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Abstract: Taking a unified view of life, language, and cognition, the Special Issue contests linguistic (or enactivist) models that grant "reality" to symbolic entities. Rather than focus on texts, utterances, or communication, language is traced to living in the extended human ecology. On a distributed view, languaging arises as, alone or together, people act while orienting to denotata and (physical) wordings. Languaging requires, not linguistic bodies, but skills based in common ways of understanding. While verbal entities are of immense value, they draw on a history of reflecting on languaging from a language stance; people need only imagine "symbols." Accordingly, languaging is part of acting, observing and imagining. Using a language stance suffices for reflecting on human practices and written marks as if linguistic entities were "real." The deflationary view extends to semiotics. As Ho and Li (2019) document, languaging-and-action enables a learner to grasp a Chinese character as a sign. While, in principle, semiosis might draw from physics or life, signs are also likely to derive from human practice. Coming to read Chinese may require not a semiotic ontology, but a human ability to self-fabricate new powers. By deflating linguistic models one can avoid appeal to observer-independent signs.

Keywords: distributed cognition; distributed language; enactivism; language use; semiotics; understanding

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1 Convergences across fields

Human cognition connects culture and lived experience with social activity. As language – or languaging – evolved, each community brought a historical dimension into its ways of living. Subsequently, physical wordings permeated human attending, perceiving, feeling, and acting – after infancy, people cannot move or think without evoking, on invoking, (possible) denotata. The view represents a fourth position in the language sciences. In what follows, I trace the view's contemporary and historical roots and, then, pursue consequences of

tracing languaging to human immersion in what Steffensen (2013) calls the *extended ecology*. The core claims of the position are:

– Human living draws on and is, in part, constituted as cognition; languaging and life entangle experiences that are inextricable from an evolving social meshwork.
– Social meshworks sustain modes of life whereby groups enable persons to self-fabricate as actors who perform within cultural lineages.

As experience takes on a verbal aspect, people use its constraints to perceive and act. The results consist in *activity where wordings play a part* or, simply, languaging (see Cowley 2014, 2019). From a distributed perspective, there is no need to posit a language faculty, linguistic signs, linguistic bodies, or systems of use. Rather languaging co-evolves with social "reality" where, together with others, people talk and listen as they concert how they attend, perceive, and act. In modern societies, languaging permeates institutions that use rituals, writing systems and technology. The roots of languaging are not communication or face-to-face interaction, but, rather, social living by human primates. Languaging thus influences how people feel, display, and understand as they connect events that include (physical) wordings with perceiving-and-acting. Incorporating repeatable patterns into experience (e.g. phonotactic and prosodic arrays) opens up ways of orienting to things, persons, events, situations, animals, etc.: life comes to be dominated by things-and-language. Within a social meshwork, people live a kaleidoscope of culturally colored change, feeling, and acting. Experience of this flux shapes a person who brings together epigenetics, social expectations, and historical constraints. As the Special Issue attests, tracing what is said and known to the evolution of languaging allows what was long unsayable to be brought back into view. While my focus is on the language sciences, I conclude by extending the fourth position's deflationary view to semiosis.

2 Division in the language sciences

Given the role Western thought grants to sentences and propositions, language and languages are often reduced to vehicles that grant individuals access to what is known or, more broadly, what can be said. The view rules a line between what can/cannot be formulated and, thus, permits a convenient disciplinary divide. For those who accept the division, linguistics can focus narrowly on utterances, their parts and, for some, larger texts. Conversely, those

who reject the linguistic/nonlinguistic demarcation can take a distributed perspective: on this view, language, life and cognition become co-constituting. Languaging is seen as know-how that arises from immersion in a world of human living.

In the language sciences, many examine how, at given moments, individuals speak. Such linguists aim to describe or, perhaps, explain linguistic form/function (often, as emergent from a mind or brain). As Andresen (2013) notes, *speaker bias* posits mastery of a "language-system" and, by implication, an evolutionary discontinuity. What the folk call languages such as *isiZulu*, *English* or *Ancient Hebrew* – together with their "use" – are deemed to be independent of persons, embodied activity, getting things done, or understanding. Before turning to the distributed alternative, I sketch three ways in which linguists commit themselves to the reality of entities associated with *languages* and/or *language use*.

In the nineteenth century, linguists such as Brugmann and Delbrück (1888) used texts to seek invariant sound laws. Ignoring context, they scrutinized written language to establish linguistic facts while, of course, also drawing on grammars, dictionaries, and linguistic traditions. A context-free approach led to the construction of hypothetical ancient Indo-European languages. These were pictured as wholes whose verbal aggregates changed with their grammar. While today's comparative linguists use techniques that even seek correlations with genetic facts (Cavalli-Sforza 1997), philological assumptions remain in place. They define what I call the first position in the language sciences:

– Languages are verbal wholes whose lexical and grammatical features can be tracked in relation to changes in historical time.

