

MIEKE VAN HERREWEGHE
**PRELINGUALLY DEAF PUPILS AND DUTCH SYNTAX: A RECEPTIVE
 LANGUAGE STUDY**

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1. Introduction

Flemish deaf youngsters are in a peculiar linguistic position. Since about 90% has hearing parents their “mother” tongue is Dutch. However, this mother tongue is not easily accessible to them since the auditive input path is blocked. Still, in Flanders most deaf pupils are raised in oral settings in which their “first language” (the Flemish-Belgian Sign Language, which is easily accessible to them) is totally disregarded. In Flanders a number of educational psychologists (together with some people from the Netherlands) have developed a special type of oral education called “differentiating communication philosophy”. In this philosophy deaf children are raised to become as ‘hearing’ as possible, so most of the children are placed in a strictly oral educational setting. However, because some deaf children have a lot of problems with strictly oral communication they can be placed into programmes that give support to spoken Dutch and speechreading by means of written Dutch and/or fingerspelling and/or signs. For this purpose deaf children are tested when they are about four years old and on the basis of the results (and a number of other, mostly environmental, factors) placement is made. In Flanders only a minority of deaf pupils is raised in a “total communication” setting in which “Signed Dutch” (a communication system in which every Dutch word is –or rather is supposed to be– supported by the corresponding sign) is used, but here also sign language is not included. Furthermore at the time of testing one school advocated spoken Dutch and speechreading supported by cued speech².

As a result right now there are no bilingual programmes (Flemish-Belgian Sign Language - Dutch) in Flanders, but most of the deaf pupils –except some of the mainstreamed pupils– can be considered bilingual as they nearly all use sign language outside the classroom.

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² i.e. small handsignals next to the mouth to show the difference between phonemes that look alike, e.g. /b/, /p/ and /m./

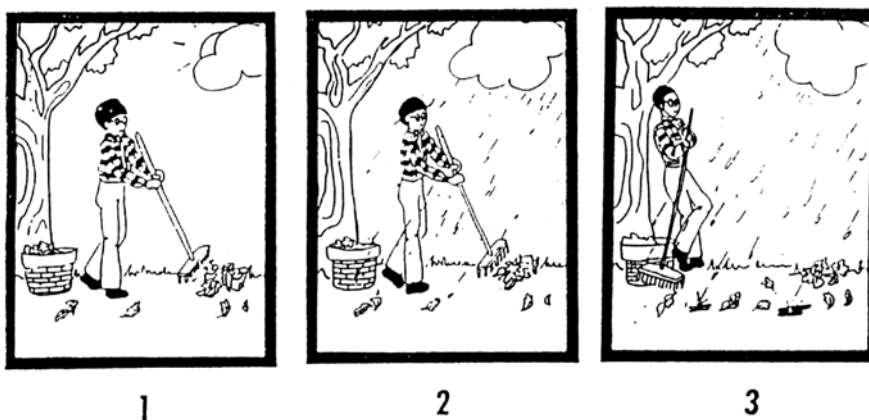
2. Goal of the study

In the 70s and early 80s the English syntactic competence of a number of American deaf pupils was tested resulting in a fairly gloomy picture: for some syntactic structures the average deaf eighteen-year-old did not have that many problems, but for others (passive constructions, medial relative clauses, etc.) they did not even reach the level of hearing ten-year-olds (Quigley et al, 1976; Robbins & Hatcher, 1981). Up till now in Flanders nobody had ever studied the level of deaf pupils' competence in Dutch (syntax), although many educators feel that there are many problems in that area. I therefore used two tests to study some aspects of their syntactic competence to know whether they have problems with certain syntactic structures and if so with which structures. The first was a receptive test, the second a productive test. It is on the first test, the receptive syntactic language test, that I want to dwell in this paper.

3. Method

To test the comprehension of certain syntactic structures a translation and adaptation to Dutch (cf. Harder, 1990) of the "Rhode Island Test of Language Structure" (Engen & Engen, 1983) was used. The test consists of 96 (50 simple, 46 complex or compound) written sentences reflecting different syntactic structures. Each sentence is accompanied by three drawings of which only one adequately shows what is expressed in the sentence (and the other two include at least one of the arguments of the sentence so that they are at least plausible):

66. voordat het gaat regenen, veegt de man de bladeren bij elkaar.



