Children's Language Acquisition

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ABSTRACT: Child language acquisition has only recently become an important research topic for developmental psychologists, although the universal appearance of language during the second year of life has long fascinated philosophers. For normally developing children, language emerges spontaneously as a means of talking about what they know so that they can accomplish social goals important to them. Some children, however, need to be taught. This article reviews current issues in child language acquisition and suggests a research agenda for helping those children who have difficulty mastering the fundamentals of language.

One of the most remarkable achievements of childhood is also one of the most commonplace. Sometime during their second year, most children begin to talk, and in apparently little time they are adept at using language to express their needs and carry on social interactions. What is remarkable about this achievement is that little or no explicit teaching seems to be necessary.

Although this observation has long fascinated philosophers, it is a relatively recent topic of major interest for developmental psychologists. The contemporary literature began to appear in the 1960s but emerged as a strong area of inquiry only during the 1970s and 1980s. The study of child language sits at an interface among linguistics, developmental psychology, sociology, anthropology, and education, and it links basic questions about the nature of human intellectual competencies to applied questions of how best to teach young children.

The purpose of this article is to provide an overview of the current questions and findings regarding children's acquisition of language so as to highlight some fundamental issues and to suggest guidelines for educational policy. It must be recognized at the outset that this area of study is among the most contentious in the developmental literature. There is little consensus about the most fundamental issues. The debates are lively, and the data base, although growing rapidly, is far from complete. Therefore, the interested reader is encouraged to consult more comprehensive treatments of the literature (e.g., Berko Gleason, 1985; Fletcher & Garman, 1986; Ingram, in press; Rice & Schiefelbusch, 1989; Wanner & Gleitman, 1982).

The article is divided into four sections. In the first, the language acquisition literature is summarized according to some of the major current questions. In the second section, consideration will turn to children who do not master language readily. The third section will address how to teach language to children. In the final section, suggestions for educational policy will be presented.

Overview of Language Acquisition

Language acquisition entails three components: One is the language to be acquired, or, in other words, the task to be mastered; another is the child and the abilities and predispositions that he or she brings to language acquisition; and the third is the environmental setting, that is, the language that the child hears and the speaking context. Each of these components has generated considerable attention. The biggest problem, however, is to characterize how all three aspects fit together to account for the spontaneous appearance of language.

The Nature of Language

Dimensions of communicative competence. Language consists of four major dimensions: the sound system (phonology), the system of meanings (semantics), the rules of word formation (morphology), and the rules of sentence formation (syntax). The phonological dimension is evident in such contrasts as bat and pat, where differences in sounds constitute linguistic distinctions. Semantics refers to the expression of meanings in language and is differentiated from underlying concepts or categories, a distinction to be discussed more fully later. Morphemes are the minimal units of meaning, either words (free morphemes) or meaningful parts of words (bound morphemes). Syntax refers to sentence patterns and the arrangement of words to represent relations between them.

In addition to these dimensions, language has important social aspects. A speaker is ill equipped to use language effectively if all he or she knows is how to formulate a grammatically correct sentence. The social setting requires adjustment of both the topic and the style of language used, and it also determines how language is interpreted. For example, in some contexts, "Is that my coat?" might be a request for information, whereas in other circumstances it might be a request for the coat or an accusation of theft.

All these aspects of language must be, and are, mastered by children. The entire package of skills is referred to as communicative competence (Hymes, 1972).

Theoretical Models

Linguists have focused much of their attention on the grammatical aspects of language, the morphology, syntax, and, more recently, semantics. Their goal has been to arrive at a satisfactory description of linguistic structures, both at the level of individual languages and at the level of universally shared features. They emphasize that lan-
languages do not appear in all possible forms, but the variation across human languages occurs within highly constrained bounds. Linguists hypothesize that these constraints correspond to those provided by a specialized biological program for language acquisition that is an isolated realm of competence not accounted for by more general cognitive abilities (cf. Chomsky, 1965; Goodluck, 1986; Wexler & Culicover, 1980).

Linguistic theorists have attempted to model the outcome of language acquisition, that is, the linguistic knowledge of the mature speaker. Although several models have been proposed, there is currently no consensus of support for any one of them (cf. Newmeyer, 1986). Instead, the field is in a period of rapid development, with emerging linguistic models competing with existing accounts and continual revision or updating of old models to meet new challenges, such as the emerging evidence about language growth and change over the life span.

