Caring, conversing, and realizing values: new directions in language studies

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Article history:
Available online 2 May 2012

Keywords:
Caring
Dialogical systems
Distributed language
Dynamical systems
Ecological psychology
Values-realizing theory

ABSTRACT

Language serves many functions for humans, but three of the most important are coordination, learning, and friendship. All of those functions were well served by the conversations from which this special issue emerged, a conference, “Grounding language in perception and (inter) action”, held at Gordon College in June 2009. The conference brought together researchers primarily from three research traditions, dynamical systems theory, distributed language, and ecological psychology, and each of these perspectives is reviewed and illustrated in this special issue. The particular focus of this issue, though, is the role of conversations in humans caring for each other and the ecosystems of which they are a part. Emergency medical care, parents and children playing, and students learning a second language, are among the contexts of caring considered. Also considered are ways in which symbol systems emerge, ways in which language extends and alters perception–action systems, and ways in which infant-caregiver relations (i.e., first friendships) are constituted. The various articles explore how language is “situated, culturally embodied, emergent, and distributed” (Zukow-Goldring, this issue); how language is a crucial dimension of the extended phenotype of humans; how language increases our ability to care for each other, our common tasks, and the (real or virtual) ecosystems we inhabit; and how language emerges as we coordinate and share perception and action skills.

1. Platonic reflections and aristotelian phronesis

One of the best-known conversations in art is presented in Raphael’s fresco known as The Schools of Athens painted half a millennium ago (1510–1511) in the Apostolic Palace in the Vatican. Though many Greek philosophers are depicted, Raphael has placed two of them in the center of the painting: Plato and Aristotle. Plato, on the viewer’s left, is holding a book in one hand, but with his right arm bent, pointing upwards toward the capacious vaults that encircle the figures below. The book he holds is the Timaeus dialog, which it mostly a monolog offering an account of the creation of the world soul, which is perfectly intelligent and self-sufficient (Cornford, 1997/1935). Aristotle, on the viewer’s right, also holds a book, his Ethics. His other arm, the one next to Plato, points forward, toward the ground on which they are walking and in the direction of their movement. On the one hand (literally), Plato’s gesture indicates his intuition that truth, beauty, and goodness are abstract ideals, only to be found in another world beyond this one. On the other hand, Aristotle’s gesture indicates his sense that meaning and value were to be found in the world in which he and Plato lived. Ideas and ideals were embodied in the world, and were accessible to those who moved through it, learning as they went. His book proposed that to engage in good action requires phronesis, practical wisdom, which does not require a knowledge of theory or general rules, so much as it requires

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http://dx.doi.org/10.1016/j.langsci.2012.03.006
practice gained through the nurture, training, and friendship of others (Kraut, 2010). This practice with others encourages the development of social and emotional skills, not just intellectual ones. It yields judgment, not just intelligence.

As a first pass, it could be said that the articles in this special issue take a more Aristotelian approach to understanding language and its role and purpose in our lives than currently ascendant Platonist understandings of language. Instead of posititing language as an abstract, formal, universal set of rules, a (perfect) competence system that exists independently of situated action in the world, the articles in this issue focus on real relationships, on personal and professional ethical commitments, and practical problems and projects. Later we will return to Raphael’s depiction of Plato and Aristotle conversing, and a different way of viewing it than we have proposed thus far, but at this juncture, we explore more thoroughly the Aristotelian themes that unite the articles in this issue.

2. Grounding language in perception and (inter) action

This special issue grew out of a conference, entitled Grounding Language in Perception and (Inter) Action, held at Gordon College (Wenham, MA, USA) in June 2009. This event brought together scholars from a variety of perspectives, primarily ones associated with dynamical systems theory, ecological psychology, and the distributed language movement. Three special issues have emerged from the conference, of which this is the third. The first two issues both appeared in Ecological Psychology, one entitled New affordances for language: Distributed, dynamical, and dialogical resources (Hodges and Fowler, 2010a), and a second entitled Dynamics and languaging: Toward an ecology of language (Hodges and Fowler, 2011). Whereas the two previous issues focused on language from ecological and dynamical systems’ perspectives, this issue focuses on the interactional dynamics that give rise to language.