The method can be projected retrospectively to languages that may or may not have existed. As wholes or, as Saussure preferred, *systems*, languages place limits on what can be written and, by extension, that which is said. People, culture, and circumstances are subordinated to systems – from this position, linguistic facts can be both disclosed and recorded with reference to what are conceived of as texts. In the twentieth century, the focus turned to what Anglo-American tradition called "speech" (Bloomfield's (1935) translation of *parole*). Linguistic facts were also pursued by transcribing utterances and, later, through acoustic analysis of speech. As in philology, appeal to *forms* excluded non-language by enabling linguists to model language systems. Even contemporary work on embodied interaction often assumes that, in yet to be specified ways, how people speak is constrained by language-systems. Speech is reduced to a modality or, in Saussure's (1983) terms, *parole* draws on a *faculté de langage*.

The system-and-use model dominates much of mainstream linguistics and thus grants the language sciences a second position:

– A language-system (which may be social and/or psychological) enables people to use speech as the basis for other kinds of language use.

A language-system can be taken to define (or constrain) the production of utterance-types. Accordingly, these can be described (and, perhaps, explained) with respect to *forms* and *functions*. Weight falls on regularities alleged to occur independently of persons, culture, and circumstances. Whereas some focus on internal relations and others on contextual realizations, most assume that the patterns are learned, acquired, and adapted to settings. The second position is often dismissed as "code-view," where language-systems are vitiated by what Harris (1981) calls a *language myth*. These systems are seen as like fixed-codes that serve in "transmitting" messages between senders and receivers. Those taking the second position defend themselves against such attacks. Chomsky (see 1998), for example, denies that communication is central to language or that I-language derives from speech; on another tack, Lakoff and Johnston (1980) posit that metaphors mediate linguistic form whose basis lies in conceptual representation of bodily experience.

The system-and-use position is attacked in relation to three main lines of empirical work. First, linking ethnomethodology to constructs like turn-taking allows speech to be transcribed as "conversation" (see Sacks et al. 1967). It was a shock to find that, even leaving phonetics aside, linguists had ignored many regularities: talk does *not* reduce to *language use*. Second, context is central to fields such as sociolinguistics, politeness, the social ecology, text structure or, simply, competent social intercourse (Hymes 1975). Third, for applied purposes, language is often better treated as communication (see Widdowson 1979). Not only are there pedagogical benefits, but many linguistic functions are, in part, pragmatic (see Levinson, 1983), contextually derived (Halliday 1978), and culturally specific (Evans and Levinson 2009). Accordingly, the threads open the way to a third position; in social context, the use of a language-system enacts communication (defined intuitively):

– A language-system (or aggregate of constructions/utterances) contributes to the verbal aspect of multimodal communication.

The position can be used in many ways. For example, some trace its evolution to a hypothetical "faculty" for intention reading (see Tomasello 1998) and others to the working of linguistic bodies (see Di Paolo et al. 2018). By contrast, the more socially inclined treat language as a communicative thread

based in experience with social practices (see Pennycook 2016) and/or on "realizing" a social-semiotic (see Halliday and Matthiesen 2006).

As in philology, the two other positions separate a linguistic "object" from any other aspect of human activity. Language is detached from feeling, thinking, moving, and, indeed, from both social reality and the living world. Where a source is considered, it is said to be either a *faculté de langage* or, perhaps, "sense-making" (see Varela et al. 1991; Di Paolo et al., 2018). If verbal activity can add to non-verbal sense, one takes views like the following:

– Language-systems (or use) are essentially verbal (bodies add a "multi-modal" element to talk).
– While appearing across media, the core of a language-system appears as speech or, perhaps, dialogical invariants (rules, words, and their sub-parts).
– Language production centers on individual sense-making, a mind or brain that, crucially, also drives what grants a person (inner) understanding.

People are taken to use language-systems to make/construe utterances as they communicate by using parts that, at the very least, make sense to a speaker. When understanding is seen as inner, the said can only be clarified by taking a speaker perspective in order to clarify what comes to be said. Conversely, in playing down the speaker, one can argue that a language faculty evolved. In turning to languaging, the Special Issue contests such the three positions by offering work that adopts a fourth distributed view.

3 Towards renewal: Languaging

There is no reason to grant a privileged locus of operation to language (or languaging). Rather, it may have a constitutive role in an evolving social meshwork that enables persons to self-fabricate. By tracing languaging to living, it ceases to depend on society, individual, mind, or brain. Knowledge in propositional form can be seen as collective wisdom that, as argued below, draws on a sense that Wittgenstein (1980) likens to *certainty*. The claims open up a fourth position for the language sciences:

– Persons draw on ever-reiterating, coordinative activity whose embodiment links activity/perception with experience that, at times, has a verbal aspect.