Among the theoretical models applied to child-language data are transformational grammar, which is now several generations removed from the original model proposed by Chomsky (1957, 1981; Wexler & Culicover, 1980), case grammar (Brown, 1973; Fillmore, 1968), and lexical functionalist grammar (Bresnan, 1982). These models differ from one another in many ways, but one dimension of particular importance for studies of language acquisition is the extent to which syntax is seen as independent of semantics. The early transformation models assumed that syntax, or grammar, is an abstract, rule-governed system independent of the meanings of individual words. Case grammar, on the other hand, introduced semantic roles for noun phrases. This distinction allowed the case grammar model to capture important differences between syntactic constructions that appear to be highly similar in form. For example, in the sentences “John opened the door” and “The key opened the door,” John and key are both nouns and both subjects. Yet the sentence “John opened the door with a key” reveals that there is something very different about these two subjects: John is an agent, and key is an instrument.

In the more recent lexical functionalist and government binding models, the meanings packaged in individual words are seen as carrying rich syntactic information. Verbs provide necessary information about the kinds of relationships that can be expressed and how they can be expressed in sentences. The following example, with asterisks to indicate ungrammatical sentences, is from Pinker (1989):

John fell.

*John fell the floor.

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A current hot issue is how children learn to avoid the ungrammatical sentences. The problem was pointed out by Baker (1979), and it rests on three observations. One is that there is no negative evidence available to children; that is, adults do not explicitly state such constraints while conversing with their children. Second, children tend to overgeneralize linguistic rules and make mistakes similar to the ungrammatical sentences listed earlier. Therefore, they must somehow learn to retreat from such errors. Finally, the constraints in a language are quite arbitrary and not readily predictable and thus seem not to be easily learnable.

What the Child Brings to Language Acquisition

The answer to the problem, as well as to other unresolved questions, lies in information about what children know about language, the sequence in which they come to learn language, and how they use language. In turn, these observations lead to inferences about the means by which children master language. Ultimately, any satisfactory model of language development must be compatible with how children learn; their ability to perceive, conceptualize, store, and access information; and their motivations. What remains unresolved is the extent to which children draw upon general learning mechanisms or language-specific learning strategies and capabilities.

Much of the literature focuses on the conceptual and social processes that bear on language development and, to a lesser extent, on the cultural influences. Of primary interest is the ability of children to form linguistic categories, abstract rules for relating the categories, and learn to adjust language to social settings.

Because language emerges when children are very young, around 1 year of age, and because children this age do not answer direct questions, the major source of information about children's language learning comes from what children say. Investigators carefully transcribe exactly what children say, along with the utterances of other speakers conversing with children. The advent of audio- and videotape records has been central to the contemporary literature, allowing for permanent records and careful data analysis. Most of the available transcript data are from White, middle-class, English-speaking children, usually with no or few siblings, although there are data from children learning non-English languages. The value of such data is evident in the formation of the Child Language Data Exchange System (MacWhinney & Snow, 1983), which serves as an international data exchange and transcript analysis center.

The transcript data capture children's production of linguistic forms and the settings and circumstances in which targeted forms are used. In addition, investigators
explore children's comprehension of linguistic forms and grammatical rules and, as children become old enough to do so, ask children to make judgments of grammatical correctness.

Cognitive underpinnings. Much of the work of the 1970s focused on the earliest stage of language development, the emergence of first words and word combinations, in the belief that the beginnings of language would be most revealing of the origins of communicative competence. The findings were striking and consistently across children and languages. In effect, young children first talked about what they knew, primarily the world of objects and actions upon objects, favorite things, and people and their activities. Children's first words were not about objects of no interest to them, such as refrigerators, but instead they named bottles and favorite toys and indicated recurrence ("more"), nonexistence ("all gone"), and negation ("no"). Furthermore, English-speaking children's first sentences were simple combinations of content words, such as "more juice," "Mommy sock," and "big ball" (Bloom, 1970; Bowerman, 1973; Brown, 1973). Conspicuously absent were words without obvious content, such as the linking words or function, for example, is, to, and will. These simple early sentences were characterized as "telegraphic." This feature has not turned out to be universal, however, but instead varies as a function of the language to be acquired (cf. Slobin, 1985).

