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BRIDGING THE GAP

Cognitive and Social Approaches to Research in Second Language Learning and Teaching

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For some, research in learning and teaching of a second language (L2) runs the risk of disintegrating into irreconcilable approaches to

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L2 learning and use. On the one side, we find researchers investigating linguistic-cognitive issues, often using quantitative research methods including inferential statistics; on the other side, we find researchers working on the basis of sociocultural or sociocognitive views, often using qualitative research methods including case studies and ethnography. Is there a gap in research in L2 learning and teaching? The present article developed from an invited colloquium at the 2013 meeting of the American Association for Applied Linguistics in Dallas, Texas. It comprises nine single-authored pieces, with an introduction and a conclusion by the coeditors. Our overarching goals are (a) to raise awareness of the limitations of addressing only the cognitive or only the social in research on L2 learning and teaching and (b) to explore ways of bridging and/or productively appreciating the cognitive-social gap in research. Collectively, the nine contributions advance the possibility that the approaches are not irreconcilable and that, in fact, cognitive researchers and social researchers will benefit by acknowledging insights and methods from one another.

EDITORS' INTRODUCTION

Learning a second language (L2) and developing pedagogy on the basis of what is known about learning are complex endeavors, and research into these areas has taken several different paths. One path is that taken by researchers investigating linguistic-cognitive issues, who pursue objectivity with quantitative research methods, often with the help of inferential statistics. Another path is taken by researchers who consider the social context of activity as a cardinal feature of human knowledge and thus of learning and teaching and who employ qualitative research methods such as case study and ethnography. These are only two of many paths that researchers have taken, but they are perhaps the two that can be most easily discerned and most conveniently contrasted. Do these two paths lie on either side of the stream of knowledge, or is it possible that at one or more bends in the stream there is a bridge by which a researcher may cross to the other side? Pursuing this trope leads to the following question: Is there a gap in research in L2 learning and teaching? And if there is, is the gap ontological (i.e., what *is* the phenomenon we should be studying?), epistemological (i.e., *how* should we be studying it?), or both?

The present article is an attempt by researchers whom we perceive as taking different paths to discuss the extent to which they acknowledge a gap in their own research work and the possibility of a bridge between the path they have taken and the path taken by others. It developed from a colloquium organized by Hulstijn and Young that was designed to address

these issues at the 2013 meeting of the American Association for Applied Linguistics (AAAL) in Dallas, Texas. The colloquium focused on the question of whether researchers who have taken different paths, which we blandly call the cognitive and the social ways, may benefit from using insights and methods from one another. The premise was that, on each side, there are researchers who have become aware of the limitations of their own path and who are looking for possibilities to enrich their theories and research methods to attain more complete answers to the questions that they ask. Following on the 2013 AAAL event, the colloquium organizers invited the six colloquium presenters to write concise summaries of their individual positions, to be compiled into a larger, single piece. They also invited the colloquium discussant to join them as coeditor, and each of the three coeditors contributed his or her own individual reflections. The product is the present article, which comprises nine single-authored pieces, bracketed by this introduction and a conclusion by the coeditors.

One question, raised but not answered during the colloquium, was whether we are dealing with gaps in the field of SLA or with gaps in the broader field of applied linguistics, or perhaps in the general domain of research in language learning and teaching. We recognize that the gap is particularly strongly felt in SLA. The reason is that, in some domains of research in L2 learning and teaching (such as language teaching, bilingual education, discourse analysis, and language ideology), the proportion of researchers taking a qualitative, interpretive, or relativist stance to epistemology is larger than in SLA and other related domains, such as technology and L2 learning or L2 assessment. Nevertheless, our position is that the gap is also felt in many different domains of applied linguistics because the nature of human language itself leads inevitably to distinct ways of studying it: as a resource and commodity for individuals as writers and speakers and, at the same time, as a social vehicle for the creation and expression of culture. For some researchers in the many different domains of applied linguistics (see Chapelle, 2013, for a recent overview of domains that can be discerned in this field), the focus of their work may be on one view of language to the exclusion of the other, and they may have little sympathy for other interpretations. In the same field, however, other applied linguists may be uncomfortably aware of the gap between their knowledge of language as an individual resource and their appreciation of how it functions in society.

