

## Polish Sign Language Verbs

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### Abstract

The aim of this paper is to present an overview of the verbal system of Polish Sign Language (*Polski Język Migowy, PJM*) – the native language of the Polish Deaf community. Our analysis derives from corpus data and focuses on certain grammatical characteristics of PJM verbs. The classification of PJM verb signs outlined in this paper is based on the criterion of sign modifiability. We also report the results of an experiment that shows to what extent PJM predicates are interpretable when extracted from the discourse context in which they occur. The classification we propose could be of use in sign language lexicography, especially in bilingual dictionaries (Polish to PJM and PJM to Polish).

## 1 Polish Sign Language

### 1.1 Polish Sign Language and signed Polish

Polish Sign Language (*Polski Język Migowy, PJM*) is a natural visual-spatial language used by the Polish Deaf community. PJM emerged around 1817, with the foundation of the first school for the deaf in Poland – the Warsaw Institute of the Deaf-Mute and the Blind (cf. Świdziński, 2003). This language is genetically independent of the Polish language, and should not be confused with an artificial manually coded language created by hearing people, the so called Language-Sign System (*System Językowo-Migowy, SJM*), a kind of signed Polish, which combines signs from PJM, artificial signs and signs borrowed from other sign languages with the grammar of spoken Polish (cf. Szczepankowski, 1999). As a signed sub-code of Polish, SJM is a foreign language to the Deaf.

Up until recently the research on signing in Poland focused exclusively on SJM, perceived as a tool of communication between the hearing majority and the hearing-impaired minority. The research into the natural sign language started only less than 20 years ago (Farris, 1994), becoming part of the dynamically developing field of sign language linguistics (see e.g. Sandler and Lillo-Martin, 2006).

### 1.2 Articulation in sign language

Sign language is articulated with the whole body of a signing person, especially their hands and face, but also their torso. According to the tradition of sign language research, a number of sub-lexical parameters may be distinguished in a sign – perceived by some scholars as equivalent to phonemes, whereas by others solely as diacritic features of a sign. These parameters include the position of one or both hands, place of articulation of a sign, movement involved in sign formation, palm orientation relative to the body, and facial expression (cf. Stokoe, 2005).

### 1.3 Visual-spatial grammar

The grammatical system of PJM, as in any other visual-spatial language, includes components which are not considered part of grammar in spoken languages – body movements (e.g. leaning forward as one of the elements constituting a question) and facial expressions (e.g. raising eyebrows and frowning, wrinkling one's nose, mouth movements, direction of gaze), which mark, among others, the intensity of verbs, comparison of adjectives, interrogative and imperative sentences etc. Grammar of sign languages is characterized by three-dimensionality (spatiality) and the possibility of simultaneous articulation of signs (which results from the simultaneous use of different articulators, e.g. the manual and non-manual

ones). PJM is an analytic language, although some phenomena present in the language could be interpreted as examples of inflection, such as the behavior of directional verbs, i.e. signs whose meaning is modified depending on the direction (agent-patient, patient-agent) in which they are produced (e.g. in the sentence ‘you give me’, the sign GIVE is directed towards the signer, whereas in the sentence ‘I give you’, it is directed towards the addressee, cf. Grzesiak, Chrzanowska, 2007).

## 2 Verb signs

### 2.1 Distinguishing verb signs

The issue of dividing PJM signs into parts of speech is still open. It is often the case that the same sign plays different grammatical roles, depending on the context. This applies, among others, to PJM verbs, whose shape is often indistinguishable from the shape of semantically related nouns. Researchers attempting to identify the category of sign language verbs run up against numerous difficulties. For the needs of this paper we will tentatively define PJM verbs as a group of signs, which differ from nouns with respect to syntax and semantics – namely, through their predicative function. One of the most characteristic traits of PJM verb signs is the semantic incorporation of the agent/patient of the predication – we will therefore find signs such as WASH\_WINDOW, WASH\_WHOLE\_BODY, WASH\_FACE, WASH\_DISHES, but no general sign for WASH, one that could be combined with any object.