Brown (1973) noted that the kinds of meanings that seemed to be central for young language learners indicated strong parallels with Piaget's model of young children's cognitive achievements during the sensorimotor period (birth to around 18 months of age). Piaget emphasized the salience of objects and actions upon objects, a salience supported by children's first words. He also proposed that toddlers formulated an abstract knowledge about the world, with a system of mental representation that included knowledge that objects exist when not in view (object permanence) and that one object can be used to obtain another (means-ends).

It was a small inductive step to hypothesize that general cognitive growth accounted for the emergence of language, a position made appealing by its congruence with the transcript data and by accounting for why children the world over, who presumably share cognitive universals, were able to learn language in a similar fashion. For the past 15 years, investigators have collected linguistic and cognitive data from children in attempts to work out the relation between cognition and language.

Contrary to Piaget's prediction, the subsequent pattern of findings did not support the model of abstract cognitive precursors to language. There is not a clear temporal order of cognitive insights first, followed by linguistic achievements. Instead, language and related non-linguistic competencies tend to appear at the same time. For example, toddlers begin to say "all gone" at roughly the same time they are solving advanced object-permanence tasks. The conclusion has been that there are very specific, rather than broad and pervasive, relations be-
at first draw heavily upon concepts as a way to master language and later use language to learn new concepts.

The acquisition of word meanings is a matter of great interest given the prominence accorded to the mapping of meanings and the centrality of meanings in current linguistic models. A well known phenomenon is the rapid spurt in number of new words learned that usually appears somewhere around 18 months, at the time of early word combinations. This is followed by an impressive rate of new word acquisition throughout the preschool years. It has been estimated that during this time children learn to comprehend more than 14,000 words (Templin, 1957), or an average of about nine new words per day. Obviously, children manage to do this without explicit word-by-word tutoring. Instead, they seem to absorb, or "map," new meanings as they encounter them in conversational interactions. They draw on an ability to "fast map" new meanings, forming a quick, initial partial understanding of a word's meaning involving a restructuring of the known word-storage space and a restructuring of the underlying conceptual domain (Carey, 1978). They are able to fast map on the basis of only one or very few encounters with a new word in a meaningful context (cf. Rice & Woodsall, 1988). Although the phenomenon of fast mapping has been replicated across several studies, the process by which children accomplish this apparently sophisticated feat remains unidentified. It is most likely that they draw upon a quick sense of likely meanings as well as their knowledge of word-formation rules and grammatical contexts, although the relative contribution of these variables remains to be determined. At any rate, this rapid word-learning ability is central to a preschooler's overall language development and serves as an important foundation for later reading skills.

Social skills. Just as the early meanings of emergent language show remarkable similarity across children, so do the early social uses. From the outset, language emerges as a social tool. Toddlers use language to get the attention of others, to request actions by others, to greet, to protest, and to comment, among other functions. Children have social as well as intellectual motivations for learning language.

Language skills emerge from prelinguistic communicative needs. The social dimension controls early uses of language, and the social setting in turn provides validation and confirmation of the child's effectiveness as a communicator. Children do not use their first words in a vacuum, as an intellectual exercise. Instead, in our society their earliest vocalizations, even cries, are interpreted as meaningful and are regarded as an important indication of the emergence of a new person. Parents actively shape the social aspects of language in the explicit teaching of polite forms such as "please" and "thank you" and appropriate ways of speaking to different individuals.

Scholars interested in the social dimensions of language have drawn heavily on Vygotsky's work as a theoretical framework. Because it is discussed elsewhere in this volume (Belmont, pp. 142-148), I will not elaborate on it here.

The social contexts of children's development are not universal but instead demonstrate enormous variability. Therefore, there is reason for caution in espousing a strong causal role for social input in language development. Any such factors would have to be consistent with what is known about different cultures and be able to account for how various cultural practices can lead to the general similarities in emergence of language skills (cf. Heath, 1989).

Individual variability. At one level of description, there are striking commonalities across children in language acquisition. Among them are the following: Language tends to appear at about the same age, the same sorts of meanings are encoded in early words and sentences, and basic meaning relations are mastered before formal grammatical devices. Such consistencies suggest a universal language-making capacity (Slobin, 1985).