Languaging arises in experiencing a perceived world (a common reality that derives from the workings of social meshworks). Far from arising in a locus, learning to language relies on human skills in attending and acting. For all its

heterogeneity, it depends on linking wordings with denotata – things, people, events, situations, etc. Language is distributed (see Cowley 2011; Thibault 2011). People use languaging to unite denotata with their use of bodies, individuals, institutions, organizations, and practices (and artifacts). Languaging – and experience – are channeled by cultural histories that work through lineages, communities, and over the course of an individual life span. Since infants are born into a social meshwork, they learn to act, talk, and perceive and, as they do so, find themselves prompted to individuate as persons. They learn directed ways of acting by linking dialogical experience with perception and, thus, reaching into the unsayable. In so doing, they draw on what people make public as they anticipate, mesh past with present, and generate the possible by using the lived but unspoken. They come to observe.

While *languaging* arose in folk tradition, the term often returns in seeking to clarify how (physical) wordings sustain understanding (see Cowley 2019). Not only does understanding extend beyond speech (and its complications) but it enacts fine bodily coordination (by at least one party). Even when we attend to wordings (e.g. words that are actually spoken), linguistic form or meaning is only rarely of concern. Whilst understanding has a subjective (or connotative) aspect, it also sustains how people act and perceive (alone or together). Bodily expression helps people bind wordings into acting with (or without) equipment by using normative, physical and other outward criteria. Next, I ask how social meshworks enable persons to coordinate as they open up verbal aspects of common worlds by attending, above all, to what can and should (not) be said.

3.1 The distributed perspective

The distributed perspective (see Cowley 2011a) integrates work from several trajectories. I begin with how its roots in cognitive science were used to reshape linguistic critique and, then, to develop parallels with the life sciences. Later, I turn to retrospective use of philosophical and semiotic traditions. Finally, in presenting the papers of the Special Issue, I sketch how *languaging* became a thriving area of scientific enquiry.

In the 1980s, changes in computing opened up *distributed* aspects of life, language, and cognition. With parallel distributed processing (see McClelland and Rumelhart 1989), weight fell on how reticulate cognitive powers linked extra-neural resources with brains (and neural simulations). In making calculations by pen and paper, it was noted, cognitive networks reach beyond the body. As Turing (1937) had intuited, human agency depends on much more than the agent (see Wells 2006). With hindsight, it is striking that many in the

life sciences were developing related views. Indeed, Dawkins (1982) had already turned to the extended phenotype and, by so doing, opened the way to niche construction theory (Laland et al. 2000), evo-devo and, recently, both epigenetics and the co-evolution of bacteria, and eukaryotes (Švorcová and Markoš 2019).

Recognition of a mismatch between the human agent and human agency arose when Edwin Hutchins brought ethnography to cognitive science. He showed that bringing a vessel into port (Hutchins 1995a) or, indeed, landing a plane (Hutchins 1995b) drew on agency that reaches beyond the body. Culture, artifacts, and social practices (not to mention languaging) were all necessary to successful action. While only one of a number of socially oriented cognitive theories,[1] *culturally distributed cognition* stood alone in overthrowing the agent's frame of reference. It is thus at odds with externalist views like extended mind (see Clark and Chalmers 1998) or, indeed, the recent flowering of enactivism (see Varela et al. 1991; Di Paolo et al. 2018). Rather, as in actor network theory, human agency is seen as unfolding in wide systems that draw on various modes of social organization. In considering how distributed systems serve science, Giere (2004) made what many see as a crucial distinction. While the Hubble telescope exhibits a clear case of extended human agency, its images can only be interpreted by highly skilled individual *agents*. Persons drive scientific understanding and progress – a historic process which concurrently depends on wider systems. Later, these were defined as cultural ecosystems (see Hutchins 2014) within which human agency is enhanced by people who undertake shared projects. Since people use extended agency in coordinated activity, human cognition connects agents with agency in ways that Cowley and Vallée-Tourangeau (2017) deem to be *systemic*.

Blair (2003) brought distributed cognition to language by tracing human interaction to bodily micro-processes (e.g. prosody) that co-occur with ways of using socially derived physical patterns ("wordings"). Language is thus inextricable from thought because people unite perception, action, and (what is now called) languaging. Human cognition connects denotata with physical wordings. The view converges with work that challenges claims that the "use" of language-systems can be explained as a special kind of verbal communication (see Reddy 1979; Linell 2004; Harris 1981). The distributed view uses this critique to offer three main challenges:

– It denies that language is essentially verbal (and denotative).

1 Partly inspired by *Mind and society* (Vygotsky 1980), the work includes Lave and Wegner (1991), Wegner (2011), Knorr Cetina (1991), Wertsch & Wertsch (2009), and Cole (1998).