### 2.2 Classifiers and classifier predicates

When discussing sign language verbs, one cannot omit the related category of classifiers, i.e. signs that fulfil an anaphoric function. A classifier is a defined position of one or two hands, which replaces a previously indicated noun (Klima and Bellugi, 1979). The form of a classifier is unchangeable and reflects such qualities as shape, size, position in space; hence the division into person classifiers, animal classifiers (different for small and big animals, as well as those that move in a characteristic way, e.g. bears), vehicle classifiers (car, plane, bike, bus) and inanimate object classifiers (e.g. books). The use of a classifier makes it often possible to produce a sentence devoid of any lexicalized verb sign. In such cases, the so-called classifier predicates function as quasi-verbs. Such

predicates are based on a classifier handshape combined with a movement imitating the three-dimensional movement of the entity denoted (coding its speed, path and character). There is a lot of flexibility in what classifier predicates may look like. Their spatial and dynamic properties are often very complex since they are dependent on the real-world movement that is being mimicked. Therefore, it is usually difficult to describe the dynamic characteristics of a classifier predicate in terms of discrete linguistic features. The class of classifier predicates consists of a virtually unlimited number of possible combinations of various classifiers and movement types. Such predicates may imitate all kinds of real-world situations. For instance, a classifier predicate may represent a human being that moves (“walks”) in a certain direction, but also an instrument that is being handled by a human being in a certain way. Since classifiers do not denote specific entities but rather allude to their general physical properties, the exact interpretation of classifier predicates depends on the context in which they are used. To give an example, the classifier imitating a hand holding a pipe-like object combined with a back-and-forth movement may as easily refer to digging with a spade as to vacuum-cleaning.

### 2.3 Verb-to-object adaptation and imitation

Another important issue related to sign language verbs is what we somewhat generally label as verb-to-object adaptation. It is a quality of a sign, expressed by the modification of a verb’s shape, depending on the noun it takes. The character of these modifications is usually strictly iconic, i.e. they imitate the actual movements of an object (e.g. the notion of ‘swimming’ will be expressed with a different shape when referring to a person, a different one when talking about a frog, a still different one for a fish, and so on). Verb-to-object adaptation will therefore be linked to incorporation and the use of classifiers. In certain works the verb-to-object adaptation is described as a form of verb inflection (cf. Klima, Bellugi, 1979); however, it seems that in PJM the sign structure of the verbs in question does not contain any easily definable morphological sub-components comparable to inflection. The existence of such verbs seems to indicate the importance of the iconic aspect of sign language, which is reflected in many dimensions of language structure, and above all on the level of denotation mechanisms (cf. Taub, 2001).

Imitation, understood as the way in which the sign relates to reality, i.e. the similarity between the sign and its denotation, is a common phenomenon in sign languages.

### 3 Classifying PJM verb signs

#### 3.1 Other scholars' classifications

Previous research on sign languages has produced several classifications of verb signs, some more detailed than others. The basic distinction found in the literature is between plain verbs, spatial verbs, and agreement verbs (cf. Padden, 1988). This classification is based on the role the hands play in encoding the arguments of a verb. Plain verbs (e.g. LIKE in American Sign Language, ASL) resemble typical verbs in spoken languages, as they do not incorporate any grammatical features of their arguments, i.e. they have to be linearly combined with separate nominal arguments in order to form sentences. Spatial verbs (e.g. PUT in ASL) convey information related to the motion and location in space of their arguments (usually, the locative source and goal of an action), i.e. they often involve hand movement, whose path in space reflects the real-world movement related to the predication in question. Agreement verbs (e.g. GIVE in ASL) denote transfer, i.e. they encode the syntactic role of their arguments, e.g. by directing the movement of the hands from the subject to the object. Other criteria have also been used to analyze the syntactic properties of verbs in sign languages. For instance, Zeshan (2000) distinguishes a class of closed (i.e. unmodifiable) signs and a class of modifiable signs, which includes verbs. The latter may be modified according to the place of articulation, movement, and location in space. In the following section we would like to propose a classification of PJM verbs, based not on how the arguments of verbs are encoded, but rather on the criterion of modifiability.

