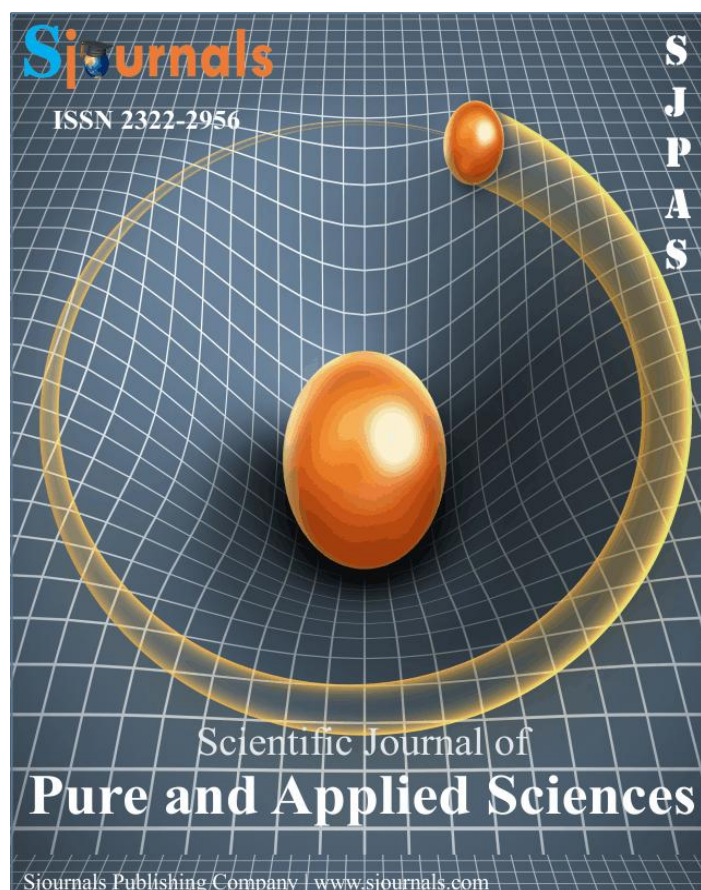


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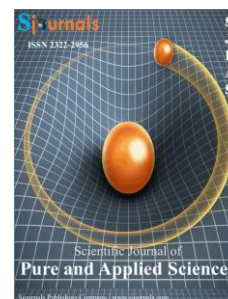
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Review article

Exposition of the grammatical structure of sign language

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ABSTRACT

Many people hardly believe that sign language is a fully fledged language. Some people mistakenly think that sign language is oral language conveyed through signs while some think that it is a manual code of English for instance. They think that it is a type of pantomime (exaggerated set of signs) rather than a real language. There are also misconceptions among the public that sign language can only be used to express concrete information and that it is universal. Signs in a sign language have been regarded simply as unanalysable iconic gestures with little or no internal organisation at all. To the contrary, linguistic research has however demonstrated beyond reasonable doubt that sign languages of the world are fully fledged languages with their own formal grammatical structures and well established lexicons. William Stokoe (1960) was the first researcher to demonstrate that signs of a sign language have an internal sub lexical structure analogous to that found in words of spoken languages. Thus, sign language is comparable to spoken language both in terms of complexity and expressiveness. It is not a manual rendition of oral language, but an independent formal language in its own right. In addition, sign language is not universal, but just like in the case of oral/spoken languages which are spoken by different people in different countries, deaf people around the world sign different sign languages. The sign language grammatical structure subscribes to the same linguistic rules enjoyed by oral language.