– It denies that language activity is driven by (knowledge of) language-systems.
– It denies that language and communication serve, primarily, in sending and receiving signs or any other kind of message structures.

The arguments give support to claims from human dialogicality (see Linell 2009), ecological psychology (see Hodges 2007), bio-cognitive theory (see Kravchenko 2011), and align closely with a view of agents/agency that is emerging within what is called social neuroeconomics (see Ross 2007, 2019). Languaging is activity where physical wordings (i.e. heard as repeatable patterns) emerge from the pico-dynamics that shape phonetic and visible gestures (i.e. on a nanoscale). Much depends on the "sense saturated coordination" of *interactivity* (see Kirsh 1997; Steffensen 2013; Cowley & Vallée-Tourangeau 2013; Gahrn-Andersen, 2019). As attested by papers of the Special Issue, these connect up the past, the present, and possible/impossible futures. Humans do not use algorithm-driven action sequences but, rather, multiscalar temporal cognition (Madsen 2017). By making use of wide systems (e.g. families, schools, and workplaces) human agency unites history with a person's epigenetic and ontogenetic past. People learn within conceptual worlds that influence action, practices, and institutions (see Cowley et al. 2004). Languaging permeates attending, perceiving, acting, and feeling as experience is co-constructed and practiced. It shapes projects whereby persons link personhood, skills, strategies, and moves in what Wittgenstein (1957) calls *language-games*. While using living linguistic bodies, languaging arises as parties experience understanding, above all, by performing roles in ways that serve the needs of wider social meshworks.

The ideas draw on the neural and biological sciences, drive empirical work, and, of course, set off examination of philosophical precursors. In terms of origins, one finds parallels with Peirce's externalism, deflation of language "objects," and a focus on what has been deemed *iconic* and *indexical*. Yet, in downplaying signs, the perspective is close to how Gibson (1966) traces vision to bodily attunement and attention. But the view is not, in a narrow sense, ecological. It is bound to reject the general principle of direct perception (Gibson 1979) on the grounds that this excludes dialogue and multiscalar cognition: first order activity always integrates a past with present and is thus partly mediated (Gahrn-Andersen, personal communication). In this respect, languaging has more in common with Dewey's (1896) action–perception cycles or, as in James (1890), a meshing of core and fringe experience. However, in stressing human dialogicality, Russian influence is even more powerful. First, it is intrinsic to Alexander Kravchenko's (2007) reading of Maturana: on this view,

as a bio-cognitive reality, languaging arises in a conceptual domain. In so doing, the dialogical play of structural coupling links activity with what Love had independently come to regard as the second-order (see Love 2004, 2017; Cowley 2017). As in Hegel and Marx, *mind* enables people to individuate in a collective world by using social concepts (representations). Far from being machine-like, people (or minds) rely on learning values and, as Maturana stresses (1978, 1988), becoming observers of their own worlds. Second, in its neurophysiological dimension, the position builds on how Järvilehto (see 1998, 2009) had made ecological use of Russian functional systems theory. In his work, he emphasizes that human activity – and languaging – unite social aspects of consciousness with anticipative, sensorimotor action. Forward-directed perception is central to languaging. Third, using Bakhtin (see 1986), Linell (2009) emphasizes that personhood and languaging are always other-oriented in both general and specific ways. Human dialogicality arises very early in ontogenesis (see Trevarthen 1979; Cowley et al. 2004). Fourth, Bernstein's (1967) work on sensorimotor action allows activity theory to inform how bodies orchestrate with each other (and each other's parts). As they do so, pico-scale dynamics bring synergies to dialogue and gesturing in ways that set off both felt reactions and changes in the trajectory of languaging that is, at once, acting/perceiving.

As for Von Humboldt (1999) and Maturana (see 1978, 1988), languaging lives through people. Humans use how language is entangled with prosodic and indexical social activity in ways that can be traced to philosophical forebears. In the first place, this is a central theme of *On certainty* (Wittgenstein 1980). Building on the well-known private language argument, he turns to how ways of reaching "agreement in judgements" can stand in for mental content. For Wittgenstein, social settings enable people to co-attune to denotata as they adjust to how others attend and vocalize. While the *Investigations* stresses what Wittgenstein calls outerings (*Äußerungen*) (e.g. 1957 §1449), in later work, he emphasizes how social activity brings their normative aspects to the fore. People gain a sense of certainty in grasping/using acts like saying, "This is my right hand" or "I have never been to Bulgaria" (Wittgenstein 1980). Crucially, certainty is *felt* and thus irreducible to what can be described by propositional form.