Prior to the actual testing I did 4 example sentences together with the subjects to make sure that they all understood what was required of them. The subjects were generally tested in groups of about ten.

4. Subjects

The deaf population is a very heterogeneous group and linguistic statements about the whole group are generally too superficial to be valuable. Therefore I only tested deaf pupils who satisfied the following requirements:

All subjects had to be prelingually deaf, i.e. deaf before the age of three (an age-limit based on Conrad, 1976);

All subjects had to have an average hearing loss of 90 dB on the best ear (based on their Fletcher-indexes);

They were not otherwise disabled. There are for instance deaf people with Usher-syndrom who are not only hearing impaired but also visually impaired and who wouldn't have been able to sufficiently see the relevant drawings.

All the subjects had to have a performal IQ of at least 80.

The subjects had to be able to read texts written for the second grade so as to make sure that they had no problems with technical reading. That is why the youngest subject was 7;4 years old (and the oldest 21;4).

In total 146 subjects were tested. This is the whole Flemish population who satisfy the above requirements (except for 4 pupils who were sick at the time of testing or who refused to participate). They were subdivided into the following age groups: younger than 9 (10 subjects), 9 - 10 (26 subjects), 11 - 12 (38 subjects), 13 - 14 (25 subjects), 15 - 16 (27 subjects) and 17 and older (20 subjects). 121 of them were educated in special schools for the deaf, 25 in a mainstream setting (including two to four hours of additional tutoring generally by a language pathologist and/or a sort of itinerant teacher). As for communication in the classroom the following groups can be distinguished:

52% purely oral communication (i.e. the stress is on spoken Dutch and speechreading)

18% oral-graphic communication (i.e. spoken Dutch generally supported by written Dutch)

10% oral-dactyl communication (i.e. spoken and written Dutch which can be supported by fingerspelling)

5.5% spoken Dutch supported by cued-speech

2.7% oral-manual communication (i.e. spoken and written Dutch and speechreading supported by signs³)

14.5% total communication (i.e. generally a form of simultaneous communication in which Signed Dutch is used).

Furthermore 42% were boys, 58% girls, 90.4% had hearing parents, 9.6% deaf parents, and the socio-economic status of 22% was high, of 24% middle, of 49% low and of 5% unknown.

Moreover the test was administered to 34 second grade hearing children with an average age of 8 years.

5. Results and discussion

5.1. Order of Difficulty of Sentence Types

As was mentioned above the test consisted of simple, complex and compound sentences with different syntactic structures. For each structure there were at least four sentences. The following table shows the overall results for each type for the different age groups.

age groups	--9	9-10	11-12	13-14	15-16	17-	tot
sentence types							
1. Type 1a (SV)	100	98	98	95	100	100	98.3
2. Non reversible passives	95	94.2	98.7	96	99	98.7	97.3
3. Type 4 (S 'is' Cs)	94.4	93.6	99.1	96	99.6	97.2	97.1
4. Type 2 (SVOd)	92	96.1	96.3	95.2	96.3	99	96.2
5. Negation	92	90.8	97.4	96	99.3	93	95.3
6. Conjoined clauses	86	85.4	94.7	96.8	99.3	96	93.8
7. Type 1b (SVA)	91.2	93.7	93.7	92	95.4	92.5	93.4
8. Type 3 (SVOdOi)	82	84.6	95.3	94.4	99.3	98	93.4
9. Direct object clauses	90	82.3	93.2	92.8	97	88	91.5
10. Final relative clauses	90	89.2	90	92.8	96.3	87	91
11. Embedded imperative clauses	80	83	93.7	89.6	94	96	89.2
12. Expanded simple sentence	71.7	81.4	85.1	85.3	96.3	88.3	86
13. Deletion	78	70.8	87.9	91.2	92.6	83	84.9
14. Final adverbial clause	70	75.5	80.6	80	87	79.4	79.9
15. Initial adverbial clause	65	68.7	72.7	75	82.9	73.7	73.9
16. Reversible passive	72.5	53.8	62.5	54	75.9	58.7	62.2
17. Medial relative clause	40	45.4	57.9	57.6	59.3	59	54.8
simple sentences	87.4	88	91.8	88.7	95.6	91.5	91.1

³ The reason why this group is distinguished from the next is because here the pupils get signs supporting spoken Dutch because they cannot handle oral communication only or oral-graphic communication, etc. It is therefore a negative choice often as a result of failure in one of the above groups and the pupils were generally only introduced to signs when they were already older than five or six. In the total communication philosophy signing is a positive choice and parents are encouraged to use signs (basically in the form of Signed Dutch) with their children as early as possible.

