1974 Sign Language Studies

IMPLICATIONAL VARIATION IN AMERICAN SIGN LANGUAGE: NEGATIVE INCORPORATION[1]

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1.0 Introduction. There is a diglossic continuum between American Sign Language (ASL) and Standard English in the U.S. deaf community (Stokoe 1969-70, 1973; Moores 1972; Woodward 1972, 1973; Friedman 1973). This differs from the classic diglossic situation described by Ferguson (1959), because the H variety (Standard English) and the L variety (ASL) are two separate languages, but it is a situation that shares much of the attitudinal and social characteristics of typical diglossic situations.

Variationsts Bailey (1971), Fasold (1972), Bickerton (1972), and DeCamp (1972) have shown that traditional linguistic theory is inadequate to explain language variation, especially in continuum situations. Models of variation theory developed by these (socio)linguists can explain such variation. This paper reports on variation in the Negative Incorporation Rule of ASL. Three studies of variable use of this ASL syntactical rule are examined utilizing variation theory. These studies offer a crucial testing ground for the descriptive and explanatory power of variation theory, since these studies are on visual language phenomena that linguists have not normally observed.

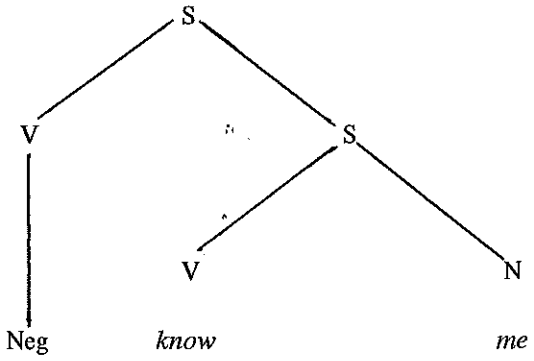
The first study (DC) reported in Woodward (1973a) analyzed data on three ASL rules from 141 informants living in the Washington, D.C., Frederick, Maryland, and New York City areas who varied according to four social measures. These variables identified the informants as ±deaf, with ±deaf parents, as having learned signs ±before the age of six, and ±attended some college. The second (MW) study (Woodward 1973b), tested the same three variable rules using 36 informants from Montana and Washington state, who were chosen on the basis of three social variables: ±deaf parents, ±signing before six, and ±college. The third (IRI) study, the inter-rule implication study (Woodward 1973c), took the data from the DC study and attempted to find implicational relations among the three ASL rules.

2.0 Negative Incorporation. American Sign Language has several verbs that may be negated by a bound, outward twisting movement of the moving hand(s) from the place where the sign is made. The derivational history of one example of Negative Incorporation is described below.

1. $\overset{\frown}{B}\underset{v}{\perp}$ [] G^{T}
   not me
   know 'I don't know'.

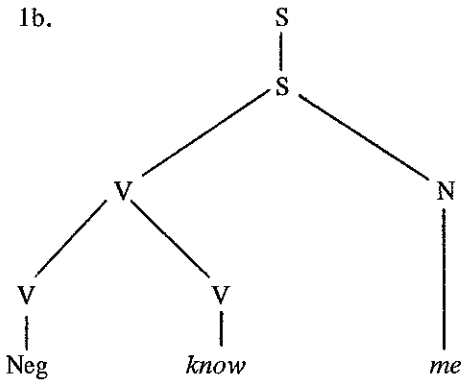
The underlying structure of 1 is represented in 1a. [Only essential structures are listed in trees in this paper. 1a probably needs an underlying object later deleted. However, as this object is not essential to the tree in question, it is not included.]

1a.



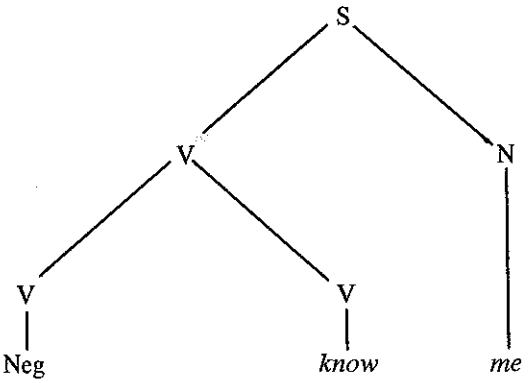
Predicate lowering results in 1b.

1b.



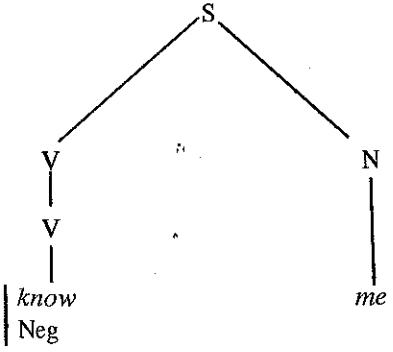
A pruning rule allows deletion of the highest S, yielding 1c.

1c.



