

chapter devoted to the introduction of a third language in immersion contexts would have fleshed out further the *pathways to multilingualism*—part of the volume's title. Although the editors acknowledge that immersion students 'may be uniquely primed for acquiring additional languages' (p. 18), this issue is not examined further. All in all, this is an excellent volume that all those interested in immersion education cannot afford to miss.

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Namhee Lee, Lisa Mikesell, Anna Dina L. Joacquin, Andrea W. Mates, and John H. Schumann: *THE INTERACTIONAL INSTINCT: THE EVOLUTION AND ACQUISITION OF LANGUAGE*. Oxford University Press, 2009.

The book starts with a position that is being entertained by a growing number of scholars today since Hopper (1987, 1998), viz. languages are emergent phenomena and complex adaptive systems (CASs). That is, their 'systems' arise out of the self-organization of the smaller elements they are made of, are in constant search for equilibrium, and undergo non-linear evolution. The authors, henceforth identified LMJMS, attribute the phylogenetic emergence of language and children's ability to learn language to their 'interactional instinct'. This is defined as an innate tendency that 'motivates the organism to take action to achieve attachment and social affiliation with conspecifics' (p. 6, 24). Grammars are consequences of the increasing size of the lexicon and have evolved 'through the conversational interaction among the hominids as they attempt to express meanings with consistent form over time' (p. 4). 'Grammatical structure [evolved] to fit the brain', contrary to claims by some other scholars that human brains evolved specifically for the kinds of languages we speak or sign (p. 4).

An important question that arises by the end of Chapter 1 ('Introduction: Overview') is what the agents of languages as CASs are. As in Beckner *et al.* (2009), the agents are hastily identified as speakers. However, complexity theory suggests that the agents be identified in language itself, where self-organization applies. In principle, the agents must be the various linguistic

units that interact with each other and constantly reposition themselves. Speakers are only the hosts and local manipulators (Mufwene 2001) that give life to the units. This appears to me to be the ultimate conclusion of the position which LMJMS advocate against the traditional conception of languages as institutions developed, apparently by design, by their speakers.

The agency of speakers/signers would still be significant. After all, the interactants and producers of utterances enable patterns to emerge out the self-organization of units. It also seems inaccurate to me to identify the 'resources' of linguistic systems with 'linguistic information' (p. 25) rather than with the devices available in particular languages to convey the information.

In any case, LMJMS present the 'Evidence for Language Emergence' in Chapter 2. The first kind is from modeling, according to which machines interacting with each other without a pre-established grammar can produce patterns. Thus, Steels (2000) underscores the role of 'feedback loop' in minimizing cognitive effort and maximizing communicative success' through 'an individual's language memory'. The second kind of evidence is adduced from creoles and pidgins, which show how grammatical complexity is correlated with the intensity/frequency of interactions and, may I add, with the range of topics on which the interactants exchange information. The authors underscore the significance of vernacularization, rather than just any kind of language practice, in the emergence of complex grammar. The Nicaraguan Sign Language is adduced to support this position.

What LMJMS do not discuss but is equally significant is the distinction between, on the one hand, the emergence of idiolects, where there is pressure to be systematic for efficient encoding of information and, on the other, the emergence of communal norms, which make the idiolects similar to each other (Mufwene 2001, 2008). The distinction sheds light on the fact that self-organization operates within both idiolects and communal languages, but not in identical ways. Interactions help generate category-based regularities in idiolects but produce convergent systems between the idiolects of regular interactants. The distinction between innovating and copying also makes more sense at the communal level than at the idiolectal level.

The evidence that LMJMS adduce from historical linguistics only shows that languages are always in the state of flux. Moreover, the question of the 'motivation for language change' at the communal level (p. 45) is not really answered. Changes are actuated by the ways current devices and strategies are extended to new situations, by the accommodations that speakers/signers make to each other, and by deviations from current forms and patterns that occur during language learning, which proceeds by inference.

LMJMS also reject the idea of a language organ that putatively facilitates 'language acquisition'. For them, 'domain-general learning strategies' enable children to acquire language. This general-purpose capacity includes a pattern-recognition module and a statistical module, which keeps track of patterns of variation. Accordingly, 'the superior ability of children to acquire

languages exists in the relative immaturity of neural structure and in the different physiology and psychology of children' (p. 47).