MIEKE VAN HERREWEGHE

complex and compound sentences	73.9	74.7	83.1	83.6	88.1	80.9	81.7
all sentences	80.9	81.6	87.7	86.8	92	86.4	86.6

However, to get a picture of the order of acquisition of these syntactic structures I decided to adopt the following strategy: if for a particular sentence type 90% of the subjects in an age group point out a correct answer in 75% of the sentences for that sentence type (e.g. 3 out of 4 sentences correct) then I decided that the particular syntactic structure could be considered acquired at that age. I did not take the youngest and the oldest groups into account because I assumed that they were not really representative: the youngest because they are probably a lot better than many other deaf pupils of the same age who have not yet reached a second grade reading level and were thus not tested; the oldest because many deaf pupils older than 17 have already left school and gone to work and their Dutch may be better than that of those who are still at school because they had to retake one or more years⁴. If we do not consider those groups we can deduce the following order of acquisition:

Sentence types acquired by 9- to 10-year-olds:

Type 1a (SV), e.g. **Het kind slaapt.** ‘*The child sleeps.*’ With this type there were no problems worth mentioning.

Type 1b (SVA⁵), e.g. **De poes ligt op de stoel.** ‘*The cat is on the chair.*’ This type did not cause remarkable problems either, except for the one sentence containing a place adverbial introduced by ‘achter’ (*after* or *behind*): ‘De poes loopt achter de hond’ (*The cat is running after the dog.*). This will be discussed further down.

Type 2 (SVOd), e.g. **Mama wast de baby.** ‘*Mummy washes the baby.*’

Generally there were no problems with this sentence type, except for some 7- and 8-year-olds who didn’t seem to be sure about whether subject and direct object were respectively agent and object or not. For the sentence ‘mama kust papa’ ‘*Mummy kisses daddy*’ they pointed out the drawing in which the man kisses the woman.

Type 4 (S ‘is’ Cs), e.g. **Het meisje is ziek.** ‘*The girl is ill.*’ There were no particular problems here. One anecdote, however, taught me that finding good testing material is not easy. One of the sentences was ‘Het kleine kind is een meisje.’ (*The small child is a girl*) and

⁴ The table clearly shows that the subjects in the age group 17 and older perform worse than the ones in the age group 15-16.

⁵ ‘A’ refers to adverbial adjunct.

some of the pupils were actually measuring up the drawings to decide which girl was the 'smallest' (taken literally).

Non reversible passives, e.g. **De appel wordt door het meisje gegeten.** 'The apple is eaten by the girl.' Again there were no particular problems.

Sentence types acquired by the age of 11:

Type 3 (SVODoi), e.g. **De zuster geeft de baby aan mama.** 'The nurse gives the baby to mummy.' Many of the pupils younger than 11 displayed word order problems. In the example mentioned, for instance, the subject functions as agent and the indirect object as recipient. Up to the age of 11 most of the children tested changed this around: they pointed out the picture in which the mother gives the baby to the nurse.

Negation, e.g. **De man heeft de vis nog niet gevangen.** 'The man has not caught the fish yet.' In the group of the 9- to 10-year-olds about one sixth still had serious problems with negation. They interpreted these sentences as positive.

Expanded simple sentences, e.g. **Het kleine dikke meisje met krullen zit in de slaapkamer te huilen.** 'The small fat girl with curls is crying in the bedroom.' This type contains type 1, 2 or 3 sentences expanded with an adverbial. That way they are considerably longer, but not more complex. Only younger deaf children could not correctly interpret these sentences which suggests that they may have short term memory problems. By the age of 11 this seemed to have been solved.