This article is organized into three parts, addressing the following in turn: philosophy and theory construction, data and research methods, and unsolved problems and unasked questions. In using this format, the coeditors have preserved the three-part sequence of presentations in the colloquium. In each of the three parts, two scholars present their opinions—first from a cognitive background and then from a social background—followed by a reflection by one of the editors of this article. In Part 1, Robert DeKeyser and James P. Lantolf address questions of

philosophy and theory construction. For DeKeyser, scientific inquiry ultimately strives for generalization, but to arrive there, he encourages a descriptive-correlational-experimental loop in which various approaches and methodologies inspire one another. Lantolf argues that there is no gap between cognitive and social approaches, and thus a bridge is not needed. Jan H. Hulstijn concludes this part by reflecting on guidelines and criteria for distinguishing and deciding among competing theories.

In Part 2 of the article, Alison Mackey and Steven Talmy address issues of data and research methods. Mackey recounts a moment in her research within the interaction approach when she began to consider the social context of interaction as a factor creating conditions for successful input, output, and feedback. She calls for a balanced and collaborative approach involving research partnerships of paradigms and methods. Talmy remarks that, after the social turn in SLA, what is needed is what he calls an "interpretivist turn," in which researchers recognize that all research is the outcome of the interpretive activity of particular people working within particular disciplinary and theoretical orientations—in particular, social contexts and historical moments. In concluding this part, Richard F. Young sees the origins of the interpretivist approach in Fleck's (1935/1979) theory of the incommensurability between different thought collectives and thought styles. Young provides, however, several examples in the research literature on language use and language learning that are successful in reconciling apparently incommensurable thought styles.

In the third and final part of the article, Nick C. Ellis and Martha Bigelow address a range of remaining unsolved problems and unasked questions. Ellis views language learning and use as an accomplishment of human social and cognitive competences, all functioning in the same complex adaptive system. He argues that partitioning the field into social and cognitive theories stands in the way of creating an integrative picture of language learning and use over different levels of granularity and timescale, which requires a variety of data types analyzed with a plurality of research methods. Bigelow returns to consider the social and historical site of research into language learning, use, and teaching. She reflects on the challenge that the dichotomy between social and cognitive approaches poses for beginning researchers, who often wish to investigate language development as both a cognitive and a social process. Recognizing that we are all actors in the stories behind the studies we do, her plea is for established researchers to try to bridge the divide themselves and to support beginning researchers to take risks in their own work. Lourdes Ortega concludes Part 3 by addressing recurrent themes. Although there may be many different ways to bridge the cognitive-social gap, Ortega emphasizes the importance of conceiving the gap not as an imminent disciplinary demise but as a compelling invitation to construct and traverse bridges. Commensurability emerges, she argues, from an effort to break away from traditions

of perceiving and experiencing cognitive and social dimensions of L2 learning and teaching as two monolithic blocks. The three editors close the article with brief concluding thoughts.

This nine-author piece is unconventional as a journal article, and, before leaving readers with it, we would be remiss if we did not acknowledge that the process of writing it has greatly challenged all of us. It has been particularly challenging as a new genre for the three of us who compiled and edited it. In preparing our own reflections on what transpired in Dallas and what it all meant (at least to each of us), we listened to and transcribed the audio recordings of the colloquium. This process reminded us of many important contributions from the audience, but it also created a dilemma as to how we should properly recognize their ideas in the final article. In the end, we have decided against verbatim transcriptions or individual attributions from the audience floor in this article. The reason is that, on the recordings, we recognize the voices of many colleagues but cannot identify several others.[1] We are deeply grateful to each member in the audience who took the floor throughout the colloquium. All their voices, anonymous or familiar, have been instrumental in shaping the dialogue and the piece we offer here.