I suspect that the following facts that are related to maturation are ecological factors that also bear significantly on the subject matter: children's communicative needs are not as extensive as those of adults, and the scope of their early cognitive and interactional interests restrict the complexity of structures that the caretakers produce in their utterances. Numerous words and structures are omitted, because they are irrelevant to the child-and-caregiver kinds of interactions, leading to a gradual emergence of complex structures in the child's linguistic competence. Incremental learning under conditions of interactions and structures that grow progressively more complex must foster closer approximations of target linguistic behaviors. The relative faithfulness of the outcomes suggests also that we not overlook the plasticity of the younger mind and the relative absence of interfering factors associated with age and experience. None of these factors appears to militate against the authors' emergentist approach to language ontogenesis.

I find LMJMS's double articulation of aggregation as a factor in the emergence of complexity (p. 52) quite compelling, though they should clearly distinguish between the 'agents' that are units in the emergent system and the human agents whose interactions produce the units without the foresight of integrating them into a system. Communication is always in the present, with the interactants remembering which strategies have worked and which ones have failed, but without anticipation of what the full communicative system will wind up like. I also find plausible the authors' position that increase in both the size of the lexicon and the frequency of interactions produces 'more complex linguistic patterns', although much of this remains to be elaborated.

Chapter 3, 'The Implications of Interaction for the Nature of Language', articulates the role of 'conversation as the primordial form of language and as the form that first evolved in the environment of evolutionary adaptation' (p. 56). LMJMS state that 'speech and/or conversation are the most natural habitats for language' (p. 57, see also Kretzschmar 2009), arguing that writing is to speech what gymnastics is to walking (p. 97). They espouse Levinson's (2006) position that 'interactive language is the key phenomenon to be explained' (p. 57); after all, 'patterns emerge out of the interactions among participating agents' (p. 68). The authors thus promote oral communication, with its pauses, repeats, restarts, and repairs (traditionally associated with performance in generative linguistics) as primary and more natural language and a more adequate subject matter of linguistics than written language (p. 63). More specifically, children 'cannot acquire language without interaction, and the use and manipulation of language reveals [*sic*] its dynamic and flexible nature, which interacting participants can exploit in order to accomplish social

goals' (p. 65). 'Language is social; it is a cultural artifact' (p. 68). Context too is highly promoted, because 'much of what gives grammar its shape is the context in which it occurs, both linguistic and situational' (p. 66).

LMJMS's correct emphasis on language as 'a cultural artifact' can help explain why there is so much typological variation among the world's languages. On the other hand, it also calls for more justification for why they think it unnecessary to posit a language organ in order to account for why languages operate in fundamentally similar ways. To be sure, they do not address the question of why grammar is necessary in the first place. The answer appears to lie in the fact that the modalities used to embody language, viz., phonetic and manual signs, call for some conventional strategies of encoding non-linear meaning into a linear (less strict for sign language) composition.

Under particular cultural constraints, linearity entails that the sounds be combined in specific ways to form words and words in turn be combined in specific ways to form larger utterances, consistent with Martinet's (1960) notion of 'double articulation'. Grammar, conceived of in 'evolutionary or neurobiological terms', is thus a consequence of the physical embodiment of language but not of the abstract, mental part of the technology, though it is constrained by universal principles that can be characterized as cognitive, and physiological in the case of sound combinations. The above considerations are consistent with the authors' position that 'grammar... did not develop as an autonomous system among its users but was used along with a multitude of semiotic resources, all of which were employed in concert for meaning to be made and for actions to be successfully carried out' (p. 100).

In Chapter 4, 'Interactional Readiness', LMJMS adduce various facts about interactive infants to prove the innateness of the interactional instinct. They suggest that the need/desire to communicate and socialize with conspecifics preceded the ontogenetic development of language and probably also its phylogenetic emergence. The evidence is adduced from infants' ability to participate in joint attention, to focus more on humans than on objects, to express emotions and read those of their caregivers, to participate in proto-conversations with them, and to imitate or initiate interactions. The authors argue that 'interaction alone does not guarantee [language] acquisition'; 'language is transmitted through other developmental precursors: pattern finding and statistical learning' (p. 131). Even pattern finding 'alone is not sufficient for language acquisition' (p. 133); the behavior of the caregivers, especially 'infant-directed speech', facilitates child language development. The interactional instinct itself is aided by the mirror-neuron system.

Chapter 5 is a very short one, on the 'Neurobiology of the Interactional Instinct'. It appears to have to do with interactional experience, negative and positive, and with memory and its role in the feedback loop within the language learning process. LMJMS remark, 'As a nonlinear course of

development begins in the infant, memory systems build on experience built on encounters, with appetitive goal-seeking, dopamine-mediated reward' (p. 166). This is what they continue to discuss in Chapter 6: 'The Interactional Instinct in Primary- and Second-Language Acquisition.' The role of interactional instinct is acknowledged as critical in both processes, assuming that 'language facilitates social affiliation' (p. 167). The role of population structure is likewise acknowledged as defining types of 'enclosure' (p. 171). 'Individuals face different experiences, which play a role in the shaping of internal neurobiological substrate' (p. 179). Notwithstanding the fact that different speakers/signers have different learning skills, the authors express a position similar to Mufwene's (2008) observation that idiolects are different largely because individual speakers have had different interactional histories, thus they have had access to different primary linguistic data, which influenced variably the inferences that shaped their emergent idiolectal systems.

The distinction that LMJMS adopt between 'experience-expectant' and 'experience-dependant' processes (p. 179) seems worth exploring further about language emergence. Success-wise, an important difference between first- and second-language acquisition seems to lie in the readiness of the learner to interact with another person in the language they are learning, with the adult often being more inhibited than the child, though there are several other factors. A controversial one is perhaps the authors' claim that 'children are better equipped with neural resources for interaction and, therefore, for language learning' than adults (p. 186). I think a noteworthy problem for adults is that they face more communicative and social pressures. Knowledge of another language can as much facilitate the learning as it can cause interference. It certainly makes the learner impatient to express ideas in ways they have not learned yet.

In 'Conclusion: Broader Implications of the Interactional Instinct', LMJMS underscore their central points in the book, especially: (i) 'language acquisition would seem to be governed not by UG but by general cognitive development'; and (ii) those who facilitate child language development need not be the parents, they can be anybody who interacts with the children, including the older children. This should remind us that language and cultural transmission is more horizontal than vertical. The learners tend to affiliate with those they interact with, making experience a more significant factor than age (Mufwene 2001).

This thought-provoking book is generally written very accessibly and focused on demonstrating the important role of the 'interactional instinct' both in language acquisition and in the emergence of language in mankind. Perhaps it would have been easier to absorb if the authors had discussed the topics in reverse order, beginning with language acquisition and ending with the phylogenetic emergence of language. Some readers may wonder why they brought in emergentism and complexity theory earlier in the book but hardly invoke them to explain language acquisition or prove the role of the interactional instinct. Chapters 4 and 5 are perhaps the most technical, while

Chapter 5 is perhaps the least informative. Overall, *The Interactional Instinct* is a book worth reading, as it is very informative in both the facts that are discussed and the literature covered, and it defends a position that in the very least deserves more attention. I have found it stimulating.

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Adam Jaworski and Crispin Thurlow (eds): SEMIOTIC LANDSCAPES: LANGUAGE, IMAGE, SPACE. Continuum Publishing, 2010.

Adam Jaworski and Crispin Thurlow, two academics with joint appointments in linguistics and communication studies, have collected excellent case studies integrating analyses of material culture with sociolinguistics. As they state, if not succinctly, they wish to foreground 'the interplay between language, visual discourse, and the spatial practices and dimensions of culture, especially the textual mediation or discursive construction of place and the use of space as a semiotic resource in its own right' (p. 1). Every worthwhile anthology deserves a valuable introductory chapter. Unfortunately, it is precisely in this regard that this collection breaks down and the excessively packed sentence above is symptomatic of the editors' failure. Recommending a reader's strategy, I suggest commencing with the articles.

I do not know when professors in fields other than semiotics decided to use 'semiotic' as an adjective and synonym for symbol, rather than master the technicalities of semiotic analysis. As a semiotician, I find Jaworski and