

Landmarks

Chomsky's Innateness Hypothesis: Implications for Language Learning and Teaching

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Noam Chomsky's 1959 review of B. F. Skinner's *Verbal Behavior* is widely acknowledged as having sounded the death knell of behaviorist approaches to human learning and knowledge, and as paving the way for the 'cognitive revolution' in the decades to follow. Over fifty years later, Chomsky's remarks are not merely of historical significance, as they are still relevant to the contours that an enquiry into human cognition and behavior must have.

At its most basic level, Chomsky's critique of behaviorism claims that children's first language(s) acquisition is directed by the stimuli provided by adults through a reinforcement of casual observation and imitation by children. What Chomsky is suggesting in this early article is that much of the child's linguistic knowledge is expressed in contexts where no reinforcement is ever available. As research has progressed in the area, a more complete picture of the inaccuracy of the behaviorists' fable has emerged. Parents neither reinforce children's grammatical utterances, nor pay any special attention to their grammatical wellformedness; and children also resist any attempts at correction. Furthermore, while children may well imitate the linguistic utterances of adults, such imitation does not form the basis of the linguistic knowledge they put to use. The following two sets of dialogues—which form part of research conducted *after* Chomsky's review—demonstrate this:

A) Adult: Where is that big piece of paper I gave you yesterday?

Child: Remember? I wrote on it.

Adult: Oh, that's right, don't you have any paper down here, buddy?

B) Child: Want other one spoon, Daddy

Adult: You mean, you want the other spoon.

Child: Yes, I want other one spoon, please Daddy.

Adult: Can you say "the other spoon"?

Child: Other ... one ... spoon

Adult: Say "other".

Child: other

Adult: "spoon"

Child: spoon

Adult: "other ... spoon"

Child: other ... spoon. Now give me other one spoon.

(Pinker, 1995, p. 281)

The first set of dialogues (A) show that the reinforcement that a child gets, through parental agreement in this case, is for an ungrammatical utterance. Simply put, parents care more about the meaning and truth of their children's linguistic acts, than about their grammatical form. The exchange in (B) illustrates that while imitation is something that a child may easily do, neither does she/he see the injunction to imitation as a reinforcement behavior by the adult, nor does she/he let the imitated utterance form the basis of her own utterances.

Add to this the fact that the nature of reinforcing behavior may itself be full of ‘noise’, as verbal communication is full of false starts, stops, incomplete utterances, etc. If a child were to rely on this flawed input as the basis for learning language, the speed with which she/he acquires the basic grammar of her/his language would be unexpected. Across languages, a normally developing child has a complete grasp of its rules of sentence formation (syntax) by the time she is five. Beyond that age, even as children (and the adult) continue to learn new words and phrases, very little syntax learning needs to take place; in fact, by the beginning of the teens, very little syntax learning *can* take place. An oft-mentioned example in this context is that of a child named Genie, who was rescued from an abusive father at the age of thirteen. Genie had been kept in an outhouse, chained to a potty since the age of one, and while food was pushed into the shed twice a day, she had never been spoken to by anyone. After her rescue, Genie made rapid strides in cognitive development, but her overall linguistic skills remained poor, and she could never produce grammatical utterances of even average length.

It is also rare for a child to hear ungrammatical sentences as part of the stimulus. However, if a child’s knowledge of ‘ungrammaticality’ is also

the product of reinforcement, how is this knowledge ever arrived at? This is especially relevant when we consider the number of mistakes that children do *not* make. A simple example is that of a phrase order in a sentence, which in a language such as English is of the order of Agent-Action-Recipient-Object-Location. As Roger Brown observed in the 1970s, while the earliest utterances of children in the age group 2-2.6 years conform to this basic order, and the difference between their output and that of an adult lies mainly in the fact that children’s outputs have more omissions. These omissions can be due to a variety of factors, some acquisition-related factors and others extra-grammatical. An example of the latter is that children often allow the discourse context to do the talking as it were, so if an object can be pointed to, they do not linguistically represent it. For example, sentence (f) below could be accompanied by a pointing gesture to the object that is to be laid on the floor. A case of grammatically-conditioned omission could however be made out for the systematic omission of prepositions in the entire set of examples – clearly the realization of prepositions as markers of spatial relations cannot be produced at this early stage of acquisition.