The three special issues present a compelling cross-section of work emerging from researchers in distributed language, dynamical systems theory, ecological psychology, cognitive science, communication, and philosophy of science. Despite the variety of topics and perspectives represented, the three issues are unified by a series of common convictions: language is “situated, culturally embodied, emergent, and distributed” (Zukow-Goldring, this issue); language is a crucial dimension of the extended phenotype of humans (Waters, this issue); language is not primarily a cognitive system, but rather a social institution (Port, 2010) that requires taking a language stance (Cowley, 2011); language increases our ability to care for each other, our common tasks, and the (real or virtual) ecosystems we inhabit (Pedersen, this issue; Steffensen, this issue; Zheng, this issue); language is a dialogically situated set of perception–action skills for realizing values (Hodges, 2007a, 2009); language depends not on basic units and fixed rules, but “interaction dominant dynamics” (Wallot and Van Orden, 2011); and finally, language emerges as we coordinate and share perception and action skills (Galantucci et al., this issue; Lu et al., this issue; Rader and Zukow-Goldring, this issue).

These themes all point in the direction of the Aristotelian project of grounding language in the complex pragmatics of speaking and listening, as we engage in our on-going everyday tasks that require our implicit judgments about what should be said, heard, and done. Far from Platonic forms, this speaking and listening (or gesturing and watching) require serious attention to the messy meshwork that characterizes human existence. It insists that conversations are grounded in the love of a parent, the concern of a nurse or a teacher, the camaraderie or critique of a colleague, and the passion of an argument with a neighbor. On this view, language cannot be abstracted from such situated, caring contexts and treated simply as a formal system.

It was out of such concerns and convictions that the Wenham conference emerged. The meeting was the first event in the United States that was sponsored by the Distributed Language Group (DLG), a loosely affiliated group of scholars from a variety of disciplines (e.g., linguistics, psychology, computer science, philosophy, anthropology, communication). As the conference approached its end, we discovered that our shared concerns for the language sciences were invigorated by sharp disagreement, as we considered some of the most basic questions one could ask about language: Why is there language? Why do we speak with each other?

Answering these simple questions turned out to be surprisingly difficult and refreshingly argumentative. Some noted that gaining agreement between people seems to be crucial. Others, however, quickly countered that language is often the means by which we argue with each other. Both conformity and conflict, others acknowledged, are important: What is crucial about language is that it provides resources for coordinating our actions together. Finally, the conversation we were having was made reflexive: What were we ourselves doing as we listened and spoke to each other over many hours together at the conference? Making this self-reflexive move clarified for many of us that language was about more than thinking out loud, or persuading others to agree with us, or being persuaded by others to agree with them, or arguing for the sake of arguing, or lots of other similar possibilities. It was so we could get to know each other better—better friendship, better science—and so we could learn from each other, and better coordinate our efforts in future projects together. Thus, coordination, learning, and friendship seem to go a long way to answering, why language?

The conversations that have emerged from the Wenham conference exemplify these values of coordination, learning, and friendship. Virtually all of the articles in this special issue highlight one or more of these values in some way or other. To whet the reader’s appetite and to set the table for appreciating the feast offered in these pages, we will first provide brief guides to some of the main traditions influencing our conversations. Reviewing these thematic traditions allows us to relate the articles in this issue to the earlier special issues, so that any one author’s contributions can be better appreciated within the conversation of the conference as a whole. Then we provide a slightly elaborated menu, highlighting and contextualizing
3. Ecological approaches to conversing

From an ecological perspective the activity of conversing is central in the study of language. Language is not primarily for thinking, but for sharing information and coordinating actions (Fowler, 2010). Without language, the cooperative, collective activities that are central to human life and culture would be much more difficult (Tomasello, 2008, 2009). Language is seen less as a cognitive system of knowledge and more as a set of perception–action skills that are fundamentally social and physical (e.g., Hodges, 2009; Port, 2010; Worgan and Moore, 2010). The focus of research tends to move away from abstracted mental models of syntax and semantics toward considerations of gestural movements of bodies in conversation (including but not exclusive of those treated as phonemic), and toward the situated social contexts in which those movements occur (e.g., Fowler, 2010; Hodges, 2007b; Shockley et al., 2003; Fowler et al., 2008). In traditional linguistic terms, pragmatic and phonetic issues are highlighted, rather than being left in the background or treated as extra-linguistic.