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1. Introduction

Sign linguistic studies have proven beyond reasonable doubt that despite long standing misconceptions that sign language is a manual rendition of oral language, a pantomime or a set of iconic gestures, it is a fully fledged language with its own formal grammar. While its grammar structurally differs from that of oral language, it is technically and systematically comparable. The purpose of this paper is to provide an exposition of the existence and nature of a sign language grammatical structure. It explicates and demonstrates the general grammatical structure of sign language through contextualisation of language rules. The same language rules that apply to oral language grammar do apply to sign language grammar too. The language rules that are examined in this paper include morphology, syntax, semantics and pragmatics of sign language. It is the fervent hope of this author that serious readers of this article will get an additional benefit of learning, at least, some basic sign language. Examples are based on either Zimbabwean Sign Language (ZSL) or American Sign Language (ASL).

2. Sign language morphology

Morphology is the study of forms of words/signs. It can also be defined as the study of complex words/signs and the process by which these words/signs are formed. By the way a morpheme is the smallest unit of meaning of a language. According to Stokoe (1960) a chereme in sign language is equivalent to a phoneme in oral language. A detailed study of the morphology of sign language by Aronoff et al. (2000) revealed that sign languages exhibit complex motivated simultaneous morphology that is similar across unrelated languages, but with limited affixation, mostly arbitrary and different among languages. In short, all well studied sign languages all over the world demonstrate the same particular type of a complex but well established morphology (Aronoff et al., 2004). There are two central sign language morphological constructions, viz, verb agreement and path shape or path movement which is combined with hand shape, manner of movement and location (Emmorey, 2003). In this way, the morphemes are combined in a simultaneous rather than in a sequential manner (like what occurs in oral language). What this means is that parameters of handshape, orientation, movement and location for example will always co-occur in the process of executing a sign. This complex morphology, according to Aronoff et al. (2004) is linked conceptually and formationally to visuo-spatial cognition. This explains the fundamental difference of sign from oral language in that sign language is visual rather than oral and is spatial rather than sequential. Sign language is executed in space using manual and not vocal signs. An elaboration of the morphological construction of verb agreement and path movement demonstrates the systematic structure and sequence of the construction of sign language grammar.

3. Verb agreement, path movement and sequential affixation

Just like in spoken languages, verb agreement in sign languages is a grammatical system as it involves formal encoding of systematic and thematic roles. The only major difference is that verb agreement in sign language follows a 3-way classification of verbs which include plain, spatial and agreement verbs. All sign languages have verb agreement that exhibits this tripartite division of verbs. In other words, this verb agreement system characterises the universality of sign language morphology. Spatial verbs are those denoted by motion in space while agreement verbs are those that denote transfer, although some such verbs fail to inflect for agreement because of constraints imposed by their phonological structures. Plain verbs result from neither motion nor motion activities. In these regards, nominals in a clause of verb agreement are associated with discrete locations in space that are called Referential- loci or R-loci if you like. According to Aronoff et al. (2004) this association is achieved by first signing and then pointing to a specific point in space. This can also be done by directing the gaze towards the specific point in space.

The path which is followed by the verb is part of the semantic structure of verbs denoting transfer in sign language. The spatial nature of sign language enables this expression of the spatial-conceptual relationship to be more precisely and directly than in oral language. The start and end points of the verb path are the R-loci which are referred to herein. The path, thus moves between these R-loci and the points are actually associated with the subject and object of the verb. So the movement path is the link between the subject and the object of the sentence as expressed by the verb. When negation is used, the action becomes a sequential affixation.

Sequential affixation is another type of sign language morphology, which is however more commonly found in spoken languages. In sign language, sequential affixation is expressed through the many ways of negation. Negation is covered under syntax elsewhere in this paper. This type of affixation is done usually to a one handed verb in which the fingers form the shape of zero and the hand move outwards from the body, for example SEE+ZERO meaning 'Not see at all.' Or 'See not at all.' The justification for using the suffix instead of a free word is that for most signers, the suffix appears to be more lexicalised, phonologically focused to the verb and occurring only with limited set of verbs some of which have idiosyncratic (unusual) meanings (Sandler, 1996). For other signers the suffix is more productive since it can attach to adjectives too. Idiosyncratic rules tell what type of words or signs and language should be used with different communication partners. The rules guide the choice of signs according to the relationship between communicators, the context and content of the conversation as well as the cultural and professional connection between the communicators (Fernandez and Cairns, 2011). Jargon, that is, a specialised lexicon used among professionals, is one such example. For instance, doctors use medical jargon when conversing among themselves, but adjust their language when relating to their patients/clients.