Part 1: Philosophy and Theory Construction

THE PHILOSOPHY OF SCIENCE AND THE SOCIAL-COGNITIVE DICHOTOMY IN RESEARCH IN LANGUAGE LEARNING AND TEACHING

Robert DeKeyser
University of Maryland

Ever since the cognitive-versus-sociocultural debate that took place in various journals and at several conferences in the 1990s, many researchers in L2 learning and teaching are probably convinced that a wide gap between the two camps is unavoidable. Yet, both Jim Lantolf and I started off our individual contributions at the AAAL 2013 colloquium by saying that there does not need to be a gap. By the standards of the 1990s, we were off to a good start!

Why does there not need to be a wide gap? Why is it even surprising that we have a (perceived) gap? Obviously, most language learning takes place in social and cultural contexts that play a role in the learning process (and all language learning does, if you call the psycholinguistics laboratory a sociocultural context, too, albeit a highly marked one). Equally obviously, all social and cultural learning is at least in part a

discussions revealed that understanding one another includes misunderstanding one another in a different sense. Misunderstandings are inevitable because habits of mind—observation habits, habits of analysis, habits of interpretation, and habits of dissemination—differ from one thought collective to another. However, as Fleck (1935/1979) put it, communication "never occurs without a transformation, and indeed always involves a stylized remodeling, which intracollectively achieves corroboration and which intercollectively yields fundamental alteration" (p. 111). Maybe Bob Dylan put it better: "We always did feel the same / We just saw it from a different point of view / Tangled up in blue" (Dylan, 1975, track 1).

Part 3: Unsolved Problems and Unasked Questions

COGNITIVE *AND* SOCIAL LANGUAGE USAGE

Nick C. Ellis
University of Michigan

Language is essentially human. It is the crowning accomplishment of our social and cognitive competences. Language bridges society and cognition. It is a distributed, emergent phenomenon. People and language create each other, grow from each other, and act and change under the influence of each other. Language and cognition are mutually inextricable; they determine each other. Language has come to represent the world as we know it; it is grounded in our perceptual experience. Language is used to organize, process, and convey information from one person to another, from one embodied mind to another. Learning language involves determining structure from usage, and this, like learning about all other aspects of the world, involves the full scope of cognition: the remembering of utterances and episodes; the categorization of experience; the determination of patterns among and between stimuli; the generalization of conceptual schema and prototypes from exemplars; and the use of cognitive models, metaphors, analogies, and images in thinking. Language is used to focus the listener's attention to the world; it can foreground different elements in the theatre of consciousness to potentially relate many different stories and perspectives about the same scene. What is attended is the focus of learning, and so attention controls the acquisition of language itself. The functions of language in discourse determine its usage and learning. Language structure, language acquisition, language processing and usage, and language change are similarly inseparable: They are facets of the same complex, adaptive system.

So each of us, whatever our theoretical background, shares a fascination with language, and we try to understand it. We ask our questions,

so many of them, and so interesting. We do our research. Our diverse questions require different methods. Language learning diaries, functional magnetic resonance imaging (fMRI) scanners, analyses of service interactions using conversational analysis (CA), introspection, visual world eye-tracking, classroom interaction recordings, computer simulations, artificial grammar learning experiments, billion-word corpora of usage, questionnaires, dynamic assessment, event-related potentials (ERPs), think-alouds, feedback manipulations, *n*-back tasks, psychometric batteries, error analysis, longitudinal corpora, laboratory experiments, classroom field experiments, ethnographic research, agent-based modeling, contrastive analysis, brain connectivity analysis, dynamic systems analysis, behavioral genetics, idiographic and nomothetic approaches, thick and thin descriptions, emic and etic approaches . . . are all usefully applicable techniques, but they are useful for different things. Distrust introspection as a valid index of the working of the prefrontal cortex and anterior cingulum in bilingual code switching. There is a reason we have neuroscience. Distrust armchair analyses of language change. There is a reason we have corpus linguistics. Distrust parental recollections of their child's language 20 years prior. There is a reason we make dense longitudinal recordings of language interaction. Distrust current computer models of emotional interaction. There is a reason we prefer people to chatbots. Distrust overzealous current technology: Do not expect rich cultural competence from computerized language instruction or solitary infants to learn language when sat in front of a TV. We are social beings. Different research methods suit different purposes. Personally, I have learned much about language from my children, from laboratory experiments, from connectionist modeling, from learning a L2, from analyzing the British National Corpus, and from behavioral genetic research, but differently so.