Focusing on social pragmatics and physical gesturing in real conversational contexts leads in some surprising directions. It has led Fowler (1986, 1996) to propose that vocal gestures are the basis of phonetic perception, and since these are publicly available, they can be directly perceived, rather than being inferred from ambiguous sound patterns. It has led Port to an even more radical claim. He has proposed that phonemes and other “low-dimensional structures” posited by traditional phonology, which are usually treated as residing in the brains of individuals, are better thought of as “social institutions” (Port, 2010) that characterize the behavior of a community, as it has emerged over generations. While an individual’s speech is influenced by these communal constraints, it remains rich and high-dimensional, and is recognized as such by listeners.

On the other hand, the focus on the physical and the pragmatic has led to claims (Fowler, 1986; Hodges and Fowler, 2010b) that the meaning of utterances may be directly shared by people who are embedded in real circumstances, are intentionally engaged in joint activities, and who share a common cultural history. On this view, direct meaning emerges not from laws of semantics or sound, or by cultural fiat, but from a history of prior engagements as well as ongoing moral commitments to individual persons and communities. Along these lines Worgan and Moore (2010) proposed that the “direct perception of speech requires the existence of ‘interaction affordances’ arising from the dialogical process” (p. 327), where interaction affordances are opportunities for engaging in intentional action with others. “Spoken language understanding cannot be divorced from the wider aspects of human behavior” (Worgan and Moore, 2010, p. 341). From an ecological perspective, the activities usually described as linguistic must be nested within the larger physical, social, and moral dynamics that constitute human life (Fowler and Hodges, 2011; Hodges and Fowler, 2010b).

4. Dynamical systems and speaking and listening

According to traditional linguistic theory, mental structures embodied in brain activities (e.g., a universal grammar plus some parameter setting) are responsible for decoding acoustic patterns and identifying linguistic signals (e.g., phonemes, morphemes). These same processes are the ones by which an abstract idea is coded and ordered into a series of sounds that constitutes a sentence that a speaker may utter. Dynamical systems researchers (e.g., Wallot and Van Orden, 2011; Yuen et al., 2009) have noted, though, that if one is listening to someone else speak and shadowing that speech (repeating what is heard), this can be done so quickly (about 150 ms) that it appears to leave no time for cognitive processing of a sort that could count as linguistic (e.g., grammatical). The articulatory trajectories of words that are spoken move in the direction of what is heard at speeds that match simple reaction time (i.e., a predetermined response to a predetermined stimulus). This is an astonishing result. It suggests that, “ambient speech must be sufficiently rich in constraints to specify articulation of speech directly (Fowler, 1986, 1996)” (Wallot and Van Orden, 2011, p. 162). It suggests that the connection between action and perception is very tightly self-organized, just as it is in the flocking behavior of thousands of birds, moving together in a way that seems completely unpredictable and yet completely synchronized.

To address phenomena of such complexity, dynamical systems researchers have worked to develop models of self-organization that can give rise to behavior that is highly constrained but indeterminate. A central feature of such models is that activities such as conversing are constrained across many spatial–temporal scales, so that any given phenomena (e.g., pronouncing a word, uttering a sentence) is possible only in the collective action of various scales interacting with each other. Ra˛czaszek-Leonardi (2010), for example, discusses scales from milliseconds of brain activity to minutes of conversational interaction to hundreds of years of cultural language evolution, but focuses on the interaction of three scales, which she calls online, ontogenetic, and diachronic, to explain grammatical gender effects in Polish and Italian.