Adverbial clauses (except for those introduced by 'voordat', 'before'), e.g. **Mama was blij toen papa haar een cadeau gaf.** 'Mummy was happy when daddy gave her a present.' Apart from temporal clauses introduced by 'voordat' ('before') there were temporal clauses introduced by 'terwijl' ('while') and 'toen' ('when') and causal clauses introduced by 'omdat' ('because'). These last ones proved difficult for deaf pupils younger than 11, who did not seem to have acquired causality yet. Temporal clauses introduced by 'terwijl' and 'toen' both express simultaneity with the main clause. I assume that this is the reason why there was no difference in difficulty between sentences beginning with the temporal clause and the ones beginning with the main clause (although this was the hypothesis). Eventhough many pupils did not know the word 'terwijl' (many explicitly asked me what it meant) they still pointed out the correct picture because they guessed that the one in which both 'events' (one from the subordinate clause and one from the main clause) was drawn was the correct one.

Final relative clauses, e.g. **Mama draagt de baby die huilt.** ‘*Mummy carries the baby who is crying.*’ There were no particular problems here. The mistakes some (usually younger) pupils made were probably caused by the length of the sentences.

Conjoined clauses, e.g. **De jongen gaat naar school, maar het meisje blijft thuis.** ‘*The boy goes to school, but the girl stays at home.*’ Sentences containing two conjoined clauses without deletions did not cause many problems except for the younger ones for whom length can be troublesome.

Embedded imperative clauses, e.g. **Mama zegt: ‘Doe de deur open.’** ‘*Mummy says: ‘Open the door.’*’ Especially younger children seemed to interpret imperative clauses as declarative clauses. In the example mentioned they would point out the drawing in which a woman is opening a door. This picture conforms to a declarative sentence like ‘Mama doet de deur open.’ (‘*Mummy opens the door.*’) or ‘Mama zegt: “Ik doe de deur open”.’ (‘*Mummy says: “I open the door”.*’). However, as of the age of 11 deaf children do not seem to adopt this strategy anymore.

Direct object clauses, e.g. **De juf zegt dat het meisje het boek moet oprapen.** ‘*The teacher says that the girl has to pick up the book.*’ Again only the younger children had problems with this type, probably due to the length of the sentences.

A sentence type acquired by the age of 13:

Deletion, e.g. **De jongen sloeg het meisje en liep toen weg.** ‘*The boy hit the girl and ran away.*’ This type contains sentences with two conjoined clauses while in the second clause one or more element(s) is/are deleted. Unfortunately different types of deletions were lumped together in this type, so that we do not really get a clear picture. It was obvious, though, that many pupils (especially the ones younger than 13) had problems with the sentence above in which the subject of the second clause is omitted. They interpreted the object of the first clause as subject of the second clause due to the ‘*Minimal Distance Principle*’, a strategy also found in the literature on first language acquisition (Rosenbaum, 1967).

A sentence type acquired by the age of 15:

Reflexive verbs, e.g. **De jongen snijdt zich met een mes.** ‘*The boy cuts himself with a knife.*’ One of the sentences of the type ‘expanded simple sentence’ contained a reflexive verb. Here more than one third of all the subjects pointed at the wrong drawing. Only the 15- and 16-year-olds seemed to be able to give a correct interpretation. I assumed that the problems with this sentence were not caused by its length, but by the presence of the word ‘zich’

(*himself*) which many of the pupils did not know. Some of them even asked me whether ‘zich’ is the same as ‘gezicht’ (*face*)!

Sentence types not even acquired by the age of 16:

Reversible passives, e.g. **De jongen wordt door het paard geschopt.** ‘*The boy is kicked by the horse.*’ This type proved extremely difficult for nearly all pupils. They usually interpreted the subject as agent and the adjunct as object (just as young hearing children in their first language acquisition) or applied their knowledge of the world to arrive at their interpretation.

Adverbial clauses introduced by ‘voordat’ (*before*), e.g. **Voordat de jongen zijn brood opeet, maakt hij een schilderij.** ‘*Before the boy eats his bread, he makes a painting.*’ This type proved to be the most difficult of all. Fewer than half of the 15- and 16-year-olds had acquired this syntactic structure. They generally adopted one of two strategies: either they thought that the clause which comes first also happened first (leading to a wrong interpretation when the temporal clause came first and to a right interpretation when the main clause came first) or they thought that the two ‘events’ mentioned in the two clauses happened simultaneously.

