Linguistics

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Linguistics is the scientific study of human language. Linguistics can be broadly broken into three categories or subfields of study: language form, language meaning, and language in context.

The first is the study of language structure, or grammar. This focuses on the system of rules followed by the speakers (or hearers) of a language. It encompasses morphology (the formation and composition of words), syntax (the formation and composition of phrases and sentences from these words), and phonology (sound systems). Phonetics is a related branch of linguistics concerned with the actual properties of speech sounds and nonspeech sounds, and how they are produced and perceived.

The study of language meaning is concerned with how languages employ logical structures and real-world references to convey, process, and assign meaning, as well as to manage and resolve ambiguity. This subfield encompasses semantics (how meaning is inferred from words and concepts) and pragmatics (how meaning is inferred from context).

Language in its broader context includes evolutionary linguistics, which considers the origins of language; historical linguistics, which explores language change; sociolinguistics, which looks at the relation between linguistic variation and social structures; psycholinguistics, which explores the representation and function of language in the mind; neurolinguistics, which looks at language processing in the brain; language acquisition, how children or adults acquire language; and discourse analysis, which involves the structure of texts and conversations.

Although linguistics is the scientific study of language, a number of other intellectual disciplines are relevant to language and intersect with it. Semiotics, for example, is the general study of signs and symbols both within language and without. Literary theorists study the use of language in literature. Linguistics additionally draws on and informs work from such diverse fields as psychology, speech-language pathology, informatics, computer science, philosophy, biology, human anatomy, neuroscience, sociology, anthropology, and acoustics.

Terminology for the discipline

Before the 20th century, the term philology, first attested in 1716, was commonly used to refer to the science of language, which was then predominantly historical in focus. Since Ferdinand de Saussure's insistence on the importance of synchronic analysis, however, this focus has shifted and the term "philology" is now generally used for the "study of a language's grammar, history, and literary tradition", especially in the United States, where it was never as popular as it was elsewhere (in the sense of the "science of language").

Although the term "linguist" in the sense of "a student of language" dates from 1641, the term "linguistics" is first attested in 1847. It is now the usual academic term in English for the scientific study of language.

The term linguist, used for one who studies language, applies within the field to someone who either studies linguistics or uses linguistic methodologies to study groups of languages or particular languages. Outside the field, this term is commonly used to refer to people who speak many languages fluently.

Fundamental concerns and divisions

Linguistics concerns itself with describing and explaining the nature of human language. Fundamental questions include what is universal to language, how language can vary, and how human beings come to know languages. Linguistic fields can then be broadly divided into those that distinguish themselves by a focus on linguistic structure and grammar, and those that distinguish themselves by the nonlinguistic factors they consider.

Fundamental questions

All humans achieve competence in whatever language is used around them when growing up, with little apparent need for explicit conscious instruction (setting aside extremely pathological cases). Linguists assume that the ability to acquire and use language is an innate, biologically based potential of modern human beings, similar to the ability to walk, because nonhumans do not acquire human language in this way (although many nonhuman animals can learn to respond to language, or can even be trained to use it to a degree).

There is no consensus, however, as to the extent of humans' innate potential for language, or the degree to which such innate abilities are specific to language. Some theorists claim that there is a very large set of highly abstract and specific binary settings coded into the human brain; the combinations of these settings would give rise to every language on the planet. Other linguists claim that the ability to learn language is a product of general human cognition. It is, however, generally agreed that there are no strong genetic differences underlying the differences between languages: An individual will acquire whatever language(s) he or she is exposed to as a child, regardless of parentage or ethnic origin. Nevertheless, recent research suggests that even weak genetic biases in speakers may, over a number of generations, influence the evolution of particular languages, leading to a nonrandom distribution of certain linguistic features across the world.

Divisions based on linguistic structures studied

Linguistic structures are pairings of meaning and form. Any particular pairing of meaning and form is a Saussurean sign. For instance, the meaning "cat" is represented worldwide with a wide variety of different sound patterns (in spoken languages), movements of the hands and face (in signed languages), and written symbols (in written languages).