Van Orden and his colleagues (e.g., Hollis et al., 2009; Riley et al., 2012) have proposed that complexity dynamics are interaction dominant; that is, they do not exist in their components. If that is the case, then it undermines the notion of compositionality assumed in traditional linguistics. From this dynamical perspective the fundamental character of linguistic activity is context-sensitivity and interdependency, which challenges claims that language is rule-following and modular (e.g., Fodor, 1983). Research has revealed pervasive, long-range patterns in linguistic performances (e.g., lexical choice, pronunciation), indicating that contexts at all temporal–spatial scales are intrinsic to those performances (Van Orden et al., 2009).
What are usually assumed to be independent segments, invariant rules, or fixed hierarchies of relations turn out to vary depending on context and the relationships among the segments, rules, and hierarchies. These varying relations suggest that, “context is constitutive of competences, not just performances” (Hodges, 2009, p. 640).

Finally, complexity dynamics draw attention to two crucial and paradoxical characteristics of healthy, creative systems. The first is frustration; the second is anticipation. Frustration is the balanced tension between local and global constraints, between faster and slower scale activities, and between tendencies toward order and toward disorder. Rather than being a detriment to ability and skill, the tension makes rapid, adaptive, and creative action possible. Flocking behavior, for example, is due to balancing the opposing tendencies of each bird to act independently and to follow the lead of its neighbors (Wallot and Van Orden, 2011).

Likewise, Steffensen (this issue) shows how dialogical systems balance similar opposing tendencies between continuity and disintegration, which is illustrated in interlocutors finding ways to dissent without actively voicing it. Anticipatory action grows out of such frustrated states, since the constantly unfolding dynamics generated by the tensions makes some actions and directions far more likely than others. No prediction is involved. In fact, precise prediction (e.g., exactly what word will be said next) is almost impossible. Speaking and listening are ordered, but they are not rule-governed. Language is grounded, yet always able to fly.

5. Distributed language

The distributed language movement emerged from concerns that linguistics has become too abstracted, too formal, too disembodied, too codified to capture the dynamics of languaging (the actual speaking and listening to others, or first-order language), or even to account properly for the role of language in the sense of forms, symbols, structures and rules (second-order language). More generally, it was influenced by the distributed cognition movement in cognitive science (e.g., Clark, 1997; Hutchins, 1995), which tried to see linguistic activity, along with other cognitive skills, as not residing solely in brains, but distributed throughout the body, across multiple bodies, interacting with crucial supports and scaffolding in the world.

Thibault (2004, 2005), Love (2004, 2007), Kravchenko (2006, 2007), Linell (2005, 2009), and Stephen Cowley and his colleagues (e.g., Cowley, 2009; Cowley and Spurrett, 2003) were among those who began to explore alternative ways of doing linguistic work that was more biological, more dialogical, more culturally embedded, and more context-dependent. The characteristics that came to define the group were convictions such as (1) language is “radically heterogeneous”, (2) “spread across diverse spatio-temporal scales”, (3) “not localizable in any one of them”, (4) understood first of all as “the intrinsic expressivity and interactivity of human bodies-in-interaction”, and (5) secondarily as constrained by “cultural dynamics of an entire population of interacting agents on longer, slower cultural–historical time-scales” (Thibault, 2011, p. 210). As Cowley (2011) elaborates these convictions, second-order wordings become a resource for listener-speakers, who can learn to use them as constraints for guiding their actions. This way of characterizing language lies far from the view that it is an innate cognitive program, which lawfully and unconsciously codes and decodes serial orders of lexical units in rule-governed ways.

In addition to exploiting dissident traditions within linguistics (e.g., Harris, 1998) as well as the distributed cognition movement, distributed language theorists also took on ecological and dynamical systems themes. Rather than focus on language as a cognitive system, these authors have focused on the “coupling between brains, bodies and the world” (Cowley, 2007, p. 575). Learning to talk, Cowley (2011) suggests, following Gibson (1986/1979), is like learning to see objects and events in pictures. It is in the “interplay between dynamic and the symbolic” that action is guided, not by knowledge of a formal language system (Cowley, 2011, p. 204). The use by Cowley of the term interplay is propitious, for it draws attention to the fact that children learn language in a community that already exists and that cares for its newest members, inviting them to join in their symbolic play (Reed, 1996).