Medial relative clauses, e.g. **De auto die de man heeft gekocht, is oud.** ‘*The car which the man bought, is old.*’ Again this is one of the types causing major problems for deaf children and adolescents. Comparable to hearing children acquiring a first language they generally adopt the ‘*Minimal Distance Principle*’ to arrive at their (wrong) interpretation: the noun closest to the verb of the main clause is considered the subject of the main clause. In the example above this means that they think that the man is old rather than the car. Unfortunately even many of the 16-year-olds still adopt this principle. On the other hand some subjects relied upon their knowledge of the world. One of the sentences, for example, was ‘De jongen die met de man praat, zit in de auto.’ (*The boy who is talking to the man sits in the car.*). Some pupils told me that the drawing in which the boy sits in the car (behind the steering wheel) was ‘wrong’ because the boy was not old enough yet to drive a car.

Place adverbials introduced by ‘achter’ (*after* or *behind*), e.g. **De poes loopt achter de hond.** ‘*The cat is running after the dog.*’ Sentences containing a place adverbial introduced by ‘achter’ were not really tested as a separate type, but they did show up in some of the other types. During the analysis of all the sentences it then became obvious that many pupils had problems with such sentences. For the sentence above, for instance, –a sentence belonging to type 1b– 36% of all the subjects chose the drawing in which the dog is chasing the cat (which

is of course also more logical if you apply your knowledge of the world). I suspect that in these cases we can talk about interference from Flemish-Belgian Sign Language although more research is necessary to verify this hypothesis.

5.2. Comparison to hearing eight-year-olds

Because of lack of space the comparison between the deaf and the hearing subjects will necessarily be short. It can be deduced from the following table that for the hearing 8-year-olds all of the tested syntactic structures can be considered acquired, with the exception of medial relative clauses. All of the mistakes made by the hearing 8-year-olds in this type involved the application of the '*Minimal Distance Principle*'. The relatively low score on the expanded simple sentences was caused by one test sentence for which the correct drawing was quite unclear.

The following table also shows that the deaf 13- to 14-year-olds approach the level of the hearing 8-year-olds for the first sentence types, but that gradually the gap between them widens and widens. It is only at the age of 15 to 16 that they actually surpass the level of the hearing 8-year-olds, with the exception of the last four types⁶ which remain extremely problematic for the deaf pupils.

subjects	deaf 13- to 14- year-olds	deaf 15- to 16- year-olds	hearing eight-year-olds
sentence types			
1. type 1a	95	100	99.3
2 non reversible passive	96	99	99.3
3. type 4	96	99.6	98
4. type 2	95.2	96.3	97.6
5. negation	96	99.3	95.3
6. conjoined clauses	96.8	99.3	99.4
7. type 1b	92	95.4	97.4
8. type 3	94.4	99.3	97.6
9. direct object clause	92.8	97	98.8
10. final relative clause	92.8	96.3	95.9
11. embedded imperative clause	89.6	94	92.9
12. expanded simple sentence	85.3	96.3	89.2
13. deletion	91.2	92.6	91.2
14. final adverbial clause	80	87	96.3
15. initial adverbial clause	75	82.9	97.1
16. reversible passive	54	75.9	97.1
17. medial relative clause	57.6	59.3	88.2
simple sentences	88.7	95.6	96.6
compound sentences	83.6	88.1	95.5
all sentences	86.8	92	96

⁶ As will have become clear from the previous parts sentence types 14 and 15 are only problematic for part of the test sentences, viz. the ones containing temporal clauses introduced by 'voordat' ('before').

5.3. Interpersonal variables

Finally I also looked at interpersonal variables to decide which non-linguistic factors may influence deaf pupils' acquisition of certain syntactic structures in Dutch. Indeed, a number of variables proved to be significant:

Type of education: those pupils who are mainstreamed in 'hearing' schools perform significantly better than the pupils in special education settings. This, of course, was very predictable since only those students who already have good oral skills and a high level of Dutch are eligible for mainstreaming.

*Socio-economic status of the mother*⁷: there is a significant difference between the deaf children with 'upper group' mothers on the one hand and deaf children with mothers from the middle and lower groups on the other.

Age of first hearing aid (and thus also the age at which auditory training started): pupils who got their first hearing aid before the age of two score significantly better than those who got one later.

