bisogna essere proprio ipocriti per dire che non si vede (…) E’ inutile continuare a rivolgerisi ad una cura che non funziona, la priorità deve essere far funzionare la cura, poi vedrai che pure io mi prendo la medicina.

“Look, it takes a lot of hypocrisy to say that you do not see (…) It is useless to keep on using a cure which does not work, the priority must be to make the cure work, than you’ll see that I’ll also take the medicine.”

While initially Moreno accuses Adimant of hypocrisy, he then calms down and tries to justify his behavior by using a smart metaphor, comparing the inefficiency and corruption of the Italian judiciary system to a cure which does not work. Nevertheless, his arguments do not impress his opponent, whose attitude gets bitter and bitter:

(9) (…) ribadisco, sei perfettamente organico alla mentalità mafiosa che sta riducendo questo paese ad una latrina, latrina nella quale quelli come te imparano a sguzzare presto mettendosi la coscienza a posto e sparando sugli altri.

“(…) again, you are perfectly functional to the mafia mentality that is reducing this country to an outhouse, outhouse where people like you learn to feel comfortable early by clearing your conscience and attacking others.”

Here, Adimant restates his criticism toward Moreno and he goes further on with his use of an elegant wording and phrasing to convey a strongly insulting message. His strategy seems to be successful, as it takes the conversation to a further stage, with his opponent turning his efforts to justify himself, abandoning his
previous, attacking attitude:

(10) Adimant, siamo nella stessa posizione, vediamo entrambi ma siamo in una posizione tale da non poter
denunciare. (...) Grazie per la proficua discussione, non sono d'accordo sul fatto che io sia organico, ma
rispetto la tua convinzione, che ritengo leggermente errata.

“Adimant, we are in the same position, we both see but we are in such a position we cannot denounce. (...) Thanks for the fruitful discussion, I do not agree on the fact that I am functional, but I respect your persuasion,
which I consider slightly wrong.”

Moreno is now just trying to get a truce from his opponent. While previously he accused Adimant of self-
righteousness and hypocrisy, now he just tries to persuade him that their status is similar, also showing
respect and gratitude. Adimant, nevertheless, refuses Moreno's hand and keeps on writing aggressively:

(11) (...) dalla mia posizione non vedo, altrimenti denuncerei. Non esiste posizione dalla quale non è possibile
denunciare. (...). Per me sei organico. E non rispetto le tue convinzioni, ritenendole profondamente errate.

“(…) from my position I can't see, otherwise I would denounce. There is no position you cannot denounce
from. (...) For me you are functional. And I do not respect your persuasions, which I consider deeply wrong.”

It is possible to observe that Adimant maintains his blaming position, perceiving himself in the position to
give moral lessons to his opponent. With Moreno having tacitly admitted defeat, Adimant goes further on
claiming not to respect his opponent's opinions, showing the will to “kill the match”. The behavioral
tendencies observed above point toward a dynamic-systems reading of the interaction: as a matter of fact, at
the beginning of the section I underlined that the dialogue can be seen as moving through distinct phases;
below, I will argue that each of these stages can be seen as initially regulated by the stabilizing function of an
attractor state, then undergoing the disruptive action of a perturbation factor, which causes a phase shift.

The first phase of the dialogue between Moreno and Adimant is characterized by a mild disagreement,
with the two opponents presenting their opinions logically and resorting to their knowledge of facts: here,
mutual respect is the attractor state. Later, the discussants become more and more emotionally involved, and
the debate becomes more heated. At this point, the conversation undergoes the disruptive effect of mutual
anger, which causes a shift toward a phase of open clash, stabilized around the interlocutors’ belligerent
attitude. In the dispute, Adimant proves to be much more able than Moreno to carry on a verbal conflict;
indeed, the former displays a more elegant turn of phrase and he is able to combine the use of complex
structures with an aggressive style. With this mixture of sophistication and vehemence, Adimant successfully
attacks Moreno, finally forcing him to give up the fight and shift to the use of a milder register. The
emergence of Adimant’s better skills as an arguer is the perturbation factor which causes the shift toward a
final phase in which Moreno surrenders. In this phase, it is possible to observe the striking asymmetry
between Moreno’s apologetic tones and Adimant’s aggressive style functioning as the attractor state.

Consistent with a dynamic-systems perspective, it is also possible to observe that the evolution of the
conversation is strongly sensitive to initial conditions (cf. Norton, 1995): the drift of the interaction toward a
clash between the two users starts with Moreno’s criticisms of the comments Adimant and other supporters
of Travaglio’s had already posted in the blog. Moreover, in this dynamic process, the cognitive and affective
coordination between the two opponents functions as a control parameter, i.e. “the parameter to which the
collective behavior of the system is sensitive and that moves the system through different collective states”
(Thelen & Smith, 1994, p. 62).