For the same reason, it is never closed to revision and reworking. In the terms of this paper, moreover, certainty grants multiscalarity to understanding: I am as certain of my travel experience as I am of my right hand. In reflecting on (and with) certainty, a past informs the present. The claims would be trivial were it not that human outerings are intricate and public. In certain aspects, they are repeatable and, of course, often repeated ("this is my *right* hand"). In time, groups and individuals aggregate and organize ways of framing

certainties –and the verbal aspect of *Äußerungen*. In some domains of action, they establish projects based on agreements in definition (e.g. engineering) that permit (second-order) ascriptions of content. Often, languaging can be used propositionally – if and only if people act as if they believe in its verbal aspect (by taking a language stance).

As in *On Certainty*, the basis of judgements lies in body-based repeatables or, in other terms, how languaging links pico-dynamics, the said, and human co-attunement with the world. The case recalls, for example, Wittgenstein's strange suggestion that Wednesday may seem fatter than Tuesday (Wittgenstein 1957: 216). Typically, of course, certainties are more likely to show up as rule-following (and a second-order pattern) such that, together or alone, people find ways of going on (or starting over). Languaging thus plays out through people, or, as Heidegger (1971) proclaims, *language speaks*. In voicing what it is possible to say *now*, as Dasein, what is present serves in how being with the world proceeds. In language, life, and cognition, denotata connect the said with sensed pre-reflexive meaning (see Gahrn Andersen 2017). Strikingly, this echoes Maturana's vision of how languaging co-evolved with observing. In Kravchenko's (2011) terms, its basis lies not in speakers, but in how observers *say* things by echoing social-concepts (or total Language). As Dasein, observers bring connotations to experience and action. Social subjectivity and, thus, activity in which wordings play a part becomes pivotal for all who live in a common linguistic home.

The distributed perspective meshes with contemporary social and cognitive thinking. Whilst the focus on human agency resonates with actor network theory (see Latour 1996), languaging does not use flat structure. The focus on living with (or Dasein) fits with how Malafouris (2014) uses ancient ways of "thinking with clay" to link material culture to human *thinging* (i.e. a thinking-with-materiality). In its use of multiscalar embodiment, languaging is thus consonant with Anthony Chemero's (2011) radical embodied view of cognition: languaging *is* body–world coupling whose reticulate nature is the source of propositional knowing and social renewal. Languaging binds social groups into much wider organized meshworks. In social and institutional domains, the past constrains how people act as, in time, they come to co-attune their perceiving and, to an extent, their acting. This is, strikingly, consistent with the evolutionary principle of neural re-use (Anderson, 2010). Further, if Maturana (see, 1988) stresses the *recursive*, a focus on re-use enables *sames* to be used in the manufacture of novelties. As cognition and communication attune perceptions, they allow people to manage attention, action, and public understanding. As Maturana (1978) saw, languaging uses embrained bodies that act within environments. In turning from a human language faculty,

evolutionary discontinuity disappears; arguably, this links with biosemiotics (see Hoffmeyer 1997; Barbieri 2007) and code-biological (Barbieri 2014) views of continuity between life, mind, and language.

3.2 Languaging evolved

Languaging evolved as ever-reiterating coordinative activity whose embodiment links people who continuously assess and manage coordination. While languaging is always *activity in which wordings play a part* (see Cowley 2014), the verbal can serve as figure and/or ground (to focus on a verbal figure is to "take a language stance" (see Cowley 2011b)). Since linguistic activity co-evolves with culture, as societies change, so do aspects of human agency and personhood. Indeed, much depends on linguistic plasticity. Although this theme has many consequences, I focus on only two points.

While popularized by Maturana, *languaging* echoes a venerable tradition of seeking to clarify what has been suppressed by work on linguistic forms and their function (see Cowley 2019). Although some retain Maturana's usage, others prefer broad definitions (e.g. *activity in which wordings play a part*). Regardless of preference, all concur that languaging arises as persons do things together and, to an extent, gain understanding of a common world. As we speak, hear, think, read, write, or watch television, much understanding is unhidden. In turning away from the speaker perspective, one begins to ask how a world of social certainties aids human coordination. Rather than posit a *faculté de langage* or mindreading, human understanding can only be enacted by vocally mediated social life. While the view stands in need of development, languaging arises in the interweaving of attention, action, and perception. Three main threads thus intertwine in tracing languaging to activity in which wordings play a part:

- Human activity (movement) derives from a history of using embodied coordination
- It uses moves based on bodily experience of normative practices within familiar cultural worlds
- These affect how a person perceives activity while also drawing on skilled ways of attending to its verbal aspect.