At the same time, on another, more specific level, there is considerable variability from one child to another in the rate of language acquisition and in the manner in which particular aspects of language are mastered and combined with one another (Ferguson, 1989). For example, toddlers vary in their preference for nounlike words versus other words. Children who prefer nouns, and later expand their number of verbs, have an advantage for early mastery of grammar (Bates et al., 1988).

Universal propensities and a child's idiosyncratic style interact in the language-acquisition process. There is no one formula, pattern, sequence, or gradient applicable to each child. Instead, each child draws upon a unique mixture of biological, psychological, social, and environmental factors to arrive ultimately at the shared conventions of formal language.

What the Environment Contributes to Language Development

Obviously, children must hear language in use in order to master the system. Furthermore, it must make sense to them and somehow be important for them to acquire. Beyond these general requirements, it is difficult to specify essential features of input that must be present for a child to learn language. On the other hand, there is evidence about which features can enhance or facilitate a youngster's language development (cf. Snow, 1984).

Much has been written about the "motherese" style of adult input in White, middle-class, Western societies, in which adults and older children adjust their language input to young children. These adjustments consist of simplifications that correspond to youngsters' comprehension levels and interests. Among the features of motherese are an emphasis on the here and now, with a restricted vocabulary and much paraphrasing; simple, well-formed sentences; frequent repetitions; and a slow rate of speech with pauses between utterances and after-content words. It must be noted, however, that these features of "motherese" are not universal but instead reflect cultural practices for addressing infants and young children (Pye, 1986).

Central to the package of facilitative input style is
semantically contingent speech. Semantic contingency refers to an immediate matching of the adult utterance to the topic or content of the child’s utterances. In this scenario, a child may comment on a toy of interest, such as “ball.” The adult may then repeat the child’s utterance or use the child’s word in an expanded comment, such as “that’s a ball,” or use the child’s word in a question, any one of which demonstrates semantic contingency. The effectiveness of this interactive style has been replicated across a number of studies. The combination of linguistic encoding of what is of immediate interest to the child with the child’s own utterances maximizes the matching of language form to communicative intent by means of joint attention.

Social interactive routines, such as book reading, are strongly supportive of language development, especially for vocabulary. Joint adult–child book reading is an activity appropriate for a wide age span, from toddlerhood through the elementary grades, and it bridges the development of oral language skills and the emergence of print literacy.

On the other hand, there are indications that some input styles may not be helpful for a child’s language development. One widely cited finding is that a directive adult style, consisting of many commands, requests, directions, and instructions, is associated with a slower rate of acquisition of naming words (Nelson, 1973). There is reason for caution in interpretation, however, insofar as it is unclear whether the input style led to the delay, or delayed onset influenced the parental input patterns.

How Do the Three Factors of Language, Child, and Environment Interact?

Ultimately, the question becomes how do children extract or induct from the language they hear or see the conventional linguistic rules of their native language(s)? To argue that children call upon cognitive or social underpinnings or innate linguistic devices only introduces an intervening layer and does not resolve the basic question of how.

At this relatively early stage of inquiry, investigators have rightfully concentrated their efforts on the description of children’s linguistic abilities and patterns of acquisition. Contemporary attempts to account for how children acquire language tend to be narrowly defined, with an exclusive emphasis on one of the three components (specific linguistic rules, child variables, or input variables). One of the more comprehensive psychological models available was proposed by Nelson (1989). He argued that language can be mastered by a general cognitive mechanism, the rare event learning mechanism (RELM), which is applicable to all complex, symbolic, rule-governed systems. He concluded that language learning is based on rare events, or isolated moments of understanding. He emphasized the cognitive processes of attention, comparison, categorization, and memory as central to language acquisition, with localized “hot spots” of intellectual realignment. In this model, language acquisition does not proceed in a steady linear progression of increasingly accurate responses but, instead, encom-

passes four phases: preparation, analysis, assessment, and consolidation. These phases occupy unequal and sometimes overlapping times during the acquisition process. Language acquisition is a consequence of child-constructed experience.