Three time-scales of interaction in the digital environment

The case-study outlined in the previous section represents an example of the sign-response cycles brought
about by the process of cognitive and affective coordination in a normative world mentioned in §2. Bulding
on an intuition of S. Cowley’s (personal communication, April 9, 2013), I propose that, at least in a digital
environment, this sign-response cycle is fleshed out through the integration of three different time-scales:
1) a first, enchronic scale, wherein both writer and addressee have to align their own thought and typing,
producing concrete language materials, i.e. digital inscriptions;

7 See the notion of enchrony used by Enfield (2011, in press); Madsen (this issue).
2) a second, *dialogical* scale, wherein the development of the interaction gives rise to more results;
3) a further scale, I will refer to as *co-optative*, wherein one of the interlocutors comes to the belief that they can obtain a particular result from the interaction, and this belief constrains the further results of the interaction. This very important scale is quite different from the others, in that it is a “scale of projection”, which illustrates the function of inscriptions as anchor points which serve in setting future targets and taking the appropriate steps in order to reach them.

This multi-scalar integration produces a series of complex *action-reaction sequences* and, by so doing, it dynamically erects a remarkably entangled interactive architecture, constantly updated by cumulative addition. While conversational analysts claim that in real-time oral communication an elaborate interaction emerges from the reiteration of the simple ordering of utterances into adjacency pairs, here the situation is exponentially more complex. Indeed, the written medium offers different affordances for coordination, allowing to keep track of previous exchanges, thus protracting the communication. Furthermore, the electronic environment allows people to communicate from very far locations without moving from their desk, often also remaining anonymous. The conversation is thus simultaneously diluted over time and compressed over space, making computer-mediated communication assume a rather unique status in the world of literacy (see Pedersen & Steffensen, this issue, on the inseparability of time and space in interactions).

From this perspective, it is all-important to underline the material nature of the anchor points represented by digital inscriptions (cf. Fusaroli, 2011). Indeed, by virtue of their ability to constrain the evolution of an interaction, inscriptions do not perform a merely symbolic function, but they also objectify the message being conveyed, which represents a resource which can later be used in order to pursue a goal. Fusaroli, Gangopadhyay, and Tylén (2013) point out that “even when language is written (…), it is still primary in support of wider communicative and cognitive practices, that is, to enable interpersonal interaction and coordination”. This observation, perhaps more straightforward to be made with regard to more traditional genres of writing (whose results are embodied by a “touchable” output characterized by ink on paper), also holds for more recent, digital means of communication, whose results most often only remain available in the virtual space of the internet, where the process of intersubjective interaction and coordination is even less linear. Digital inscriptions are therefore conceivable as tangible, material anchors for future action, enhancing the integration of the three time-scales briefly outlined above.

The development of the conversation through phases illustrated in the previous section can be seen as the result of the kind of cognitive and affective coordination determined by the multi-scalar integration process. Indeed, all the comments in the blog are the result of the user's alignment between thought and typing at the enchoric level: each comment works as a “brick” added to the interaction “building”, introducing some perlocutionary effects in the interlocutor and influencing their response. Dialogically, this interactive cycle makes the discussion take a certain direction. At some point, the co-optative scale also comes into play, for the evolution of the dialogue will lead (at least) one of the interlocutors to decide to pursue a certain goal in the interaction, and this quest for a result will clearly influence the content of their comments, thus affecting and constraining the further development of the conversation.

The interplay and integration between these different time-scales can be seen as regulated by a principle of causal circularity (e.g. Kelso 1995; Torre 2013c, 2013d). Indeed, the enchoric alignment of thought and typing, which gives birth to each comment, has an influence on the dialogical evolution of the conversation. On the other hand, the trajectory of the interaction also affects the next comment which will be written. When the co-optative time-scale (which includes the interlocutors’ goals) enters into play, it influences the content of the following comments, and thus the trajectory of the interaction. At the same time, the latter will also influence the former, as it may force the interlocutors to change their goals.

This is what can actually be observed in the conflicting interaction between Adimant and Moreno: initially, Moreno writes a comment on the basis of what other users had previously written. Then, Adimant replies to his comment, and the conversation begins to evolve into a dialectical confrontation. Quickly, the exchange turns into a bitter conflict, which initially both opponents seem decided to win. Nevertheless, after a short while Adimant's superior skills as an arguer make it clear that Moreno has no chance of prevailing.

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9 On the complex relationship between multi-scalarity and interactivity, see e.g. Kelty-Stephen, Palatinus, Saltman, and Dixon (2013); Steffensen and Pedersen (this issue).
As a result, Adimant goes on attacking, while Moreno withdraws from the conflict, only trying to justify himself.