4. Characteristics of verb agreement in sign language

There is need to appreciate that the verb agreement system in sign language characterises the universality of sign language morphology. Thus verb agreement in sign languages is simultaneous, rule governed, predictable, productive and universal. These characteristics are universal for all sign languages and further characterise sign language as a legitimate language. The simultaneous nature of verb agreement in sign language entails that a sign canonically assumes a prosodic template (for any sign whether morphologically simple or complex), that is; a location and a movement along a pathway and another location. This dual nature of execution of a sign in space characterises it as simultaneous (Aronoff et al., 2004). In addition, sign language has a specified rule governed system which defines its intelligibility and efficiency.

In other words, units of language such as signs are acceptable on the basis of set language rules. In the same vein, sign language is imbedded in culture and is accepted within a context of a particular Deaf culture. This argument forms the basis of the relationship between Sign Language and the Deaf culture. In addition, the principles that govern the direction of the path movement as expressed earlier are fully specifiable in sign language verb agreement. Further, verb agreement in these regards is also characterised by the mechanism of the facing of the hand, that is, the direction towards which the palm or fingertips are facing. This is often referred to as palm orientation.

Similarly, the tripartite classification of verbs (i.e according to spatial, plain and agreement) is predictable and need not be listed as an idiosyncratic property of each verb (Meir, 2000). The classification, according to Aronoff et al. (2004), is semantically predetermined. In these regards, sign language has an infinite number of meaningful units, for example. Productivity entails that, in sign language, an infinite number of signs and sentences can be generated. This entails the capacity of sign language to extend linguistic generalisations to novel contexts or instances (Berent et al., 2014). The verb agreement system is productive in that all verbs that meet the semantic and phonological conditions for agreement inflection indeed do inflect for agreement. Additionally, there is hardly any individual variation with respect to the verbs that comprise the class of agreement verbs manifesting in the possibility of an infinite number of meaningful sign language units (morphemes).

From the earlier expressions elsewhere in this paper, verb agreement in sign languages is universal, that is, it is the same in all sign languages of the world. In effect, all sign languages resemble each other in both the morphological instantiation of agreement and the meaning (Aronoff et al., 2004). This cross-linguistic resemblance implies that all sign languages have similar verb agreement systems, with a few exceptions such as the Taiwan Sign Language and the Sign Language of Japan. Despite these few exceptions, the tripartite classification of verbs still holds for all sign languages as does the spatial and simultaneous nature of their instantiation. This examination also reflects on the syntactical capability of sign language.

5. Syntax

Syntax is the study of rules that underlie the formation of grammatical expressions in a language. In other words, syntax is the study of constructing sentences or the rules and principles of sentence structure (Bentari, 2013). It is concerned with organisation or order of words/signs in a sentence. Syntax is not as constrained in Sign

Language as it is in oral language. Sign language syntax is conveyed through sign order and non-manual markers. Whereas spoken languages follow a subject-predicate structure, sign languages follow a topic-comment structure. These linguistic structures are equivalent in their own rights. However, the topic in sign language is not constrained. It is not always the subject, but can be whatever the comment is referring to, meaning that it can either be the subject or the object of the sentence as we shall witness shortly. While English always follows a Subject+Verb+Object (SVO) order, sign language can follow any of the following: SVO, OSV, SVOS, OSVS. For example, either ME GO HOME (SVO) or HOME ME GO (OSV). Thus, sentence structure in sign language can follow a variety of word orders.