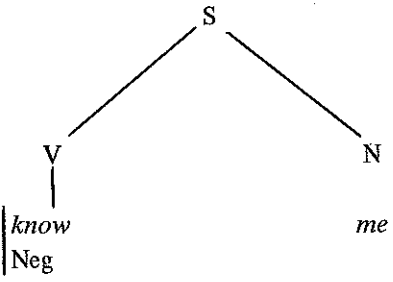
Negative Incorporation then yields 1d.

1d.



A final pruning rule gives 1e.

1e.



Later rules give a surface structure symbolization to the lexical units and rewrite Neg as twisting outward movement of the dez from the tab of KNOW. (These terms for the working hand's configuration and the distinctive sign location are from Stokoe, 1960; Stokoe et al, 1965; caps. show signs as common glosses.)

3.0 The DC Study. 3.1 Negative Incorporation Implication. Not all ASL verbs undergo Negative Incorporation. Five verbs that do undergo this transformation were used in the DC study:

KNOW	WANT	GOOD	LIKE	HAVE
				

Before this study was begun, it was noticed that not everyone who signs or who claims to use ASL uses Negative Incorporation with all these verbs. There was considerable variation. However this variation was found to be implicational. The ordering for the implication is: HAVE, LIKE, WANT, KNOW, GOOD. Based on this implicational ordering we have the six possible implicationally ordered lects shown in Table 1, even though mathematically there are 32 (2^5) possible lectal arrangements.

Lect	HAVE	LIKE	WANT	KNOW	GOOD
1	+	+	+	+	+
2	–	+	+	+	+
3	–	–	+	+	+
4	–	–	–	+	+
5	–	–	–	–	+
6	–	–	–	–	–

Table 1. Presence of Negative Incorporation in Six Implicational Lects.

For such an implicational scale to be valid, at least 85% (Guttman 1944) and preferably 89-90% (Bailey personal communication) of the responses must fit the implication shown in Table 1. With 141 informants and five verb choice slots, the total number of responses was 705. There were 21 exceptions to the scale in Table 1, which makes a 3% exception rate or 97% rate of following the implication--well over what is needed for a valid implication.

The information supplied by an implication must be incorporated into the grammar. Methodology for doing this will be discussed after the following discussion of the correlation of these lects with social variables.

3.2 Correlation of Negative Incorporation Lects With Social Variables. The four social variables in the DC study were, ±deaf, ±deaf parents, ±signed before age six, and ±attended some college. The first three of these social variables are extremely important criteria for socialization into the deaf community. If a person is deaf, he can much more easily join the deaf community. Meadow (1972) has pointed out that socialization into the deaf community invariably includes language socialization. With the children of deaf parents this takes place from birth. With deaf children of hearing parents it may take place at other times. However, the age of six seems to be a crucial time in first language acquisition. Quite possibly a person learning signs after the age of six will sign differently from a person who learned signs earlier.

The fourth variable, education, seems to be a universal social variable for those societies having a formal educational system, since education tends to perserve and transmit traditional values of language and society as well as to promote a maintenance of language forms and structures that may not be present in everyday conversation.

Membership in lects having Negative Incorporation is related to the variable ±deaf and does not seem to be related to the variables of parents' deafness, age of acquisition, or education. As intuitively expected, deaf informants fell into lects that were closer to "pure" ASL, although it is surprising that none of the other variables were significant. Other linguistic variables, e.g. ASL Agent-Beneficiary Directionality, are correlated with more social variables, ±deaf, ±before six, and ±college. In fact, it is possible to set up hierarchies of social variables from the linguistic variation. The most important social variable found in the DC study was deafness, which correlated with four out of five linguistic variables. The next most important variable was parentage, which correlated with three of the five linguistic variables. Education correlated with two, and age of sign language acquisition with only one of the linguistic variables.

3.3 Features Conditioning the Variation. We have seen that the Negative Incorporation Rule applies for signers first in environment of GOOD, second in the environment of KNOW, third in the environment of WANT, fourth in the environment of LIKE, and fifth in the environment of HAVE.

We hypothesize that there are phonological and/or semantic features that are similar in these five verbs, and that are conditioning the variation.

Table 2 shows the phonological features necessary to distinguish these verbs.

Feature	HAVE	LIKE	WANT	KNOW	GOOD
face	-face	-face	-face	+face	+face
trunk[2]	+trunk	+trunk	-trunk	-trunk	-trunk
outward sig motion	-out	+out	-out	-out	+out

Table 2. Features on Negative Incorporating Verbs.

From Table 2 we see that it is possible to weight these features, assigning α to that feature that influences operation of the rule more frequently. To successively less important environmental features we can assign β, γ, etc. Table 3 shows the proper weighting of features.

HAVE	LIKE	WANT	KNOW	GOOD
	γ out	β -trunk	α face	α face
			β -trunk	β -trunk
				γ out

Table 3. Weighted Features on Negative Incorporating Verbs.

While there is not enough empirical evidence to completely justify the naturalness of these phonological features in conditioning the operation of this rule, these features are not merely *ad hoc.* Negative Incorporation requires an outward twisting movement of the hand(s) from the place where the sign is made. These negative signs require more complex movement than their positive counterparts. Siple (1973) has shown that because of constraints on visual perception, signs on the *face* allow much more complex hand configurations and movements than signs made on other parts of the body. Signs made on the *trunk* appear to allow the least complex configurations and movements. Signs already containing an *out*ward movement in their positive form are also favored for Negative Incorporation.