#### 3.2 Three classes of PJM predicates

Our research is based on 2 hours of video material selected from the corpus of PJM that is being compiled at the University of Warsaw. In the PJM corpus project, data is collected from signers who either have Deaf parents or have used PJM since early childhood. The informants are asked to react to certain visual stimuli, e.g. by describing a picture or discussing a video recording. The signers are all adults and come

from different regions of Poland. For the purposes of the present study, we have analyzed the semantic and syntactic properties of all the predicates that occur in signed utterances produced by two PJM signers (one hour of recorded material per person). A detailed inspection of this set of data has allowed us to distinguish three types of PJM predicates. Their main characteristics are discussed below.

##### 3.2.1 Context-free predicates

This class consists of plain verbs that do not undergo any contextual modifications. It includes signs like SEEK, SLEEP, MEET. From the syntactic point of view these predicates behave like verbs in spoken languages, i.e. they are linearly combined with their arguments. Most importantly, they do not adapt in any way to their arguments, which means that their shape is independent of the sentential context in which they occur.

##### 3.2.2 Context-modifiable predicates

This class includes verbal signs that are usually modified in a certain way, i.e. they adjust to their sentential context. The modification in question may be related to one of the following parameters:

- direction and path of movement (resulting from the presence and location of the agent and patient of an action); this kind of modification is possible in the case of predicates like CRITICIZE, HAVE, LOOK, e.g. the sentences 'I criticize you' and 'you criticize me' have to be signed in the opposite directions;
- manner (speed, intensity, emotional attitude towards an action etc.); e.g. EXERCISE, THINK, QUARREL; this kind of modification is usually obtained not only by intensifying the movement parameter, but also through the use of non-manual elements, e.g. in the sentence 'I exercised hard' the predicate is accompanied by a frown that functions as an intensifier;
- aspect (expressed through the opposition of one vs. reduplicated movement or created with the aid of analytical constructions, i.e. by using auxiliary signs, such as ALREADY or WAS which mark perfectivity).

##### 3.2.3 Context-dependent predicates

This group includes predicates that are essentially imitational/mimetic. Their shape is strictly dependent on the action that they refer to.

Most of them are classifier predicates, i.e. they include one of many classifier handshapes available in PJM. However, the classifier seems to be the only conventional element in such signs. The rest of the semantic content is conveyed by an iconic movement, which can be freely modified. For instance, when a signer wants to refer to ‘sliding down a slide’, they will use a classifier representing a person and move it in three-dimensional space, following the path of the real-world slide that is being referred to. Needless to say, the exact interpretation (i.e. the fact that such a sign refers to sliding and not to, for instance, ski jumping) derives from the context.

### 3.3 An experiment: semantic interpretation of context-dependent predicates

In order to judge whether the above classification corresponds to psychological reality, we have carried out an additional questionnaire investigation aimed at testing the degree to which context-dependent predicates are interpretable out of the context in which they were originally produced. We presented a number of short video clips extracted from the PJM corpus material to 15 subjects: five native signers, five L2 learners of PJM, and five hearing speakers of Polish with no knowledge of PJM. They were all asked to interpret a set of classifier predicates, which consisted of the following 12 signs:

Clip No.	Original meaning
1.	to dabble in water
2.	to pillow fight
3.	to yell at each other
4.	to gnaw at leaves
5.	to sniff at each other
6.	to vacuum clean
7.	to vacuum clean (with the carpet sucked into the vacuum cleaner)
8.	to swim (synchronized, forming a heart-like shape)
9.	to handle a surfboard

10.	to ballet dance
11.	to climb a ladder
12.	to slide down a slide

The subjects were not told anything about the grammatical status of the signs (i.e. whether they were nouns or verbs) – their only task was to explain (or, as in the case of the subjects with no knowledge of PJM, to guess) the meaning of the 12 signs. The informants filled out the same questionnaire in which they were asked to give all the possible meanings of each of the signs presented to them. Our initial expectation was that the native signers should be able to interpret the predicates more easily than the other subjects. However, the results showed that, when devoid of contextual information, context-dependent predicates are equally difficult to interpret for the three groups of subjects. The table below shows the responses that we obtained.