This paper has already alluded to the fact that sign order in sign language is less constrained than word order in oral languages. Newport and Supalla (2000) concur that, sign order in sign language is relatively free (less constrained) with unmarked Subject, Verb, Object (SVO) order. The authors also suggest that, when verbs are marked for agreement, the subject and object may be omitted from the sentence. For example, the child may sign GOING + BUY or just GOING instead of SIGNING MOTHER IS GOING TO THE SHOPS. Newell et al. (1989) earlier on argued that, some verbs in sign language indicate grammatical relationships through the direction of their movement in space. The authors insisted that the subject and the object are implicated in the verb movement and therefore the movement of the sign indicates the subject and object of the verb. For instance, when the child signed GOING in the above example, she might have pointed at the mother and executed the sign for 'GOING' or 'GO' in the direction of the shops. Following are examples of various sentence structures to illustrate the flexibility, but legitimate structure of sign language. These can be classified as time-topic-comment sentences, rhetorical questions, declarative sentences, negation and pronominalisation.

Time-frame in sign language is established before signing the rest of the sentence when referring to a past or future event or activity. This creates a Time-Topic-Comment structure. For example, YESTERDAY JOHN READ BOOK. Put in another way, in tense with time, the time sign is placed at the beginning or near the beginning of a sentence. For example, TOMORROW ME GO TO TOWN. A more basic variation is the Topic-Comment structure in which the topic is described first followed by the comment. For example, HIS MONEY LOST, HE UPSET. Meanwhile, rhetorical questions are those which do not require a response from the second person. The question is often qualified with 'Why?'. At times the signer asks the question and immediately provides an answer. For example, ME HAPPY WHY? MOTHER COME or ME HUNGRY, WHY? EAT LUNCH NOT. In general rhetorical questions involve the 'wh' words, that is who, what, why, where, when? One of the non-manual markers that accompany the 'wh' words is raised eyebrows. Rhetorical questions can be conceptualised as the flip side of declarative sentences.

Declarative sentences can be affirmative, negative or neutral statements recognisable by using appropriate non-manual markers. Examples of some of the non-manual markers include nodding or shaking head, scrunching up face, frowning etc. Examples of declarative sentences are as follows: ME WRITE MATH FINISH, ME RUN CAN'T. In addition, but unlike declarative sentences, negation can be formed by signing NOT before the word, for example, ME NOT HAPPY. It can also be formed by shaking head while signing the word. Generally, a thought, for example, can be negated by placing a negative 'sign' before the verb or after the description of a topic (like the example of ME NOT HAPPY) or by giving a negative head shake. Reversal of orientation is another way of forming negation. For example, reversing the palm orientation can be used to express the meaning of the original sign. Meanwhile, pointing to a referent in space using the index finger, an action common with babies, is reminiscent to what is termed pronominalisation.

Pronominalisation entails pronouns indicated by pointing to a person, object or a place within the signing space that is used as a referent point. It is often done using the index finger or eye gaze accompanied by hand shape. Pronominalisation is also called indexing and involves setting up a point in space to refer to a person or object that is not present in the signing space. The signer identifies the person or object and then 'index' that person or object to a point in space. Each time the signer can refer back to the same point. Indexing can also be contextualised within the R-loci in agreement verbs which have been elaborated elsewhere in the paper. Personal and possessive pronouns and directional verbs are often used to address referents within the signing space. Reference to the addressee and other participants is performed in the signing space in front of the signer's body, but reference to the signer is always done by pointing to the signer's body (Maier et al., 2013). First person reference (e.g I, me, am) can therefore be distinguished from other pointing signs in being expressed with a default, non-context dependent location. This has implications for the semantics and pragmatics of sign language.