Intelligence: there is a significant difference between highly intelligent subjects (i.e. with a performal IQ of more than 120) and the rest. The difference between subjects with a normal intelligence (performal IQ of 100 to 120) and those with a weak intelligence (performal IQ of 80 to 100) is almost negligible.

A remarkable outcome of this study was that type of education was correlated to two of the three other factors yielding significant differences: deaf mainstreamed pupils are nearly all children and adolescents with a significantly higher performal IQ and from a significantly higher socio-economic background. They constitute about one sixth of the total population.

⁷ Concerning the socio-economic status of the mothers (and fathers) three groups were made based on both educational background and occupation. Some examples are:

lower group:

studies: primary education, secondary vocational or special education, lower secondary technical education

occupation: blue collar worker, cleaning lady, seamstress

middle group:

studies: higher secondary technical education, lower secondary general education

occupation: sales representative, army officer, civil servant, shopkeeper

higher group:

studies: higher secondary general education, higher education

occupation: teacher, nurse, doctor, biologist

The question is of course what can be done to enhance the level of Dutch of five sixths of the population, being pupils with a normal to weak intelligence and a middle to lower socio-economic background.

A number of variables were not significant, but showed a positive or negative tendency:

Socio-economic status of the father: comparable to the socio-economic status of the mother, there is a big gap between the higher group and the other two.

Type of communication in the classroom: TC-pupils score slightly better than strictly oral pupils and oral-graphic pupils. Then there is a breach between these three groups and the rest, i.e. oral-dactyl pupils, oral-manual pupils and oral-cued speech pupils (but it must be taken into account that the oral-cued speech pupils are all primary school children).

There were hardly any differences for the following variables:

Deaf or hearing parents: contrary to many other (non Flemish) studies in which deaf children from Deaf parents generally obtain better results than deaf children from hearing parents, there were hardly any differences in this study.

Degree of hearing loss: all subjects already had a hearing loss of more than 90dB on the best ear. An even greater hearing loss (between 100 and 110, between 110 and 120 and more than 120 dB) did not make a difference.

Sex: contrary to many linguistic studies in which girls tend to perform better than boys, there were hardly any sex differences in this study.

Residence: whether the subjects came from a town/city or a village did not make any difference.

6. Conclusions

This study brings out quite obviously that in Flanders deaf education the way it is organised now fails to a large extent as far as acquisition of Dutch is concerned. However, the situation in Flanders has slightly changed since this test was administered.

The cued speech-school has dropped cued speech altogether and would like to start off with bilingual education as soon as possible (right now there are only a number of administrative problems which will probably be solved in 1998).

One of the total communication schools hardly has any deaf pupils left, and the other one has been merged with a differentiating communication school which has had a fairly strong impact on the school's total communication philosophy.

The schools with a differentiating communication philosophy have slightly changed their outlook. First, deaf pupils with better Dutch and better oral skills are mainstreamed as much as possible, whereas at the time of testing this was done more tentatively. Second, in the deaf schools there are now two major divisions: there is an oral group (with support by means of written Dutch if necessary) and there is a manual group (in which communication is in Signed Dutch). Placement is made as soon as possible (generally at about the age of three to four) on the basis of a number of tests and environmental factors (e.g. whether the child has deaf parents or not). This, however, has a very alarming effect, because at lunchtime and in the mornings and evenings that division is being held up. In reality this means that orally raised children have no (or hardly any) contact with native signers (i.e. deaf children of deaf parents). In deaf education all over the western world there is a history of deaf children of hearing parents learning sign language from their deaf peers on the school playground. That is why deaf children can and could become fluent signers eventhough sign language has not been or was not used in the classroom nor by their parents. In recent years a number of deaf educationalists have uttered some concern about mainstreamed deaf children becoming semi-lingual since they are not being exposed to sign language in a 'hearing' school and they have many problems with the spoken language. I at this point would like to add my own concern about the linguistic development of these orally educated deaf children that are separated from their signing peers. In my opinion they are potential semi-linguals as well.

Personally I think that these results show that differentiating communication nor total communication result in the desired level of spoken or written language competence. There are some exceptions but they are generally children from a high socio-economic background and with an exceptionally high IQ. Therefore I think it is high time that in Flanders people should examine how and in which form bilingual education for deaf children can be implemented.

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