As with Nigel Love's claim that languaging exhibits two orders (Love 1990, 2004, 2017), its basis lies in activity or bodily coordination. In languaging, whether acting solo or alone, at least one party's doings invite description around a second-order of verbal patterns. While always particular, first-order

languaging is also open to "repeating" (given human working memory): it no more reduces to wordings ("language use") than wordings can explain languaging. In that each linguistic order is irreducible to the other, languaging is *symbiotic*. In Maturana's terms, the coordinated coordinations of languaging (i.e. activity) arise recursively between observers who draw on experience of consensual domains (i.e. ones that draw on verbal and other second-order practices). Together, coordination and the use of repeatables enable them to self-maintain by playing a part in the co-constitution of what Maturana calls third-order social systems (i.e. within socially organized activity or games).

However construed, languaging is ever-changing and heterogeneous. Since it *includes* living persons ("observers") it has a constitutive role in what each person says, thinks, does, feels, and is able to become. In taking a fourth position, rather than *explain* language, one stresses how languaging and living beings continuously explore possibilities. Further, the position can be used both theoretically and also, as Li (2017) shows, in practical ways. More specifically, it can be used, first, to understand practices; second, it can ground practical theories; and, third, it can be used to create new practices. Although opening many paths, practically and theoretically oriented approaches complement each other, as appears in the Special Issue.

4 From theories of practice to insight into theory

Cowley (2019) uses the genealogy of languaging to challenge three established positions in the language sciences. First, a view where the social meshwork works through embodiment allows skepticism about an ontology of linguistic entities. This is not ascribed to some kind of primal reality but, rather, to a literate's "point of view." Unsurprisingly perhaps, the fourth position finds support in early use of *languaging* where, as illustrated by Mulcaster (1582), understanding is traced to how schoolboys use their "naturall tung" (i.e. how they use the vernacular to grasp how they understand Latin or Greek texts). Related applications return repeatedly and, in the twentieth century, were used, above all, to connect up the particular, the cultural, and the living. Given the term's poietic power, Cowley argues that languaging can ground a new ecolinguistics. By aspiration, this can connect human living, environmental collapse, and, perhaps, not only collective awareness but also action that mitigates its effects. It thus challenges both organism-centered views of language and cognition and also ecolinguistic structuralism. While externalist

about mind, the fourth position stresses the collective and, thus, the practical value of tracing languaging to a history of embodied coordination.

In "Extending the private language argument," Trybulec (2019) pursues philosophical implications of languaging. By tracing linguistic know-how to coordinated embodiment, he shows how its materiality can be used to extend Wittgenstein's private language argument. While many have come to doubt that that minds store linguistic "content" (and thus ascribe to "anti-representationalism"), on a more radical view, minds also lack access to linguistic *forms*. By failing to press this point, it is argued, Wittgenstein's private linguist is covertly treated as literate. For Trybulec, this has the unfortunate effect of masking how human agency has been transformed by a history of writing. Trybulec argues that this view fits evidence showing, for example, that literacy (and its forms of life) are necessary to many kinds of "metacognition." Further, if materiality (not mind) grounds form/meaning, script-based practices (viz. use of writing-systems) drive social change that shapes human agency. The resulting symbolizations render knowledge construction more independent of individual experience. Among the many implications of the view is that, to varying degrees, literacy helps humans to animate nonliving actants.

Four papers stress that embodied coordination influences linguistic understanding. In "Harmonious languaging," Zheng et al. (2019) show how language learning can be enhanced by playing a computer game. Reporting on a study in a Chinese school, the authors note that learning opportunities are deeply affected by kinds of pedagogical design. Classroom organization changes the languaging styles that are observed and, it is argued, how the learners are able to develop. In language teaching, one influences human becoming: being-with-others matters as much as new familiarity with grammatical and lexical patterns. Today, language learning gains much from judicious use of technology. In "Mobilizing learning," Ho and Li (2019) pursue how an individual used technology in studying Chinese. They track how she masters a character associated with what is, for her, an unfamiliar writing system. As shown, she relies on integrating translanguaging with action and perception. The learner links visible affordances with perception and multimodal action. In ways that echo Trybulec's (2019) argument, the learner enhances her understanding by coming to grasp the symbolization as *a* sign. As transformation occurs, her potential to read (more) Chinese characters changes her agency. Once again, languaging is shown to depend on more than the doings of a human agent.

While linguistic understanding draws on semiosis, it also draws on genre, skilled embodiment, and factors such as face-work and affect. Grzegorczyk (2019) highlights how interpersonal dynamics contribute to the success (or

otherwise) of university tutoring. In pursuing events in a tutorial "learning space," he shows the value of accepting a degree of interdependence. In illustration, he shows how a tutee fails to hear the tutor's well-timed hints. In missing "signs" that she needs to *rethink*, she loses a learning opportunity. Instead, she rehearses old ideas while speaking and gesturing in a lively manner: in the context described, reliance on face-work and expression shows lack of understanding. In spite of the tutor's efforts, she fails to draw on what Swain calls "coming to know while speaking." Trasmundi (2019) also begins with a moment where, initially, there is a lack of coordination. In tracking events in a hospital's emergency department, she focuses on pico-dynamics and, thus, sense-saturated embodiment. She highlights events that depend on *interactivity* and "play out more rapidly than in a microscale." Intense sense-saturation helps parties to an effective solution where wordings act as the ground to focused action. In the interactivity framework, therefore, how people move and vocalize can be functionally more important than what is said. In showing how parties struggle and, later, coordinate, she shows that the educational initiatives in health settings have much to gain from bringing the interactivity framework to professional training.