Clip No.	Responses in the experiment		
	Deaf	PJM Learners	Hearing
1.	to drum [2 subjects], bicycle, to run, bull	running animal, dog to drum, to laugh, to play the piano	to drum [2 subjects], to run [2 subjects], to swing legs
2.	to fight [2 subjects], arrival [2 subjects], adventure, meeting, to whip	meeting, assembly, to kill, to slap, to pack, to load	to beat [2 subjects], to fight, to hit, to explain
3.	to bite each other [2 subjects], to shout [2 subjects], to quarrel	to gossip, to quarrel, to bite, to bark, to growl, to shout	to quarrel [3 subjects], to shout, to eat
4.	to scratch [3 subjects], to fawn, to bite	to scratch [2 subjects], predator, to knock, to dial	to shout [2 subjects], to eat, to talk, animal

5.	to jump [2 subjects], to have sex [2 subjects], request	to prepare for a fight, to analyze, to plug in, to yelp, two animals	to jump, to pick, to cry, to look at each other, difficulty
6.	to pump [3 subjects], to vacuum clean, to fish	to pump, to drag, to drop, to play the double bass, to pull on	to drag [2 subjects], to pull [2 subjects], to vacuum clean
7.	to dig [3 subjects], spade, to bury	to dig [3 subjects], spade [2 subjects]	to dig [4 subjects], to broom
8.	sky, heart [2 subjects], necklace of beads, carousel, amusement park, bundle	to swim, a heart-like shape made by two planes, aerial stunts, love, swans	love [2 subjects], dolphins, lovers, change
9.	to rock [4 subjects], to tear off	to rock [3 subjects], baby carriage [2 subjects]	to swing [2 subjects], to bike, to move, to shake
10.	ballet [2 subjects], dancing [2 subjects], metronome	metronome, legs, to bounce, pendulum, Charlie Chaplin	dancing [2 subjects], legs [2 subjects], cutlery
11.	squirrel [2 subjects], to climb [2 subjects], ladder	to climb [4 subjects], stairs	to climb [2 subjects], to write, to seek, to go up
12.	to jump [2 subjects], slide, going down, ski jump	to land [2 subjects], to go down and land, ski jump, going down	to land [3 subjects], ski jump, to jump

interpretation. Interestingly, most of the subjects correctly identified the signs presented to them as verbs, however the exact meaning was much more difficult to define. This suggests that context-dependent predicates are far more iconic and far less conventionalized than other PJM signs. They also allow for a virtually unlimited number of modifications. Although we do not assume that these results can be interpreted as conclusive evidence for the necessity of distinguishing context-dependent predicates from other types of PJM verbs, we can clearly see that, unlike their counterparts in spoken languages, such predicates are underspecified with respect to their semantic value, which makes them difficult to interpret out of the discourse context in which they occur. This kind of underspecification does not seem to have obvious parallels in spoken languages. We treat this experiment as a pilot study for further research.

#### 4 Summary

We hope that this short review of some important issues related to the distinguishing and classifying of PJM verb signs has allowed us to demonstrate the problems that may be encountered by a researcher of a visual-spatial language, especially one that still remains a terra incognita, like PJM. The proposed classification of PJM verbs is of course a tentative one; it may however be the basis for further, more detailed research. Such research could result, among other things, in facilitating the process of compiling PJM dictionaries. Sign lexicography in Poland is practically non-existent – up until today the only dictionaries published have been those between Polish and signed Polish (SJM), which are usually collections of photographs presenting signs accompanied by glosses in Polish (cf. Hendzel, 1995). Obviously, one of the most problematic issues related to PJM lexicography is that of assigning a grammatical interpretation to sign lexemes. The classification of verbs proposed in this paper could be used in lexicography by providing verb signs with information on what types they belong to and what their possible modifications are. This information could be of great use in the sign language learning/teaching process.

Our experiment showed no significant differences between the three groups of subjects in terms of the accuracy of semantic

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