6. Caring, conversing and values-realizing

Having thus outlined the intellectual state-of-the-art that underpins this special issue, we will now turn to the articles contained in it. In the context of language sciences, the focus of this special issue is at the level of conversations, i.e., joint actions of two or more people that enlarge the possibilities of their engaging in coordinated, directed activity together. More particularly, the authors focus on a central activity of humans, namely caring for each other and for the larger social and physical environments that support that caring. Thus, several articles suggest that caring is a significant, perhaps central, dimension of language as it is embodied in various communicative practices. In this special issue, the concern with caring unfolds in two main ways: partly as investigations into real-life empirical examples of caring-in-conversing (e.g., in the environments of parenting, emergency medical treatment, language learning, and infant-caregiver interaction), and partly as investigations into the consequences of the dynamics of caring-in-conversing (e.g., the extending of action and perception systems, the emergence of symbol systems, the constitution of infant-caregiver relations, and the impact on hemispheric activity).

Many contributions trace the preoccupation with caring to Hodges’ (2007a,b) work on realizing values. Hodges proposed the hypothesis that we converse primarily in order to care for others, for ourselves, and for the world we inhabit. The distinctive character of caring embodied in conversation emerges from two features of complex dynamical systems, noted
earlier: context-sensitivity and interdependency. Caring arises out of interdependency and demands context-sensitivity (Hodges, 2009). The pragmatics of languaging and language can thus largely be summarized as, knowing how to be caring and careful in our speaking and listening to each other.

To care and to be careful is to evaluate and select better and worse ways to move. Every aspect of language involves the selection and shaping of movements, from pronunciation to syntax, from word choice to choice of addressees. It has been proposed that all of these implicit, largely unconscious choices depend on values-realizing dynamics (Hodges, 2007a,b; Hodges and Baron, 1992). According to values-realizing theory (Hodges, 2007b), all actions, whether driving a car or conversing with a colleague, are constrained and legitimated by multiple values. Values are the real goods that actions must realize sufficiently for an ecosystem to exist; thus, values are obligatory demands that define what constitutes good driving or good conversation (Hodges, 2007b). Such a view suggests that we converse in order to explore and create possibilities for doing something good together. It may be as simple as preparing a meal or amusing each other during a boring interlude, or as profound as telling or being told by someone, “I love you”, or “You have a grave illness”. Failures to speak clearly, cooperatively, and in ways that are comprehensible yet newsworthy, are all too common. Nevertheless, our very recognition of them as inarticulate, or awkward, or insidious depends on values-realizing judgments.

7. A linguistic menu: from phenotypes to colors

Having set the table, we now consider the various dishes individually. The issue opens with an article by Waters (this issue) who sets the scene for the whole issue by emphasizing that our biological being is at the heart of the language sciences. He presents two models that add to our understanding of language as a complex system. One is Dawkins’ (1982) model of the extended phenotype, and the other is (Gibson, 1966, 1986/1979) model of affordances. Both models concern a central tenet in the distributed language view, namely that action–perception cycles constitute our body-world interaction. On the one hand, language depends on this body-world interaction, and, on the other, it significantly alters the interaction. Building on these models, Waters argue that language extends human abilities and environmental opportunities far beyond the self. Language, both as a material artifact and as a behavioral constraint, extends the human phenotype. In turn the extended phenotype gives rise to extended affordances, i.e., environmental structures that we only can pick up because we are immersed in language. From this perspective, language is distributed, and not just as a property of individual brains or even individual persons. In extending our ability to act and to perceive, language is just that—ours.