Linguists focusing on structure attempt to understand the rules regarding language use that native speakers know (not always consciously). All linguistic structures can be broken down into component parts that are combined according to (sub)conscious rules, over multiple levels of analysis. For instance, consider the structure of the word "tenth" on two different levels of analysis. On the level of internal word structure (known as morphology), the word "tenth" is made up of one linguistic form indicating a number and another form indicating ordinality. The rule governing the combination of these forms ensures that the ordinality marker "th" follows the number "ten." On the level of sound structure (known as phonology), structural analysis shows that the "n" sound in "tenth" is made differently from the "n" sound in "ten" spoken alone. Although most speakers of English are consciously aware of the rules governing internal structure of the word pieces of "tenth", they are less often aware of the rule governing its sound structure. Linguists focused on structure find and analyze rules such as these, which govern how native speakers use language.

Linguistics has many sub-fields concerned with particular aspects of linguistic structure. These sub-fields range from those focused primarily on form to those focused primarily on meaning. They also run the gamut of level of analysis of language, from individual sounds, to words, to phrases, up to discourse.

Sub-fields of structure-focused linguistics include:

Phonetics, the study of the physical properties of speech (or signed) production and perception
Phonology, the study of sounds (or signs) as discrete, abstract elements in the speaker's mind that distinguish meaning
Morphology, the study of internal structures of words and how they can be modified
Syntax, the study of how words combine to form grammatical sentences
Semantics, the study of the meaning of words (lexical semantics) and fixed word combinations (phraseology), and how these combine to form the meanings of sentences
Pragmatics, the study of how utterances are used in communicative acts, and the role played by context and nonlinguistic knowledge in the transmission of meaning
Discourse analysis, the analysis of language use in texts (spoken, written, or signed)

Many linguists would agree that these divisions overlap considerably, and the independent significance of each of these areas is not universally acknowledged. Regardless of any particular linguist's position, each area has core concepts that foster significant scholarly inquiry and research.

Divisions based on nonlinguistic factors studied

Alongside the structurally motivated domains of study are other fields of linguistics. These fields are distinguished by the kinds of nonlinguistic factors that they consider:

Applied linguistics, the study of language-related issues applied in everyday life, notable ones being language policies, planning, and education. (Constructed language fits under Applied linguistics.)
Biolinguistics, the study of natural as well as human-taught communication systems in animals, compared to human language.
Clinical linguistics, the application of linguistic theory to the field of Speech-Language Pathology.
Computational linguistics, the study of computational implementations of linguistic structures.
Developmental linguistics, the study of the development of linguistic ability in individuals, in particular the acquisition of language in childhood.
Evolutionary linguistics, the study of the origin and subsequent development of language by the human species.
Historical linguistics or diachronic linguistics, the study of language change over time.
Language geography, the study of the geographical distribution of languages and linguistic features.
Linguistic typology, the study of the common properties of diverse unrelated languages, properties that may, given sufficient attestation, be assumed to be innate to human language capacity.
Neurolinguistics, the study of the structures in the human brain that underlie grammar and communication.
Psycholinguistics, the study of the cognitive processes and representations underlying language use.
Sociolinguistics, the study of variation in language and its relationship with social factors.
Stylistics, the study of linguistic factors that place a discourse in context.

Semiotics is not a discipline within linguistics; rather, it investigates the relationship between signs and what they signify more broadly. From the perspective of semiotics, language can be seen as a sign or symbol, with the world as its representation.

Variation and universality

Much modern linguistic research, in particular within the paradigm of generative grammar, has concerned itself with trying to account for differences between languages of the world. This has worked on the assumption that, if human linguistic ability is narrowly constrained by human biology, then all languages must share certain fundamental properties.

In generativist theory, the collection of fundamental properties all languages share are referred to as universal grammar (UG). The specific characteristics of this universal grammar are a much debated topic. Typologists and non-generativist linguists usually refer simply to language universals, or universals of language.

Similarities between languages can have a number of different origins. In the simplest case,

universal properties may be due to universal aspects of human experience. For example, all humans experience water, and all human languages have a word for water. Other similarities may be due to common descent: The Latin language spoken by the Ancient Romans developed into Spanish in Spain and Italian in Italy; similarities between Spanish and Italian are, thus, in many cases due to their both having descended from Latin. In other cases, contact between languages -- in particular where many speakers are bilingual -- can lead to much borrowing of structures, as well as words. Similarity may also, of course, be due to coincidence. English much and Spanish mucho are not descended from the same form or borrowed from one language to the other; nor is the similarity due to innate linguistic knowledge (see False cognate).

Arguments in favor of language universals have also come from documented cases of sign languages (such as Al-Sayyid Bedouin Sign Language) developing in communities of congenitally deaf people, independently of spoken language. In general, the properties of these sign languages conform to many of the properties of spoken languages. Other known and suspected sign language isolates include Kata Kolok, Nicaraguan Sign Language, and Providence Island Sign Language.