The papers show how languaging binds action with perception as people get things done. They emphasize many aspects of understanding. Whereas Ho and Li (2019) pursue how an idiograph comes to be seen as a sign, others describe less overtly semiotic cases. They illustrate how parties use first-order activity to vary ways of attending. In "Interactivity and languaging," Gahrn-Andersen (2019) examines the basis for this important contrast in emphasis. Having argued for defining *languaging* in Maturana's sense (i.e. more narrowly than Cowley), he draws a distinction between two applications of *interactivity*. In its "narrow" sense, the term picks out cases where Love's first-order is most clearly illustrated by nonverbal problem solving (see Steffensen, Vallée-Tourangeau and Vallée-Tourangeau 2016). Yet, for Gahrn-Andersen, *interactivity* is of more interest when applied in a "wide" sense. In his view, sense-saturated coordination is central to enacting what is usually called pre-reflective and pre-propositional meaning. As people link this experience with wordings, he suggests, wide-interactivity (and languaging) shape ever-changing understanding (i.e. doing conscious experience). Further, he suggests that ways of using wide interactivity can be traced to an ontogenetic accomplishment that opens up a normative world of *existential meaning*. This derives from how the infant's triadic behavior leads to the discovery of *denotata* (i.e. things, persons, events, situations, etc.) and, inseparably, to skills in grasping/hearing verbal patterns. This symbiotic view of experience makes ontogenesis central to the evolution of human kinds of agency – and, of course,

the self-fabrication of human agents. Were such lines of thought to be consolidated, languaging would show its potential to build new connections between the human and life sciences.

The role of languaging in human evolution offers a Maturanian challenge to neo-Darwinism. Raimondi's provocative account also treats human agency as socially derived. Rather than argue against a language faculty, Raimondi traces human abilities to how infants self-fabricate as observers. He thus shows the epistemological power of acting while attending to verbal pattern. In arguing that natural drift gives rise to an ontogenetic phenotype, observing is traced to a process of structural and genetic change. Languaging and life enable social meshworks (societies) to transform human living. Body, cognition, and culture all evolve through spiraling positive feedback processes. As applied to humans, the case for natural drift seems to be powerful; however, it is less clear how (or whether) the view applies to other living systems. For the same reason, Raimondi leaves aside why genetic drift (based on operational congruence) should be privileged over evolutionary tricks such as simplexity (see Cowley 2016). There will be many opportunities for clarification of this particular view of how languaging evolved.

The papers unleash a long-suppressed history that prioritizes languaging-with-understanding over use of "language-systems." They show practical implications for education, work in hospitals, and, indeed, pursuing how humans are changed by information and communications technology. Indeed, they invite one to rethink pre-propositional meaning, human ontogenesis, and what languaging implies for how evolution affects human agents who, given social organization, draw on wider human agency.

5 Languaging and semiosis

Many reject linguistic models of mental *faculties*. Although observer-independent language entities haunt linguistics, there is scant evidence of their reality. As Saussure (1916) suggests, they draw on a point of view or, as proposed here, how literate personhood makes use of a language stance within a social meshwork. In denying a locus to language, with Heidegger and Wittgenstein, humans are taken to inhabit a linguistic home. Many repercussions follow from taking seriously the view that languaging evolved. Among these, one finds implications for the three established positions in linguistics. Above all, each of the position statements can be rewritten to include recognition of the observer (see bold italics):

– Languages ***can be pictured as*** verbal systems whose lexical and grammatical features can be tracked in relation to changes in historical time.
– A language-system (which may be social and/or psychological) ***can be imagined as*** enabling people to use speech as the basis for other kinds of language use.
– A language system ***can be construed as*** contributing to the verbal aspect of multi-modal communication.

Even if language-systems are fictional, linguistic descriptions are of enormous value. Regardless of whether language is *really* a specific medium of communication, users of social media can draw on their beliefs to treat it as if it were. Similarly, treating language-systems as verbal has many uses: one can compare lexical and grammatical systems or, indeed, track how texts reflect on historical change. Finally, imagining that speech is the grounding of language is crucial to teaching and, of course, the basis for developing literacy practices. Indeed, since machines lack any understanding, modern electronic communication is bound to simulate language as if it were a modality that drew on a network of programs and associated data. Thus, even if linguistic entities lack "reality" the positions can transform social meshworks and, by extension, the wider bio-ecology or the domain of all living beings. In denying observer-independent existence to language-systems, we merely confirm that humans use the past to connect materiality, beliefs and attitudes in collective living.