As we research all of our questions, we will incrementally develop a better understanding of language. But if we do it simply in the way that I have listed pieces of the enterprise here, it will be piecemeal theory. We need an additional understanding of how the pieces fit together, interacting in space and time over many different levels of granularity and timescale. Distrust any theory that claims that you can comprehensively study a component in isolation: syntax separate from lexis or semantics, form from function, representation from processing, diachronic from synchronic, knowledge from experience, behavior from brain, competence from usage, and so on (N. C. Ellis & Larsen-Freeman, 2006). Especially pertinent here is the social-cognitive gap. Such partitioning leads to theoretical, ontological, and social isolation; self-aggrandizement; and autistic hostility. Diversity is powerfully creative if there is chance of interaction (Darwin, 1859/1928; Holland, 1998; Page, 2008, 2010). I am encouraged by the multiple perspectives currently represented within usage-based approaches to language (Behrens, 2009; Bybee,

2010; N. C. Ellis, O'Donnell, & Römer, 2013; Robinson & Ellis, 2008; Tomasello, 2003; Trousdale & Hoffmann, 2013). These hold that we learn language while engaging in communication—the "interpersonal communicative and cognitive processes that everywhere and always shape language" (Slobin, 1997, p. 267). Some of the basic tenets, many of them explicitly addressed by de Saussure (1916/1983), include the following:

1. Language is intrinsically symbolic, constituted by a structured inventory of constructions as conventionalized form-meaning pairings used for communicative purposes.
2. Language is intrinsically linked to human cognition and processes of perception, attention, learning, categorization, schematization, and memory.
3. Adult language knowledge consists of a continuum of linguistic constructions of different levels of complexity and abstraction. Constructions can comprise concrete and particular items (as in words and idioms), more abstract classes of items (as in word classes and abstract constructions), or complex combinations of concrete and abstract pieces of language (as mixed constructions). No rigid separation exists between lexis and grammar.
4. Constructions may be simultaneously represented and stored in multiple forms, at various levels of abstraction (e.g., concrete item: *table* + *s* = *tables* and [Noun] + [morpheme *-s*] = plural things).
5. Constructions can thus be meaningful linguistic symbols in their own right, existing independently of particular lexical items. Nevertheless, constructions and the particular lexical tokens that occupy them attract each other, and grammar and lexis are inseparable.
6. Language structure emerges ontogenetically from usage in particular contexts. Development is slow and gradual, moving from an initial reliance on concrete items to more abstract linguistic schemata. This process is dependent on the type and token frequencies with which particular constructions appear in the input. Storage of wholes depends on token frequency; the development of abstract linguistic schema depends on type frequency.

From analyses of large usage corpora, we can analyze the latent structures of language and their roles in the associative and cognitive learning of language (N. C. Ellis et al., 2013). This is the stuff of cognitive psychology, associative learning theory, and corpus linguistics. But in addition to construction forms and their frequencies, there are their meanings—embodied, attended, consciously formed in dialogue and dialectic, and situated and encultured in social and educational interaction. Usage-based theories hold that an individual's creative linguistic competence emerges from the collaboration of the memories of all the meaningful interactions in his or her entire history of language usage.

Cognitive linguistics (Croft & Cruise, 2004; Langacker, 2000; Robinson & Ellis, 2008) provides detailed analyses of how language is grounded in our experience and our physical embodiment, which represents the world in particular ways. The meaning of words in languages and how

they can be used in combination depends on the perception and categorization of the real world around us. Because we constantly observe and play an active role in this world, we know a great deal about the entities of which it consists. This familiarity is reflected in the nature of language. Ultimately, everything we know is organized and related to our other knowledge in some meaningful way, and everything we perceive is affected by our perceptual apparatus and our high-level motor control and motor apparatus: Spatial language is grounded in the visual processing system as it relates to motor action, the multiple constraints relating to object knowledge, dynamic-kinematic routines, and functional geometric analyses (Coventry & Garrod, 2004). Action elements relating to hand posture, joint motions, force, aspect, and goals are all relevant to linguistic distinctions (Bergen & Chang, 2012). Meanings are embodied and dynamic (Spivey, 2006); they are flexibly constructed online. Here we have the embodied, dynamic mind of modern cognitive science (A. Clark, 1998; Rosch, Varela, & Thompson, 1991).