Steffensen (this issue) enlarges this vision into a full-scale discussion of language as an “extended ecology” (cf. Steffensen, 2009, 2011), advocating an embodied, enacted, and bio-cognitive approach to clarifying the dynamics of dialog. Drawing on third wave cognitive science, especially the enactive program and distributed cognition, he develops a model of dialogical systems that functions as a descriptive and explanatory frame for investigating real-life dialogs and conversations. This model takes us beyond the dichotomy between ‘individual biology’ and ‘collective sociality’ by claiming that human interactivity is grounded bio-cognitive dialogical systems that are non-local (Steffensen and Cowley, 2010), that is, irreducible to both individual biology and to a supra-biological interaction order. One implication of this approach is that observable behavior in dialogical systems depends on system-level regulations that cannot be reduced to sequential patterns constituted by individual actions and accounts. Analyzing patterns of deixis in a conversation between a mother and a health visitor, both working to care for a newborn infant, the paper exemplifies how dialogical systems theory approaches real-life conversations. The focus is on how a dialogical system maintains its equilibrium, as well as how dialogical systems relates to larger social systems (e.g., families, governmental agencies).

Using values-realizing theory, as well as distributed language and cognition, Sarah Bro Pedersen (this issue) examines the life-and-death dynamics of hospital emergency care. She argues that the medical field suffers from individualist approaches that fail to appreciate how whole-bodied interactivity in medical teams contributes to care and treatment. It does so because it operates with a dichotomy between private cognition and public communication. In contrast, Pedersen, following a distributed approach, argues that events in the public domain, both in the medical team and in relation to the patient, determine a treatment trajectory. The contribution pivots on methodological innovations, which are presented under the rubric of Interactivity Analysis (IA). The viability of the approach is established through a detailed analysis of an emergency ward simulation, performed by a doctor and a nurse at the ward. The analysis shows how the practitioners have difficulty maintaining their collaboration: They lose situation awareness and sensitivity to each other in the high-pressure environment, and revert to individualist strategies that yield insufficient care. Although both intend to care for the patient, they care individually, resulting in the simulated patient dying.

Like the previous contributors, Zheng (this issue) explores the dynamics of caring in socially important contexts, in casu in second language learning. Making use of ecological psychology and values-realizing theory, she explores how language learners can be prompted to care for their co-learners in the design of computer-mediated language learning tools. In line with van Lier (2002, 2004), Zheng combines theoretical insights from ecological psychology, distributed cognition and language, and dialogism, and she combines and applies methods from these areas to explore how learners behave at the “Chinese Island” in the 3D virtual world of Second Life. The scene is designed so as to promote both second language development (in Chinese) and caring interactions between the learners’ avatars in the virtual world. The study investigates how learners make it possible for Chinese signs to have a useful function, while they develop identities that contribute to the coordination of actions and interactions. One significant result is that towards the end of the learners’ journey, Chinese
wordings increase in frequency and in orchestration. Likewise, the game design prompts the learners to develop more equal social relations, as they all need to initiate interactions in Chinese.

Taken together, these three studies of real-life interactions in the context of child care, emergency medicine, and language learning emphasize two things. First, understanding and investigating interactivity depends on sensitivity to ecological and bio-cognitive processes. Second, cognitive scientists working with real-life examples of situated cognition need to sensitize themselves further to the dialogical and sense-saturated aspects of human cognition (Steffensen, forthcoming).

By contrast to interaction theorists and many cognitive scientists, all of the authors of the remaining four articles have, to some extent, been shaped by ecological and embodied approaches to cognition, and thus, have some feel for the importance of embodiment, of perceptual activity, and of the reciprocity between persons and their environment. What has been more challenging for scientists working from this perspective, however, has been paying sufficient attention to the importance of interactivity, and the need for committed, communal relationships to nurture basic perception–action skills. The authors of the following papers, though, make serious efforts to improve their ecological sensitivity in these respects.