The RELM model deals with the interface of what the child brings to the task and what the environment offers, in terms of what we know about children’s general cognitive mechanisms. What is relatively neglected is the language-specific dimension of language acquisition. It is unclear how cognitive mechanisms, powerful as they may be, help children resolve the learnability problem or arrive at language-specific knowledge. On the other hand, linguistic models espousing an innate linguistic learning device have not satisfactorily specified how such a device would work and how it interfaces with the rich network of general cognitive mechanisms available to even very young children. Resolution of these problems constitutes the most challenging of current questions about language development.

Summary of Normal Language Development

Overall, the outcomes of two decades of child-language research lead to the following picture of children’s language. There is a remarkable similarity in the general acquisition sequence for language skills across language and cultures, although there is considerable individual variability in learning strategies and rate of acquisition. Children learn language as a means of talking about what they know so they can accomplish social goals important to them. Explicit language teaching from adults is not necessary. In fact, if adults try to structure and direct a child’s language learning, the outcome may be interference with, instead of enhancement of, a child’s language skill. Language emerges from a child’s explorations of the world in a rich social setting. Although children’s cognitive and social knowledge contribute to language mastery, they do not fully account for language development. Not all aspects of language have close parallels to general cognitive or social skills. The specifics of how children manage to combine their mental resources with the environmental input to master language continue to elude scholars, but much progress has been made in terms of the empirical validity of explanatory models.

Impaired or Delayed Language Development

Not all children develop language effortlessly. Instead, some youngsters struggle to achieve linguistic competence. Their difficulty is made more poignant in a society that places a high premium on an individual’s ability to express himself or herself well. Traditional teaching methods are based on the assumption that a learner can process language readily and use verbal language as a means of conveying ideas. From kindergarten through higher education to subsequent high-status roles such as those of professors and physicians, it is assumed that a learner or practitioner can understand and manipulate linguistic symbols.
If children cannot master the fundamentals of language during their preschool years, they are greatly at risk for educational achievement, particularly for reading skills. Furthermore, their limited verbal skills affect their social skills. It is difficult for a youngster to win an argument over a desired toy if he or she cannot negotiate verbally.

Language-learning difficulties can be secondary to another handicapping condition, such as a hearing loss, limited intellectual ability, or atypical social/affective functioning. Of all handicapped children served by speech/language pathologists, more than 40% have other primary handicaps (Dublinske, 1981). The remainder have communication problems as a primary handicap (i.e., without other significant handicaps). Overall, 5% of school-age children receive services for communication handicaps (Dublinske, 1981). These children include those whose problems are with production aspects of communication, such as fluency and voice disorders. It is estimated that approximately 3% of preschoolers lag significantly behind their peers in language development, even though their general sensory, cognitive, and emotional abilities are commensurate with their cohorts (Leske, 1981). These children are referred to by a variety of labels, including language delayed, language impaired, and specific language disability.

The existence of children whose only significant handicap is that of language development is an interesting challenge to current models of language acquisition. If language is such a robust human-skill domain, why are some children at such risk? What is known about these children is certainly less extensive than the data base for normally developing children. The safest conclusions are about what is not true of language-disabled children. First, by definition, they do not have general intellectual limitations, as indicated by performance within the normal range, or above, on nonverbal measures of intelligence. In other words, they are defined as demonstrating a discrepancy between linguistic and general cognitive ability. This discrepancy is often not recognized by lay persons and educators, presumably because they expect a close association of linguistic and intellectual abilities. The implied erroneous causal interpretation of slow language because of slow intellect can be particularly distressing to a youngster and his or her parents.

Second, language-disabled children are not necessarily from environments with insufficient or inappropriate input, although that can sometimes be the case. It is very difficult to ascribe causal effects to environmental input, in part because communication with a child with limited skills is different from that with a more interactive or responsive youngster, and therefore unusual input patterns can be a consequence instead of a cause of the delayed language. Furthermore, the effects of unjustly attributing guilt to parents are unproductive, at best.

If not general intellect or environmental input, what does account for the difficulties of some children in acquiring language? At present, there is no consensus as to etiology (cf. Johnston, 1988; Leonard, 1979). Among the current hypotheses are specific problems in mental representation or information processing that have close parallels to language but are not crucial for performance on nonlinguistic intelligence tests (Johnston, 1988; Nelson, Kamhi, & Apel, 1987). Another candidate is a problem with on-line linguistic processing, evident in the limited ability of language-delayed preschoolers to fast map new words (Rice, 1987; Rice, Buhr, & Nemeth, 1988).