Shared attention, shared cooperative activity, and shared cognition are key to meaningful language usage. In their first 2 years, infants develop their capabilities of attention detection (gaze following), attention manipulation (directive pointing), intention understanding (the realization that others are goal directed), and social coordination with shared intentionality (engaging in joint activities with shared interest, negotiating meanings), and these processes are central in child language acquisition (Tomasello, 1999, 2008).

The nature of language follows from its role in social interaction. Social interactions are typically characterized by what philosophers of action call shared cooperative activity (Bratman, 1992) or joint actions (H. H. Clark, 1996). Joint actions are dependent on what might be broadly called shared cognition, a human being's recognition that she can share beliefs and intentions with other humans. Thus usage-based approaches emphasize how language is learned from the participatory experience of processing language during embodied interaction in social and cultural contexts in which individually desired outcomes are goals to be achieved by communicating intentions, concepts, and meaning with others. Conversation partners scaffold and coconstruct meanings. Socially scaffolded noticing (Schmidt, 1990) solves Quine's (1969) problem of referential indeterminacy and builds so much more. The dynamics of language learning are inextricably linked to the dynamics of consciousness, in neural activity and in the social world as well (U. Frith & Frith, 2010). Input to the associative network is gated by consciousness, and consciousness is coconstructed in social interaction (N. C. Ellis, 2005; C. Frith, 2010). In these ways, the input to the associative network is socially gated (Kuhl, 2007).

Language—and language learning—is ever thus. It takes place in social usage, involving action, reaction, collaborative interaction, intersubjectivity, and mutually assisted performance (Lantolf & Thorne, 2006).

Speech, speakers, identity, and social relationships are inseparable (Lee, Mikesell, Joaquin, Mates, & Schumann, 2009; Norton, 1997; Tarone, 2007). Activity theory emphasizes how individual learning is an emergent, holistic property of a dynamic system comprising many influences: social, individual, and contextual. Action provides a context within which the individual and society, mental functioning, and sociocultural context can be understood as interrelated moments (Wertsch, 1998). The associative learning network is culturally gated. Tomasello's constructionist approach to language unites with his research in comparative primate cognition, the unique place of social cooperation in humans, and the Vygotskian intelligence hypothesis, whereby regular participation in cooperative, cultural interactions during ontogeny leads children to construct uniquely powerful forms of perspectival cognitive representation, including language itself (Moll & Tomasello, 2007). The last 40 years have seen huge progress in research into social cognition, and within social cognitive neuroscience there is now a rich understanding of the role of implicit and explicit knowledge in social cognition (C. D. Frith & Frith, 2008), of the role of consciousness and metacognition in social interaction (C. Frith, 2010), and of the brain mechanisms involved in these processes (U. Frith & Frith, 2010). From the very name of the field, you can tell that there is no social-cognitive divide within contemporary social cognitive neuroscience.

How should we research this usage? If language learning is in the social cognitive linguistic moment, we need to capture all these moments so that we can objectively study them. We need large, dense, longitudinal corpora of language use with audio, video, transcriptions, and multiple layers of annotation for data sharing in open archives. We need these in a sufficiently dense mass that we can chart learners' usage history and their development (Tomasello & Stahl, 2004). We need them in sufficient detail that we can get down to the fine detail of CA analyses of the moment (Kasper & Wagner, 2011). Brian MacWhinney has long been working toward these ends, first with the Child Language Data Exchange System (CHILDES; MacWhinney, 1991) and then with Talkbank (MacWhinney, 2007). These projects have developed various computerized language analysis (CLAN) tools for computer analyses of large bodies of data, right down to, in collaboration with Johannes Wagner, tools for a fine-grained CA bank (http://talkbank.org/CABank). With these types of data, we can study the cognitive and the social. This way the future lies. These are huge contributions to language acquisition research, though, at the moment, the data are relatively sparse. We need much more, especially for studies of L2 learning and teaching. We need big, dense, longitudinal data sets that we can all observe; it is up to the field to contribute to these open archives.