In summary, we can notice how the multi-scalar integration determines the evolution and the result of the interaction between the two arguers, which develops on the basis of their cognitive and affective coordination against the background of a normative world. Indeed, as the interaction moves through phases, one interlocutor’s better cognitive and linguistic abilities allow him to optimally exploit the affordances offered by the digital environment (i.e. the written medium, time-dilution, and anonymity) and win the debate.

**Conclusion: material anchors, multi-scalar integration, and dynamic systems**

Adopting a dynamic, ecological perspective, in the present contribution I suggested that language is an inherently distributed phenomenon (see Cowley, 2011), shaped by the constant interaction between intentional agents, lived temporality, and the environment. Following those scholars who claim that the primary function of language is the interpersonal achievement of cognitive and affective coordination, I underlined that the interlocutors engage in this coordination process in a normative context, which imposes a set of rules and conventional behaviors on the members of a social group. Against this background, communication takes the shape of a sign-response cycle, characterized by a prospective dimension, where a first action activates a norm, making the doing of a second action relevant, and a retrospective dimension, which allows the first interlocutor to see if and how they have been understood.

Then, I illustrated the development of a conflicting interaction between two users in a specific Italian blog as a case-study. The exchange under consideration can be seen as moving through three distinct phases (whose shift is determined by changes in the kind of coordination between the two users): in the first stage, the two opponents rationally present and support their opposite points of view; in the second one, the debate becomes more heated and both interlocutors adopt an aggressive attitude; in the final stage, the user Adimant prevails on Moreno, who basically withdraws from the conflict and only tries to justify himself. I then argued that this sign-response cycle is fleshed out by the integration of three different time-scales, which gives rise to complex action-reaction sequences. As a consequence, it develops into a complex interactive architecture, constantly updated by cumulative addition made possible by the affordances of the digital medium, which dilutes interactions over time while compressing them over space, by allowing the interlocutors to communicate from distance and keep track of their exchanges.

In my opinion, there are essentially three main points which can be taken home from the present study. The first one regards the nature of digital writing: while distributed, dynamic, and ecological approaches to the study of language reject the “written language bias” (and rightly so) which lies at the core of much work in mainstream linguistic approaches (cf. Fusaroli, Rączaszek-Leonardi, & Tylén, 2014), a dynamic, ecological perspective does have something to say about the ontological status of the written medium. Limiting my attention to digital inscriptions, with particular reference to the blogging activity, in §5 I underlined the importance of recognizing the fact that they do not simply perform a symbolic function; rather, they are material resources which have the power to influence the dynamics of an interaction. Indeed, once a message is written, it is reified and ready to be used in the future: it serves as an anchor point to set new goals and plan how to reach them. When the message is made public, the resource is then available to be used by other people as well. It is from this perspective that digital inscriptions can be defined as “material anchors for future action.”

The second point regards the function of the co-optative scale, and the role of digital inscriptions in the integration of the three time-scales. As underlined in §5, the co-optative scale differs from the enchronic (more distanced) and the dialogical (emotionally heightened) scales, in that it is a scale of projection, i.e. it provides the user with a way of projecting into the future: in the course of the conversation, the blog-user at some point can figure out a particular result they may be interested to pursue, and this belief will constrain the development of the interaction (i.e. in their messages, they will try to manipulate the interlocutor’s attentional system by making use of the most adequate linguistic constructions in order to direct the conversation toward their goal). This point is fully consistent with, and actually supports, the view of digital inscriptions as material anchors for future action. As a result, it can be argued that people constantly integrate the different time-scales by their skills in optimally using and making sense of inscriptions to achieve cognitive and affective coordination in a normative world, where understanding and interaction can be
conceived as emerging in phases.

Finally, it is possible to observe that all the main issues I dealt with in the present study, which so far have been introduced a bit in dribs and drabs, can be unified into a coherent explanation by making use of basic dynamic-systems principles. Indeed, the digital interaction can be seen as a dynamic system, represented by a sign-response cycle fleshed out by the integration of three interactive time-scales, whose interplay is regulated by a principle of causal circularity. This multi-scalar integration gives rise to complex action-reaction sequences which can be seen as constituting the solution trajectory of the system, where each communicative move represents a specific point in the state space and the cognitive and affective coordination between the interlocutors (inherent in sign-response cycles, which represent interactions in a normative world) functions as the control parameter, moving the collective state of the system. Actually, the interaction is characterized by distinct phases, each of which is initially regulated by the stabilizing function of an attractor state; later, the disruptive effect of a perturbation factor causes the system to shift to another phase, converging toward another attractor state (see §4 above). Against this backdrop, it seems reasonable to underscore again the role of digital inscriptions as material anchors for future action, as not only do they keep track of every single step in the evolution of the interaction, but they also represent an actual tool which is effectively used to determine the subsequent ones.

References:


