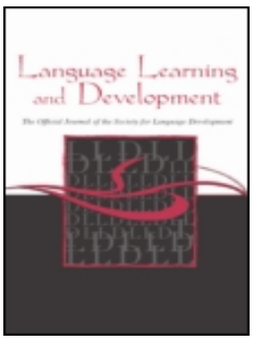

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INTRODUCTION

Perspectives on Cognition and Language

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One of the strengths of *Language Learning and Development* and the society that sponsors it—the Society for Language Development (SLD)—is the two welcome diverse approaches to the study of language and its development. These approaches encompass biological, cognitive, social, and cross-cultural perspectives and whatever methods work to answer the question (e.g., experimental, observational, ethnographic, comparative, neuroscience, formal methods of investigation). In that spirit, the 2010 SLD symposium, "Cognition and Language," in Boston took a cognitive-science approach to the study of language development in an attempt to foster discussion of the place language holds in the science of thought. To that end, we invited two internationally known scholars whose work bears on the problem of language learning in different ways: Noam Chomsky, whose ground-breaking linguistic discoveries since the 1950s laid the foundation for the field of language learning; and Randy Gallistel, whose animal research has shed light on the mechanisms underlying learning and memory, two processes central to language production and acquisition. The papers that follow are the product of these presentations.

The first paper (Gallistel, this issue) explores how advances in our knowledge of cognition in general, and nonhuman animal cognition in particular, can influence the way we investigate mechanisms that underlie human language learning. Gallistel reviews the fascinating literature on how animals understand and communicate about space, that is, how they locate themselves and objects in the spaces within which they live, the inferences they must be making when forced to compute spatial routes they have never experienced, and the information they glean about spatial locations from others. The paper makes two points, both of which have implications for how we think about human language and its acquisition. The first is that there are parallels between spatial learning in other species and language learning in humans. Space is a domain in which we find specialized computational systems that have to be tuned via (incomplete) experience to reflect information too unpredictable to be genetically encoded. In this sense, spatial learning parallels

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language learning. These parallels are intriguing and set the stage for using what we know about the mechanisms that underlie spatial learning in other species (some of which are genetically specified) as a basis for investigating the mechanisms that underlie language learning in humans. In this regard, we should note not only the similarities between space and language but also the differences. For example, an animal does not necessarily want to generalize when thinking about space—the goal is to remember exactly where the food is in the specific environment, not in one like it. In contrast, generalization is key in language learning. Domain-specific differences of this sort might (or might not) have implications for learning mechanisms.

Gallistel's second point is that the maps animals learn and operate on are best viewed as symbolically represented. Moreover, these maps seem to require predicate-argument structures comparable to those that underlie verb or sentence meanings. If correct, this view suggests that nonhuman animals have the basic machinery for representing predicate-argument structures within their brains. The question, then, is why isn't this machinery sufficient to allow them to develop at least the rudiments of human language? Gallistel's answer is that the machinery for mapping these private representations onto a communicable system of symbols is what is lacking in other animals and what is unique to humans.

The second paper (Chomsky, this issue) demonstrates how the study of language itself can help us understand the nature of the mind. Chomsky also begins with the assumption that human language is special, although for him it is not the communicative aspects of language that give it its uniqueness. Indeed, when a conflict between communicative efficiency and computational efficiency arises, Chomsky argues that computational efficiency wins out in human language. In the 1950s, a rich descriptive apparatus—Universal Grammar (UG)—was posited to account for regularities in human language. Since that time, a primary goal of linguistic theory has been to try to reduce UG to a minimum. Chomsky argues that, using minimal computation as a guide, it has been possible to reduce UG to more general principles (the minimalist program); however, it has not been possible to eliminate UG entirely by calling upon other cognitive processes. For Chomsky, the core (and uniqueness) of language lies in the system of thought that is captured in UG, not in processes of externalization, which include communication. In this sense, then, Chomsky's view of what makes language unique appears to diverge from Gallistel's.

The third paper in the series is a commentary, written by Elissa Newport (this issue), that focuses on the topic of domain specificity. Newport's view is that the facts Chomsky and Gallistel highlight in their papers can all be accommodated within a domain-general theory, but not the particular domain-general position argued against by Chomsky. Her paper suggests a rapprochement of positions and new ways to approach questions about the relation between cognition, language, and development.

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