Structures

Ferdinand de Saussure

It has been perceived that languages tend to be organized around grammatical categories such as noun and verb, nominative and accusative, or present and past, though not exclusively so. The grammar of a language is organized around such fundamental categories, though many languages express the relationships between words and syntax in other discrete ways (cf. some Bantu languages for noun/verb relations, ergative-absolutive systems for case relations, several Native American languages for tense/aspect relations).

In addition to making substantial use of discrete categories, language has the important property that it organizes elements into recursive structures; this allows, for example, a noun phrase to contain another noun phrase (as in "the chimpanzee's lips") or a clause to contain a clause (as in "I think that it's raining"). Though recursion in grammar was implicitly recognized much earlier (for example by Jespersen), the importance of this aspect of language became more popular after the 1957 publication of Noam Chomsky's book Syntactic Structures, which presented a formal grammar of a fragment of English. Prior to this, the most detailed descriptions of linguistic systems were of phonological or morphological systems.

Chomsky used a context-free grammar augmented with transformations. Since then, following the trend of Chomskyan linguistics, context-free grammars have been written for substantial fragments of various languages (for example, GPSG, for English). It has been demonstrated, however, that

human languages (the most notable ones being Dutch and Swiss German) include cross-serial dependencies, which cannot be handled adequately by context-free grammars.

Selected sub-fields

Historical linguistics

Historical linguistics studies the history and evolution of languages through the comparative method. Often, the aim of historical linguistics is to classify languages in language families descending from a common ancestor. This involves comparison of elements in different languages to detect possible cognates in order to be able to reconstruct how different languages have changed over time. This also involves the study of etymology, the study of the history of single words. Historical linguistics is also called "diachronic linguistics" and is opposed to "synchronic linguistics" that study languages in a given moment in time without regarding its previous stages. In universities in the United States, the historic perspective is often out of fashion. Historical linguistics was among the first linguistic disciplines to emerge and was the most widely practiced form of linguistics in the late 19th century. The shift in focus to a synchronic perspective started with Saussure and became predominant in western linguistics with Noam Chomsky's emphasis on the study of the synchronic and universal aspects of language.

Semiotics

Semiotics is the study of sign processes (semiosis), or signification and communication, signs, and symbols, both individually and grouped into sign systems, including the study of how meaning is constructed and understood. Semioticians often do not restrict themselves to linguistic communication when studying the use of signs but extend the meaning of "sign" to cover all kinds of cultural symbols. Nonetheless, semiotic disciplines closely related to linguistics are literary studies, discourse analysis, text linguistics, and philosophy of language.

Descriptive linguistics and language documentation

Since the inception of the discipline of linguistics, linguists have been concerned with describing and documenting languages previously unknown to science. Starting with Franz Boas in the early 1900s, descriptive linguistics became the main strand within American linguistics until the rise of formal structural linguistics in the mid-20th century. The rise of American descriptive linguistics was caused by the concern with describing the languages of indigenous peoples that were (and are) rapidly moving toward extinction. The ethnographic focus of the original Boasian type of descriptive linguistics occasioned the development of disciplines such as Sociolinguistics, anthropological linguistics, and linguistic anthropology, disciplines that investigate the relations between language,

culture, and society.

The emphasis on linguistic description and documentation has since become more important outside of North America as well, as the documentation of rapidly dying indigenous languages has become a primary focus in many of the worlds' linguistics programs. Language description is a work intensive endeavour usually requiring years of field work for the linguist to learn a language sufficiently well to write a reference grammar of it. The further task of language documentation requires the linguist to collect a substantial corpus of texts and recordings of sound and video in the language, and to arrange for its storage in accessible formats in open repositories where it may be of the best use for further research by other researchers.

Applied linguistics

Linguists are concerned largely with finding and describing the generalities and varieties both within particular languages and among all languages. Applied linguistics takes the results of those findings and "applies" them to other areas. Linguistic research is commonly applied to areas such as language education, lexicography, and translation. "Applied linguistics" has been argued to be something of a misnomer, since applied linguists focus on making sense of and engineering solutions for real-world linguistic problems, not simply "applying" existing technical knowledge from linguistics; moreover, they commonly apply technical knowledge from multiple sources, such as sociology (e.g., conversation analysis) and anthropology.