Languaging grants persons a considerable role in making their own linguistic homes. However, I have argued that they do not *become* linguistic bodies (with a special kind of autonomy): rather, they develop within an entangled domain of people, things, situations, events, etc. In this space, each person comes to use beliefs, artifacts, institutions, and ways of living: human life need build on neither a (social) reality nor an objective world. In pursuing the alternative, with Wittgenstein, I have suggested that the peculiar nature of human agency can be traced to how we depend on the use we make of what we call *certainty*. Our worlds grant us ways of attending that reach beyond the said and, as we do so, bring judgments to understanding. As agents, in classic terms, we "use" linguistic signs; in others, human coordinating connects the pre-reflective with language in its verbal aspect. The symbiotic nature of language thus grounds the fourth position:

– Persons draw on ever-reiterating coordinative activity whose embodiment links activity/perception with experience that, at times, has a verbal aspect.

Given skepticism about private language (and minds), the Special Issue clarifies how the social meshwork draws on each person's epigenetic and life

history. This allows the person to contribute to poiesis; as we do so, languaging prompts actively bringing a past to the lived present. As Harris (1982) stresses, each human being lives as a language maker. Yet, in classroom language learning, self-directed study, real-world medical work, or tutorial learning spaces, poiesis is also shaped by what Kravchenko calls *cognitive dynamics*. Ho and Li's (2019) study of learning to recognize a Chinese character thus poses an intriguing puzzle. How are we to understand a person's ability to invest in what are perceived *as* signs?

Viewing linguistic signs as observer-independent leads to attempts to "explain" language by an inner faculty, evolution, social practice, or learning. Belief in the natural status of linguistic forms links work as diverse as that of Skinner, Chomsky, Lakoff, Latour, and Tomasello (and others too numerous to mention). However one views this work, there is a striking alternative. Rejecting the reality of linguistic signs, Peirce turns to an evolving life-world that, in later work, uses an ontology of firstness, secondness, and thirdness. Accordingly, the view shares much with the fourth position: it challenges anthropocentrism, stresses the observable, and allows that persons can treat perceiving as semiotic. Indeed, it allows that languaging can be described as iconic, indexical, and symbolic (in all their dimensions of complexity). Like Peirce, many taking such a view would thus trace the observer-independent (if such a domain exists at all) to what can be imagined on the basis of given pre-reflective experience. As for linguistics, there is heuristic value in appeal to semiosis: indeed, it offers important alternatives to mechanistic approaches to the living (see Barbieri 2007; Hoffmeyer 1997).

Yet, from the fourth position, languaging evolved. So, what of signs? As noted, to "read" a Chinese character is to have *reached* understanding. Once a mark is seen *as* a character, the knowledge can perdure. It has been appropriated or becomes part of a person. Is semiosis thus a matter of learning *correct* ways of attending? This seems possible. Further, no counter-case can show that, in principle, semiotic relations are independent of using attending to make normative judgements. Of course, if they do have such independence, as Peirce and others assert, signs indeed have a strange ontology (based on natural interpretants). In the case of the character, however, this does not apply. The sign manifestly emerges from a history of integrating acting and perceiving; understanding is *reached* as the observer's languaging comes to be integrated with repeated modes of action. In such cases, there are no signs-in-themselves and, thus, no strong case for a semiotic ontology. The argument also seems to apply to wordings that are made and heard as people talk aloud. These physical events arise from Mulcaster's (1582) "naturall tung" or, in other terms, how we navigate a sense-saturated domain of (wide) *interactivity*. Wordings allow

certainty to serve people who cooperate in complex projects: as with grasping a Chinese character, *reaching* understanding changes future potential. At times, the results can be shared – though it is very hard to grasp or formulate new certainties. Outerings link existential meaning with what was unsayable/unsaid: often by chance, something new comes to the fore. If noted, it may be appropriated by a group or, indeed, by a single individual. For Peirce, this is semiosis; for Wittgenstein, it is *a way of going on*. From the fourth position, it arises from how observers use the entanglement of cognition, languaging, and life. Understanding arises through perceiving and acting that draws on historically conditioned outerings (using affective, attitudinal, and/or indexical criteria). In principle, the normative may shape non-human species' ways of going on. If this happens, activity will give rise to perception of physical events that, given an observer's history, can evoke patterns/signs (see Ross 2019). Just as with wordings, individual judgments may derive from a history of repeatability, correction, and associated ways of integrating perception with action (and vice versa).

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