Rader and Zukow-Goldring (this issue) present evidence from developmental research that children's early word learning is guided by gestures, and that synchrony is a crucial dimension of this guidance. More specifically, they provide convincing experimental evidence that novel words are learned when dynamic, synchronous gestures occur along with the word being uttered, but not when a static gesture accompanies the word. The results, based on eye movement data, suggest that the means for the reference relationship being established is that children are detecting amodal invariants across dynamic manual gestures and dynamic verbal patterns (i.e., words spoken). What is particularly impressive about this experimental demonstration is that the children in their study were 9–15 months old, which is prior to the time many psychologists believe children are able to follow reliably gaze or pointing gestures.

In a separate piece Zukow-Goldring (this issue) goes on to outline an argument for a general theoretical model of language development, focusing particularly on the phenomenon of assisted imitation. She argues that caregivers educate the attention of infants, helping them to notice the possibilities of their bodies in relation to environmental opportunities. Her argument indicates that it is only within such caring, communicative contexts that children can be expected to notice ways in which their own bodily activities can be coupled with the meanings and possibilities of various objects and relationships. She notes that, “Caregivers have no script, no directions from MapQuest for getting through the day as they interact with their infants” (this issue), anymore than their infants have a map to language. What they do have is each other. Zukow-Goldring proposes that it is in the small joint activities of playing and interacting together that they discover what can be done and known, including their own reciprocity: “The infants’ behavior benefits the caregiver and vice versa” (Zukow-Goldring, this issue).

Using an original task of his own devising, Bruno Galantucci and his colleagues (this issue) report work in “experimental semantics” on how communicative signs are invented, shared, and adopted (or not, as it turns out) to yield successful problem solving. They draw attention to the central importance of community in shaping the behavior of dyadic interactions, leading them to the question of whether third parties, observing a speaker-addressee dyad, will adopt novel signs emerging from dyadic interaction. Their findings indicate that diffusion of signs does occur, but that often it does not. One reason for unsuccessful diffusion was differential skill at the task, but a more surprising finding was evidence of uncooperative behavior, and more surprising still was the fact that it was often the more skilled participant who undercut success. Their evidence suggests that caring for one’s conversation partner is crucial for the continuation of interaction and the diffusion of signs across a community of potential users. If it is not really a community (i.e., caring), diffusion is unlikely.

Finally, Lu and her colleagues (this issue) provide new evidence and perspective on the influence of linguistic activity on color recognition. Repeatedly declared moribund, linguistic relativity has been revived by a fresh wave of recent research, which has brought new excitement to a textbook issue. Lu et al. provide a brief, but useful, review of this recent research, and then present two experiments which show that (1) colors that are easily named are slower to be recognized than colors that are difficult to name, and that (2) color recognition is slower in the left hemisphere than in the right hemisphere. Thus, along with other recent studies, their experiments provide persuasive evidence for linguistic relativity. They then discuss possibilities for how these novel findings and those of other recent studies can be understood in a way that move beyond old debates about universalism and cultural variability, toward ways of understanding that are more dynamic, ecological, distributed, and caring. In the end they propose that both color and conversation are fundamentally dialogical.

8. Conversation as dialog: learning together

We left Aristotle, as painted by Raphael, dissenting, as it were, from his teacher’s characterization of language in other-worldly terms. Perhaps, Raphael was offering a pictorial representation of the debate between idealism and realism, between metaphysics and physics.

However, it is difficult not to notice that they are painted conversing with each other. They are not entrenched, each in his corner, establishing his own school. Rather, they are dialogically engaged with each other. Furthermore, they are moving together in a direction, straight towards the spectator. It is as if Raphael wanted to embed the philosophical conversation between Plato and Aristotle in a much larger conversation between the spectator and the pantheon of ancient Hellenistic philosophy – as if he wanted to tell us to listen to the voices of Aristotle and Plato together, amid the concert of voices surrounding them. If one travels the line of walking in the other direction—the eye is drawn to the vanishing point, which lies
between and beyond them, at a point of infinity, perhaps referencing god. Along with the encircling vaults, and the axis of engagement with the infinite and the whole, the geometry of the conversation points less to debate than it does to the necessity of both voices being joined, if they are to begin to do justice to their own insights and to lead the viewer toward the truth.