Today, computers are widely used in many areas of applied linguistics. Speech synthesis and speech recognition use phonetic and phonemic knowledge to provide voice interfaces to computers. Applications of computational linguistics in machine translation, computer-assisted translation, and natural language processing are areas of applied linguistics that have come to the forefront. Their influence has had an effect on theories of syntax and semantics, as modeling syntactic and semantic theories on computers constraints.

Linguistic analysis is a subdiscipline of applied linguistics used by many governments to verify the claimed nationality of people seeking asylum who do not hold the necessary documentation to prove their claim. This often takes the form of an interview by personnel in an immigration department. Depending on the country, this interview is conducted either in the asylum seeker's native language through an interpreter or in an international lingua franca like English. Australia uses the former method, while Germany employs the latter; the Netherlands uses either method depending on the languages involved. Tape recordings of the interview then undergo language analysis, which can be done either by private contractors or within a department of the government. In this analysis, linguistic features of the asylum seeker are used by analysts to make a determination about the speaker's nationality. The reported findings of the linguistic analysis can play a critical role in the government's decision on the refugee status of the asylum seeker.

Description and prescription

Linguistics is descriptive; linguists describe and explain features of language without making subjective judgments on whether a particular feature is "right" or "wrong". This is analogous to practice in other sciences: A zoologist studies the animal kingdom without making subjective judgments on whether a particular animal is better or worse than another.

Prescription, on the other hand, is an attempt to promote particular linguistic usages over others, often favouring a particular dialect or "acrolect". This may have the aim of establishing a linguistic standard, which can aid communication over large geographical areas. It may also, however, be an attempt by speakers of one language or dialect to exert influence over speakers of other languages or dialects (see Linguistic imperialism). An extreme version of prescriptivism can be found among censors, who attempt to eradicate words and structures that they consider to be destructive to society.

Speech and writing

Most contemporary linguists work under the assumption that spoken (or signed) language is more fundamental than written language. This is because:

Speech appears to be universal to all human beings capable of producing and hearing it, while there have been many cultures and speech communities that lack written communication.

Speech evolved before human beings invented writing.

People learn to speak and process spoken languages more easily and much earlier than writing.

Nonetheless, linguists agree that the study of written language can be worthwhile and valuable. For research that relies on corpus linguistics and computational linguistics, written language is often much more convenient for processing large amounts of linguistic data. Large corpora of spoken language are difficult to create and hard to find, and are typically transcribed and written. In addition, linguists have turned to text-based discourse occurring in various formats of computer-mediated communication as a viable site for linguistic inquiry.

The study of writing systems themselves is, in any case, considered a branch of linguistics.

History

The earliest known linguistic activities date to Iron Age India (around the 8th century BC)) with the analysis of Sanskrit. The Pratishakhyas were a proto-linguistic ad hoc collection of observations about mutations to a given corpus particular to a given Vedic school. Systematic study of these

texts gives rise to the Vedanga discipline of Vyakarana, the earliest surviving account of which is the work of P??ini (c. 520 - 460 BC), who looked back on what are, it is presumed, several generations of grammarians, whose opinions he occasionally refers to. P??ini formulates close to 4,000 rules that together form a compact generative grammar of Sanskrit. Inherent in his analytic approach are the concepts of the phoneme, the morpheme, and the root. Due to its focus on brevity, his grammar has a highly unintuitive structure.

Indian linguistics maintained a high level for several centuries; Patanjali in the 2nd century BC still actively criticizes P??ini. In the later centuries BC, P??ini's grammar came to be seen as prescriptive, and commentators came to be fully dependent on it. Bhart?hari (c. 450 - 510) theorized the act of speech as being made up of four stages: first, conceptualization of an idea, second, its verbalization and sequencing (articulation), and third, delivery of speech into atmospheric air, the interpretation of speech by the listener, the interpreter.

Western linguistics begins in Classical Antiquity with grammatical speculation such as Plato's Cratylus. The first important advancement of the Greeks was the creation of the alphabet. As a result of the introduction of writing, poetry such as the Homeric poems became written and several editions were created and commented, forming the basis of philology and critic. The sophists and Socrates introduced dialectics as a new text genre. Aristotle defined the logic of speech and the argument, and his works on rhetoric and poetics developed the understating of tragedy, poetry, and public discussions as text genres.