The rule for Negative Incorporation, which changed tree 1c to tree 1d, can now be written:

1	2	3	4	5	6	7
[	[	NEG	V	]	N	]
S	V		+Neg Inc	v		s
			α face			
			β -trunk			
			γ out			
1 2 3 4 5 6 7 ⇒			1 2 4 5 6 7			
			+ out			
			+ twist			

4.0 The Montana-Washington Study. The M-W study was a follow-up to test if the implicational patterns found in DC would be found in the lects of informants from other parts of the country. The patterns were the same, and with generally higher rates of following the implication. Negative Incorporation, e.g., showed a 95% rate of responses fitting the pattern of Table 1. There were not enough informants in each cell to test reliably for correlation of membership in lects with social variables.

5.0 The Interrule Implication Study. The DC study revealed six lects for Negative Incorporation, ten lects for Agent-Beneficiary Directionality, and ten lects for Verb Reduplication. It was pointed out in that study that the implicational scales could be divided and that Negative Incorporation lects 1-3, Agent-Beneficiary Directionality lects 1-5, and Verb Reduplication lects 1-5 were that part of the continuum that approached ASL most closely, i.e., the lects that used these three rules in the largest number of environments. These three rules then may be treated as parts of another implicational ordering. Table 4 shows the four lects so determined with '+' indicating membership in the ASL-like lects and '–' indicating membership in the more English-like lects.

Lects	Agent-Beneficiary lects 1-5	Neg-Incorporation lects 1-3	Verb Reduplication lects 1-5
1	+	+	+
2	–	+	+
3	–	–	+
4	–	–	–

Table 4. Rule-to-Rule Implication.

There were 20 exceptions to this implication out of 423 responses. This gives a 95.3% rate of acceptability. Dividing this implication in half, lects 1-2 represent the end of the continuum in which most ASL rules are used in the most environments, and lects 3-4 represent the end of the continuum in which few ASL rules are used in few environments. Chi-square tests of membership in lects 1-2 and 3-4 and the social variables used in the DC study showed strong dependency relationships between +deaf, +deaf parents, and +signing before six and membership in lects 1-2; also between -deaf, -deaf parents, and -signing before six and membership in lects 3-4. Thus, deaf people, people with deaf parents, and people who learned signing before the age of six patterned in lects that approach "pure" ASL more closely. Hearing people, people with hearing parents, and people who learned signs after age six patterned in lects that do not approach ASL closely.

6.0 Summary and Conclusions. These three studies have shown that variation along the ASL-to-English continuum is regular, rule-governed, and describable by variation theory. It is perhaps in the U.S. deaf community, more than in any other place, where the utilization of variation theory is most needed. Variation in sign competence is large and complex. Any attempt to describe the language of the deaf community must take account of this variation.

Negative Incorporation, as a particular example of variation, offers important insights into the nature of ASL. As seen from the IRI study, Negative Incorporation is crucial in defining ASL-like competence along the deaf diglossic continuum; for this rule marks the boundary between ASL-like and more English-like lects in that study.

Further support for the salience of this rule in ASL comes from observation of children's signing in which it is overgeneralized. There have been reported overgeneralizations by a child who already had the full implication, i.e. was most ASL-like. This child used the overgeneralized form *DON'T-LOVE.[3] It is also interesting to note that once hearing signers realize that Negative Incorporation extends to more signs than KNOW and GOOD, they also begin making hypercorrections, e.g. *DON'T-THINK.

Finally Negative Incorporation is also important because it gives further support to the presence of a systematic phonology in ASL

(Battison 1974; Battison, Markowicz, and Woodward 1974) which helps to condition grammatical variation. With a level of systematic phonology, American Sign Language shares a basic quality of all human languages, duality of patterning.

NOTES

[1]This paper was presented at the 1973 annual meeting of The Linguistic Society of America in San Diego. Research studies reported on were supported in part by NSF grant GS-31349 and NIH grant NS-10302 to the Linguistics Research Laboratory at Gallaudet College.

[2]I would like to thank Susanna Oliver for suggesting this feature (-trunk) as a possible solution. Earlier I had proposed as *beta* feature -body, which weakened the rule somewhat in the environment of +face, the *alpha* feature, and which did not allow any claim for naturalness in WANT's occurring before LIKE and HAVE. With -trunk as *beta* feature the rule is strengthened and weakened in the proper places. Moreover a further claim can be made for naturalness using the work of Siple (1973).

[3]I would like to thank Dennis Cokely for pointing out this example to me.

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James C. Woodward, Jr. hardly needs an introduction in these pages. Assistant Professor in the Linguistics Research Laboratory and the department of English, Gallaudet College, he has contributed seven papers to the first four issues of SIGN LANGUAGE STUDIES. His research and teaching are rapidly bringing forward a new generation of scholars to make up for the long neglect of Sign and its users.