Teachability of Language

Although not usually necessary, in some cases language must be explicitly taught to children. For children who do not have them, language skills can enhance their social worlds, increase their learning capability, contribute significantly to their chances for academic success, and help ensure their eventual functioning as independent, self-actualizing adults. This teaching responsibility is distributed across teachers, speech/language pathologists, and parents.

In line with the three subdivisions of the first section of this article, the teachability of language depends upon the extent to which certain language skills are learnable, the characteristics of the individual learner, and the match between learner and teaching strategy. Principles of teachability are in the formative stages, and given the time demands inherent in evaluation of teaching methods, definitive conclusions will not be available immediately. With these caveats in mind, I have proposed a basic principle for each of the three components of teachability (Rice & Schiefelbusch, 1988, 1989):

1. The key dimension of language to be targeted for training is the lexicon (word meanings), especially verbs, insofar as they are the key to grammar, according to current theoretical models. Therefore, formal syntax is a secondary training target.

2. Children bring a wide variety of intellectual, perceptual, social, and motor competencies to language learning. Their teachability depends upon a synergistic balance of interacting skills and knowledge bases.

3. Teaching new language skills requires the use of converging strategies to enhance the aspects of the environment relevant to linguistic mapping in a manner that matches a learner's style of language learning with the targeted linguistic skill.

Conclusions and Applications

Naive intuitions about children's language development greatly underestimate the complexities of the achievement, the significance of the accomplishment for related areas of development, and the child's strong but apparently effortless contribution to the acquisition process. As adults, our language facility is so intimately ingrained in our thinking and social functioning that it is difficult to imagine the perspective of the language-learning youngster. We routinely assume that children understand what is said to them and that children mean what they say. We bring our assumptions to our plans for caring for and educating young children. In our culture, verbal communication is the primary means of managing the
behavior of children and gaining access to their minds. With this in mind, there are two major conclusions.

First, for normally developing preschoolers (including infants and toddlers), it is important to remember that one of the ways in which these children are qualitatively different from school-age children is that they have not mastered the fundamentals of language. Although much of English grammar is mastered by age five, and kindergarten children can readily follow simple verbal instructions displaced by time and space, preschool children are still working on these skills. Language development is a primary educational objective for preschoolers. The best way to encourage development of language is to provide many opportunities for a child to interact with objects and events and other children. Children's play is a primary source of language enrichment. Adult-directed teaching drills are not appropriate. In other words, most children do not need to be taught language, but they do need opportunities to develop language. The role of the adult in language facilitation is to follow the child's interests, paraphrase what the child says with simple elaborations, and interact in a conversational manner about objects and events on which the child's attention is focused. Also, children do not always need to respond in order to learn new language skills. They can benefit greatly by the opportunity to absorb the conversations of others. At the same time, they do need opportunities to practice expressing words and sentences when they are ready to do so. An easy way to allow for opportunities is to provide pauses in conversations with children; in other words, for adults to refrain from doing all the talking.

Second, some children do need to be taught. Furthermore, a deficiency in language skill should not automatically be equated with limited intelligence, sensory handicaps, poor parental skills, or impoverished environmental circumstances. Careful assessment of the child and the family by trained professionals will be required to identify causal factors. Language teaching requires specialized strategies designed to meet the needs of individual children. Given that these children have not been able to benefit from ordinary communicative situations, it is unlikely that they will profit from placement in a typical preschool classroom, without directed focusing on targeted language forms. Instead, an appropriate preschool is one designed to enhance language, in which the teacher input is adjusted to the children's comprehension levels, communication opportunities are socially engineered in the context of meaningful play activities, and specific linguistic skills are targeted as goals for individual children (cf. Fey 1986). Furthermore, special adjustments to the school curriculum, in which a specific focus on language is provided, are likely to be needed throughout the secondary level as a child makes the transition from oral to written language, from language to express what is known to the use of language as a mental tool for acquiring new knowledge.

Overall, the study of children's language acquisition provides insight into fundamental human mental abilities, contributes to formal models of linguistic knowledge, provides a challenge to accounts of how children learn and how adults can teach, and reminds us of the priority of the social/communicative nature of human existence.

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