One of the greatest of the Greek grammarians was Apollonius Dyscolus. Apollonius wrote more than thirty treatises on questions of syntax, semantics, morphology, prosody, orthography, dialectology, and more. In the 4th c., Aelius Donatus compiled the Latin grammar Ars Grammatica that was to be the defining school text through the Middle Ages. In De vulgari eloquentia ("On the Eloquence of Vernacular"), Dante Alighieri expanded the scope of linguistic enquiry from the traditional languages of antiquity to include the language of the day.

In the Middle East, the Persian linguist Sibawayh made a detailed and professional description of Arabic in 760, in his monumental work, Al-kitab fi al-nahw (The Book on Grammar), bringing many linguistic aspects of language to light. In his book, he distinguished phonetics from phonology.

Sir William Jones noted that Sanskrit shared many common features with classical Latin and Greek, the notable ones being verb roots and grammatical structures, such as the case system. This led to the theory that all languages sprang from a common source and to the discovery of the Indo-European language family. He began the study of comparative linguistics, which would uncover more language families and branches.

In 19th-century Europe, the study of linguistics was largely from the perspective of philology (or historical linguistics). Some early-19th-century linguists were Jakob Grimm, who devised a

principle of consonantal shifts in pronunciation - known as Grimm's Law - in 1822; Karl Verner, who formulated Verner's Law; August Schleicher, who created the "Stammbaumtheorie" ("family tree"); and Johannes Schmidt, who developed the Wellentheorie" ("wave model") in 1872.

Ferdinand de Saussure was the founder of modern structural linguistics, with an emphasis on synchronic (i.e., nonhistorical) explanations for language form.

In North America, the structuralist tradition grew out of a combination of missionary linguistics (whose goal was to translate the Bible) and anthropology. While originally regarded as a sub-field of anthropology in the United States, linguistics is now considered a separate scientific discipline in the US, Australia, and much of Europe.

Edward Sapir, a leader in American structural linguistics, was one of the first who explored the relations between language studies and anthropology. His methodology had strong influence on all his successors. Noam Chomsky's formal model of language, transformational-generative grammar, developed under the influence of his teacher Zellig Harris, who was in turn strongly influenced by Leonard Bloomfield, has been the dominant model since the 1960s.

The structural linguistics period was largely superseded in North America by generative grammar in the 1950s and 1960s. This paradigm views language as a mental object, and emphasizes the role of the formal modeling of universal, and language specific rules. Noam Chomsky remains an important but controversial linguistic figure. Generative grammar gave rise to such frameworks such as Transformational grammar, Generative Semantics, Relational Grammar, Generalized phrase structure grammar, Head-Driven Phrase Structure Grammar (HPSG), and Lexical Functional Grammar (LFG). Other linguists working in Optimality Theory state generalizations in terms of violable constraints that interact with each other, and abandon the traditional rule-based formalism first pioneered by early work in generativist linguistics.

Functionalist linguists working in functional grammar, and Cognitive Linguistics tend to stress the non-autonomy of linguistic knowledge and the non-universality of linguistic structures, thus differing significantly from the formal approaches.

Schools of study

There is a wide variety of approaches to linguistic study. These can be loosely divided (although not without controversy) into formalist and functionalist approaches. Formalist approaches stress the importance of linguistic forms, and seek explanations for the structure of language from within the linguistic system itself. For example, the fact that language shows recursion might be attributed to recursive rules. Functionalist linguists, by contrast, view the structure of language as being driven by its function. For example, the fact that languages often put topical information first in the sentence, may be due to a communicative need to pair old information with new information in

discourse.

Generative grammar

During the last half of the 20th century, following the work of Noam Chomsky, linguistics was dominated by the generativist school. While formulated by Chomsky in part as a way to explain how human beings acquire language and the biological constraints on this acquisition, in practice it has largely been concerned with giving formal accounts of specific phenomena in natural languages. Generative theory is modularist and formalist in character. Formal linguistics remains the dominant paradigm for studying linguistics, though Chomsky's writings have also gathered criticism.

Cognitive linguistics

In the 1970s and 1980s, a new school of thought known as cognitive linguistics emerged as a reaction to generativist theory. Led by theorists such as Ronald Langacker and George Lakoff, linguists working within the realm of cognitive linguistics propose that language is an emergent property of basic, general-purpose cognitive processes, though cognitive linguistics has also been the subject of much criticism. In contrast to the generativist school of linguistics, cognitive linguistics is non-modularist and functionalist in character. Important developments in cognitive linguistics include cognitive grammar, frame semantics, and conceptual metaphor, all of which are based on the idea that form-function correspondences based on representations derived from embodied experience constitute the basic units of language.