6. Semantics and pragmatics

Semantics is the branch of linguistics which is concerned with meaning. Some authors view semantics as the science of meaning. In semantics we are concerned with the meaning of words, signs and expressions while in pragmatics the focus is on the use of language for specific purposes. A sign may refer to different meanings depending on the context of the conversation. The pragmatics rule of language often applies to social communication. The issue of reference to the addressee and other participants, which is imbedded in pronominalisation is in effect a matter of pragmatics in sign language. Thus, first person reference can be distinguished from other pointing signs for instance by expressing it with a default non-context independent location. On one hand, the pragmatics of reference to the signer is that it is always done by pointing to the signer's body while on the other hand, the pragmatics of reference to the addressee is partly expressed through Grice (1975)'s cooperative principle which effectively is the general conversational maxim in sign language. The Gricean principle is descriptive of pronominalisation where reference to other participants and objects is made by pointing to the signing space as per the spatial nature of sign language grammar and qualified with visual focusing. The conversational maxim of sign language states: '*Always look at the addressee*'. While Gricean reasoning also applies to spoken language, clearly visual contact is more important for the deaf in sign language communication. In expressing intended meaning where signs tend to be similar, non-manual markers are used to achieve the specific purpose of the communication. This visual contact, used in conjunction with non-manual markers is central to the pragmatics of signing. In other words, to facilitate effective or successful sign language communication the signer should keep track of the addressee. This, according to Maier et al. (2013) can be pragmatically explained as behaviour that is central to sign language communication. Quite clearly this would depend on the amount and flexibility of an existing lexicon.

7. Lexicon

The lexicon of a language is the catalogue or stock of vocabulary that constitute a language. It is the language's inventory of *lexemes* (Geet, 2005). Lexemes can either be words or signs. Thus, a dictionary is a representation of attempts at listing, in alphabetical order, the lexicon of a given language. Metcalf (2002) posits that, when linguists study the lexicon of a language, they consider such elements as phonemes (*cheremes*); word-concept relationship; lexical access and lexical access failure; how a word's/sign's phonology, syntax and meaning (semantics) intersect; the morphology-word relationship; vocabulary structure; language acquisition and use; the history and evolution of words (etymology) and the relationship between words/signs. While Metcalf's thesis was based on oral language, Sign language does possess a credible lexicon too.

The sign language lexicon is categorised into the core, the non-core and the non-native lexicons. According to Fenlon et al. (2016) signs in the core lexicon are comprised of meaningless sublexical units with highly conventionalised form and meaning association. These are the signs typically found in a Sign Language Dictionary and most sign language phonological theory has been based on signs in the core lexicon. In contrast, signs in the non-core lexicon are made up of meaningful units and typically refer to classifier constructions or signs involving sequences of constructed action (Cormier et al., 2012). In other words, these are signs which are self-explanatory and provide meaning on their own. Signs in the non-native lexicon are those involving fingerspelled sequences. Fingerspelled sequences represent a form of borrowing where different configurations of the hand are each associated with a letter from the corresponding spoken language alphabet in order to spell out a word (Fenlon et al., 2016). In addition the signs in the non-core and the non-native lexicons differ in their structural properties from those in the core lexicon with regards to handshape inventories and application of phonological constraints and rules (Eccarius, 2008).

8. Discussion and conclusion

This paper was aimed at providing an exposition of the existence and structure of sign language grammar. With a few exceptions the paper demonstrated that sign languages of the world while not universal, have a cross linguistic resemblance which implies that all sign languages have similar verb agreement systems. Despite these few exceptions, the tripartite classification of verbs still holds for all sign languages as does the spatial and simultaneous nature of their instantiation. The paper concludes from the outset that sign language grammatical

rules are the same as those of oral language. While there are modality and lexical differences between sign and oral languages they both possess an analysable but complex lingual grammatical system. There is no plausible excuse whatsoever to perceive sign language grammar as inferior to that of oral languages. The paper therefore also concludes that sign language is a formal language with a specified, systematic and well established grammatical structure. The advantage of sign language though is that it does not possess a constrained lexicon. Thus, sign order is not highly restrictive, but formal and systematic in its own right making sign language more flexible than oral language.

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