(C)	<i>Agent</i>	<i>Action</i>	<i>Recipient</i>	<i>Object</i>	<i>Location</i>
	(Mother	gave	John	lunch	in the kitchen.)
a.	Mommy	fix.			
b.	Mommy			pumpkin.	
c.	Baby				table.
d.		Give	doggie.		
e.		Put		light.	
f.		Put			floor.
g.	I	ride		horsie.	
h.	Tractor	go			floor.
i.		Give	doggie	paper.	
j.		Put		truck	window.
k.	Adam	put		it	box.

In the examples above it will be noticed that while the early utterances of children do not uniformly realize the full frame of Agent-Action-Recipient-Object-Location (as shown in the adult sentence *Mother gave John lunch in the kitchen*), they do have knowledge of the frame. If they did not, then children should have been equally likely to produce *Mommy fix* as well as *fix Mommy* to mean ‘Mommy fixed it’; however, they do not. Similarly, if this frame were not available, we would expect that the children would have used example (f) to describe an event when the floor was being laid in a building (i.e., when the floor was interpreted as the Object), but that was never the case – (f) was used when something was to be laid on the floor (i.e., the floor was location).

Children also do not make certain mistakes that they would be expected to make were they generalizing from observed patterns. As Pinker (1994) points out, if British/American English-speaking children were generalizing from observed patterns, we would expect that on observing the patterns in (D), they would utter the ungrammatical (Eii). However, British/American English-speaking children never make this mistake.

- (D) (i) Irv drove the car into the garage.
 (ii) Irv drove the car.
- (E) (i) Irv put the car into the garage.
 (ii) *Irv put the car.

Since the 1970s, this line of reasoning has come to be known as the ‘poverty of the stimulus’ argument: Given that the data children receive from the input is woefully underdetermined to serve as the basis for language acquisition, and given that children nevertheless do acquire the grammar(s) of their native language(s), it must be that the child’s learning of language is guided by some form of innate linguistic capacity. The existence of a critical period—a window of time

in which environmental exposure stimulates an innate trait—for language acquisition suggests that this innate endowment is genetic, “spurred on by the unfolding of the genome during maturation” (Pinker, 1995)

Finally, if grammar is what this innate endowment must be, then this human cognitive ability is an instance of *domain-specific* intelligence, unrelated to the development of general intelligence and cognitive abilities. Research, both preceding and following Chomsky’s (1959) *Review* has confirmed this in a number of ways. The human brain has circuitry in the left hemisphere exclusively for language, and there are a few inherited syndromes that target language alone. One such syndrome is Specific Language Impairment (SLI), which recent research has established as genetic. SLI is a purely linguistic inherited disorder caused by mutation in the gene FOXP2. Moreover, intact language has been found to coexist with severe retardation, as in the famous case of Christopher, who was born with hydrocephalic brain damage, and was severely retarded, but had unique and prodigious language abilities—he could read, write and communicate in any of fifteen to twenty languages (Smith and Tsimpli, 1995).

For language teachers of young children today, Chomsky’s nativist ideas point towards a profound question—how much of the innate endowment is implicated in the construction of linguistic knowledge? Chomsky’s answer would be much along the same lines as his observations in the Creation and Culture Conference in Barcelona in November 1992:

Most problems of teaching are not problems of growth but helping cultivate growth. ... Typically, they come in interested, and the process of education is a way of driving that defect out of their minds. But if children[’s] [...] normal interest is maintained or even aroused, they can do all kinds of things in ways we don’t understand.