We need theoretical integration, too. Cognition; consciousness; experience; embodiment; brain; self; and human interaction, society,

culture, and history are all inextricably intertwined in rich, complex, and dynamic ways in language. We require additional perspectives on dynamic interactions between levels, perspectives provided by approaches such as complex adaptive systems (N. C. Ellis & Larsen-Freeman, 2009), dynamic systems theory (de Bot, Lowie, & Verspoor, 2007; N. C. Ellis, 2008; Spivey, 2006), and emergentism (N. C. Ellis, 1998; N. C. Ellis & Larsen-Freeman, 2006; MacWhinney, 1999).

At the AAAL 2013 colloquium in Dallas, I was asked to talk from a cognitive perspective along with Martha Bigelow, who was presenting for the social side. I knew how lucky I was in this pairing: *Language Learning* had previously published her excellent monograph *Mogadishu on the Mississippi: Language, Racialized Identity, and Education in a New Land* (Bigelow, 2010). At the end of her presentation, I was asked if I wanted to respond. Postperformance zonked and worried by the adequacy of my own contribution and the large, varied, and potentially awesomely critical audience (you, maybe?), I was not prepared for this. But our joint reaction was easy. In the moment, we faced each other, checked the trust in each other's eyes, smiled, shook hands, and embraced. It emerged in that cognitive-social moment: There was no cognitive-social divide. For my part, it was easy to embrace the position of someone who blends together approaches from focus groups, sociocultural analysis, storytelling, psycholinguistics, and educational evaluation, as they are appropriate in dealing with very real educational and social issues of immigration. As Ortega noted in her discussion of our presentations at the colloquium, we can go beyond simple dichotomies if we choose to imagine better, we can strategically try to undo these outdated notions, and we can socially coconstruct something superior. There is no social-cognitive gap.

BLENDING SOCIAL AND COGNITIVE RESEARCH TRADITIONS IN LANGUAGE LEARNING AND TEACHING

A Matter of Mentoring and Modeling

Martha Bigelow
University of Minnesota

There is a story behind every study, and it seems as though most studies are a series of compromises, with hindsight being 20-20. We always miss something or discover limitations, and I hope this piece offers encouragement for researchers to try doing research in new ways, with different populations, in different settings, and using new, hybrid, or mixed methodologies. There are many ways of knowing, and we should push our use of current methodologies to make our analyses better and

a gap is bridged there is still a gap, we note that genuine attempts to build bridges constitute attempts to understand views on the other side, which cannot but lead one to reflect on one's own stance. We trust that the contributions to the colloquium and to this article have shown many areas for dialogue and collaboration.

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NOTES

1. Hulstijn, Young, and Ortega recognize by name the contributions of the following colleagues, whose identity is known to the editors from audio recordings of the colloquium and who offered important thoughts that we have incorporated into our discussion: Dwight Atkinson, Andrew Cohen, Rod Ellis, Agnes He, Brian MacWhinney, Paul Matsuda, John Norris, Bonny Norton, Elaine Tarone, Steven Thorne, Albert Valdman, and Henry Widdowson. They are particularly grateful to Heidi Byrnes for introducing the ideas of Ludwik Fleck, whose work they subsequently read and have cited in this article.

2. Translated from the Spanish by Lantolf.

3. Talmy is grateful to Jan Hulstijn and Richard Young for inviting him to participate in this colloquium and to the many audience participants who helped transform the debate into discussion. He particularly thanks Keith Richards, Patsy Duff, Ryan Deschambault, and Meike Wernicke-Heinrichs for their comments on earlier drafts. All remaining errors are his own.

4. By "epistemic" Ortega means (in her own definition): reflective of any kind of theoretical knowledge gleaned from systematic evidence collected through the practice of science and scholarly inquiry. She finds this adjective is a useful alternative to *scientific* or *epistemological*, as it is more explicitly inclusive of any knowledge generated in the natural and physical sciences, in the social sciences, and in the humanities.

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