Martin and Fonseca (2010) propose something along these same lines in reanalysing a conversation of sorts that occurred between the philosopher Karl Popper and the physicist Thomas Kuhn about the nature of science. Kuhn thought Popper had too much the logician’s view of science and Popper thought Kuhn’s view too social psychological. (There are similarities to Plato and Aristotle’s views.) We will not repeat Martin and Fonseca’s analysis here, except to note the ecological, distributed, dynamical character of their “conclusion”. They propose that rather than seeing the discussion as a debate between logically opposed positions, it is better seen as “complementary moments in the course of an unfolding, temporally distributed dialogue” (Martin and Fonseca, 2010, p. 265). If one attends to the “directions of arguments”, then it appears that, “rather than precluding one another, the complementary trajectories require one another if they, and the play they constitute, are to be of value” (Martin and Fonseca, 2010, p. 266). Martin and Fonseca do not just report Kuhn and Popper’s positions, indicating which one they prefer. Instead, they engage the dialog itself, suggesting that it be understood, not simply as a disagreement, but as a moral-intellectual encounter in which each man is warning the other of the dangers of his position, unless it is held in tension with the position being highlighted by his “opponent”. Each needed to realize that conversing across the tension of their differing perspectives embodied the character of science itself more comprehensively and accurately than either of their isolated positions alone could do. “It is precisely the capacity of conversations to embody and negotiate clashing and distinct possibilities that constitutes both the meaning and the motive for communication” (Martin and Fonseca, 2010, p. 267).

Both accounts, Raphael’s pictorial one, and Martin and Fonseca’s verbal one, point us to a larger view of philosophers and scientists and their debates. Like Plato and Aristotle, they move in a direction that is orthogonal to the direction of the dissenting exchanges in the dialog. Both accounts encourage us to see and hear the protagonists as engaged in an embodied dialog where they care for each other and the greater whole of which they are a part (i.e., truth, justice). Thus, what appears to be a back and forth, winner-take-all debate, is transformed into a cooperative joint task of coordinating the serious issues and claims that each party has identified in a way that allows them to argue their case playfully with each other. It also requires that each of them listen with humility to the case of the other, so they can recognize the truth of the other’s argument, as well as the dangers that threaten their own view. If they are able to do this, they both will learn, and their dialog will have moved them toward a more complex and comprehensive view than either of them would have achieved alone.

Reflecting on caring and learning brings us back to the question, noted earlier, about why converse with others. Conversing does not have a single function, of course, but it is easy to assume that its primary function is to inform, or to share, or to persuade. All of these functions point toward language as being aimed at agreement, but as discussed earlier, this will not do. Disagreement and argument are central to language and its value as well. As the earlier discussion of Plato and Aristotle, and Popper and Kuhn, illustrated, conversing moves beyond agreement and disagreement. It seeks goods (i.e., values) that are beyond the personal preferences of the individuals involved, or even their society.

As Raphael’s painting suggests, conversations answer to larger communities, the world, and god, including the viewers of the painting itself. All engage Plato and Aristotle’s conversation to discern its worth. Aristotle and Plato were trying to work out where values are to be found, in this world or another or in both, while Kuhn and Popper were trying to work out how science works best to advance our knowledge, while acknowledging human limitations. Their conversations about the ontological locus of values, and about how truth is best found and shared by scientists are ones that many since have found valuable. Conversations on science emphasize that science is a collective and moral activity: there can be no science without con-science. Thus, the scientific conversation and its tacking back-and-forth between question and response also emphasize the values-realizing dimension of science: questions are grounded in the human quest for better lives, and responses are grounded in the responsibility for sharing what we find with each other.

It is our hope that the conversations that are implicit in this special issue will be worthwhile, if not for the ages, at least for taking the next small steps needed to advance our scientific knowledge of language.

Acknowledgments

We gratefully acknowledge the support of the National Science Foundation (BCS-0843219) to Bert Hodges for the conference, Grounding Language in Perception and (Inter) Action, and for preparation of this article. We thank all those who participated in the Distributed Language Group conference at Gordon College, especially those contributing to this special issue.

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