It is therefore important to question whether the methodology we employ assumes that first or second language learning is primarily graphic, and that the process is deductive, requires rote memorization, role playing and structure drilling, and stress habit formation as a means of learning language. These are all behaviourist assumptions. Teaching first or second languages through grammar is not really teaching language at all, because what is taught is a system of prescriptive rules that linguists/grammarians have come up with to describe a language. To tell students that they must not split an infinitive with an adverb is to teach an aesthetic choice—i.e. the ‘correct’ form is not *I want to quickly tell you* but *I want to tell you quickly*—because all native speakers of English actually agree that both alternatives are grammatical. Teaching young students the grammatical jargon for the form ‘I am reading’ is the present progressive, is not teaching language, but grammar, and while an appreciation of grammatical analysis is an important aspect of learning, this is a sophisticated skill and not suitable for very young children. At the heart of our teaching must lie the understanding that children already know their first language, and that this knowledge can be harnessed to acquiring other languages as well. Finally, while the focus on writing is crucial, it must not be at the cost of encouraging children to fully ‘activate’ their developing knowledge of language, by learning new vocabulary (the only aspect of language acquisition that carries on throughout one’s lifetime) and using all the syntactic constructions they have an innate competence in.

Awareness of the innateness argument should also enable us to critically evaluate the instruments by which we teach language—textbooks, storybooks, readers, etc. While one can be misled into thinking that a particular lesson ‘teaches’ some aspect of language, quite often the lesson’s content simply piggybacks on the child’s tacit knowledge of language. For

example, no textbook would ever attempt to explain the linguistic properties of the Hindi use of *apne-aap*, or the English *themselves*. In fact many crucial properties of language are not the subject matter of lessons at all. Consider Chomsky’s (1983) example of the kind of sophisticated knowledge that children must have to be able to process their parent’s utterances (even before they can themselves produce similar ones):

Take the sentence “John believes he is intelligent.” Okay, we all know that “he” can refer either to John or to someone else; so the sentence is ambiguous. It can mean either that John thinks he, John, is intelligent, or that someone else is intelligent. In contrast, consider the sentence “John believes him to be intelligent.” Here, the pronoun “him” can’t refer to John; it can refer only to someone else.

Now, did anyone teach us this peculiarity about English pronouns when we were children? It would be hard to even imagine a training procedure that would convey such information to a person. Nevertheless, everybody knows it—knows it without experience, without training, and at quite an early age.

The ‘Chomskyan revolution’ has had an important impact on language teaching methodologies, particularly in the development of content-based communicative approaches. These approaches make active learner participation the centrepiece of the activity, and aim at providing appropriate language input and increasing communicative competence. However, there are still many other fruits that remain to be picked. One of them is the implication that the Chomskyan revolution has for mother tongue education and multilingual learning.

Although we have not mentioned it thus far, the Chomskyan perspective argues that the innate

mechanism enables children to acquire as many languages as there are in the input provided a child's environment. So, if a child has parents that speak to her in two languages, say Malayalam and Bangla, and her playmates and other caregivers speak to her in Hindi, she will acquire at least three languages in her childhood. By the time she is five, she will be roughly equally competent in all three (provided, of course, that the input is regular and use of all three languages is not discouraged). It has been observed that once children start going to school, this incipient multilingualism gets eroded, and some of the languages get restricted to the home domain, often withering away. However, imagine a school in which the languages of all children were encouraged, where homework involved learning poetry in more than just one or two dominant languages, and where these other languages were brought to the classroom and shared. In that world, children's cognitive development and linguistic creativity would develop more rapidly, and they would be more aware of differences and the rights of others. In such a scenario, even though education may ultimately move in the direction of one or two languages, the richness of the initial multilingual resource would ease the transition.

In the world we live in, however, many, if not most, children are often educated in a language that they have never heard as the input. While this language could be English, it could also be a major regional language not spoken in their home environment. This imposes a tremendous cognitive burden on the child who is expected to gain 'knowledge' through a medium that she/he does not comprehend. This creates a fundamental inequity between her/him and other children who do have access to the language of education, an inequity that cannot serve as the edifice on which true learning can be built.

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