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Author(s): Clifford Alden Hall

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Variation in the Use of 'Front' and 'Back' by Bilingual Speakers
 Clifford Alden Hill
 Teachers College
 Columbia University

This paper describes an empirical study of the linguistic encoding of spatial relations in Hausa and Djerma by 346 bilingual students in Niamey, Niger. These students were participating in a model school which had been organized for training teachers in Niger.¹ They ranged

- 1) from 10 to 20 in age;
- 2) from classe sixième to classe première in school (seventh grade to twelfth grade in the American system).²

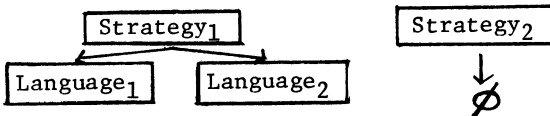
Before entering classe sixième, all had attended six years of primary school in which lessons had been conducted in French. Since French was also the language of instruction at the secondary level of education, all students were functionally bilingual. They were accustomed to a typical pattern of bilingualism in the third world: use of a European language at school, use of an indigenous language at home.

This study attempts to link current concerns in psycholinguistics and sociolinguistics, particularly as they relate to bilingualism:

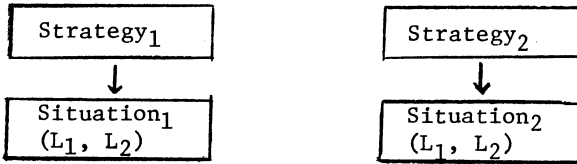
- 1) How do opposing cognitive strategies interact with the linguistic choices of a bilingual speaker?
 - a) Is there consistent matching of a cognitive strategy with a linguistic system for a bilingual speaker?



- b) Or does a single strategy emerge as the dominant one for both languages?



- If so, which one emerges and why is it selected? Can the selection be predicted from the social background of a particular bilingual individual?
- 2) If opposing strategies are retained, may a single one play across both languages, matching up with factors in the communicative situation like setting, topic, addressor-addressee relationship, etc.?



A series of tasks were presented to the bilingual students in which they were linguistically constrained

- 1) to touch the side of an object which they considered to be its 'front' or 'back,' even though that object possessed no intrinsic front or back;
- 2) to respond with the terms for 'front' and 'back' in Hausa or Djerma in describing relations within various configurations of spatial stimuli (in the initial task they were free to describe the relations with any set of terms).

All the results of this study cannot be described in this preliminary report. Only six tasks will be selected for comparison.³ First, a red ball with no markings was placed in front of a student. The student was then asked:

Kwallo yana da gaba da baya?

'Does the ball have a front and back?'

91.0% of the students answered,

A'a.

'No.'

These students were then asked:

Amma tilas a ba shi gaba da baya, ina gabanshi/bayanshi? Taƙa shi.⁴

'But if you had to give it a front and back, where's its front/back? Touch it, please.'

Gaba 'front' and baya 'back' were alternated throughout the study in this kind of task; such alternation will be consistently represented by gaba/baya 'front/back'.

The 9.0% of the students who answered 'yes' to the initial question were simply asked:

Taba gaban/bayan kwallo.

'Touch the front/back of the ball, please.'

The responses to these tasks were as follows:

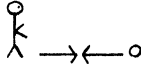
A. 'Touch the front.'

1. 63.1% touched the far side. ($z=3.89$, $p<.001$)
2. 36.9% touched the near side.

B. 'Touch the back.'

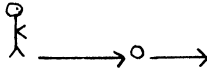
1. 60.8% touched the near side. ($z=3.86$, $p<.001$)
2. 39.2% touched the far side.

The two patterns of response reflect opposing strategies that the students have encountered in their bilingual experience. An adult speaker of French (or of English, for that matter) typically assumes that any object without an intrinsic front-back is facing in:



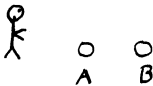
This strategy appears to reflect the face-to-face norm of social interaction (Clark:1973) and, in addition, man-machine interaction as well.⁵

An adult speaker of Hausa and Djerma without western education typically assumes that an object is facing in the same direction he is facing:⁶



In effect, they give their own spatial orientation to the object; it is as if the object possesses its own deictic center.

These opposing strategies are also evidenced in encoding the relations between two objects, neither possessing an intrinsic front-back. A French adult will typically describe the nearer of two objects as in front of the farther, the farther as in back of the nearer:

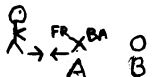
A est devant B.

'A is in front of B.'

B est derrière A.

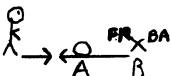
'B is in back of A.'

No matter which object is taken as the reference point,⁷ it is assumed to be facing ego. If A serves as reference point, its front is conceived as towards ego and so its back is towards B:

B est derrière A.

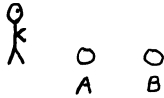
'B is in back of A.'

If B serves as reference point, it is conceived as facing ego and so A as well:

A est devant B.

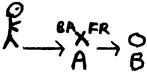
'A is in front of B.'

The Hausa or Djerma adult will typically report the farther object as in front of the nearer, the nearer as in back of the farther:



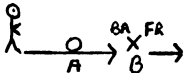
A yana bayan B.
 'A is in back of B.'
B yana gaban A.
 'B is in front of A.'

No matter which object is taken as the reference point, it is assumed to be facing in the same direction as ego itself. If A serves as reference point, it is conceived as facing away from ego and hence towards B:



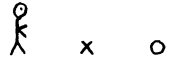
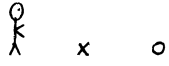
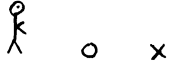

B yana gaban A.
 'B is in front of A.'

If B serves as reference point, it is conceived as facing away from ego and hence A is at its back:



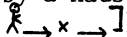
A yana bayan B.
 'A is in back of B.'





Four tasks were presented to each bilingual student which forced a choice between the opposing strategies. They are represented in the following matrix:

	SENSORILY PERCEIVED OBJECTS	CONCEPTUALIZED ENTITIES
Nearer object serving as reference point	1. 	2. 
Farther object serving as reference point	3. 	4. 

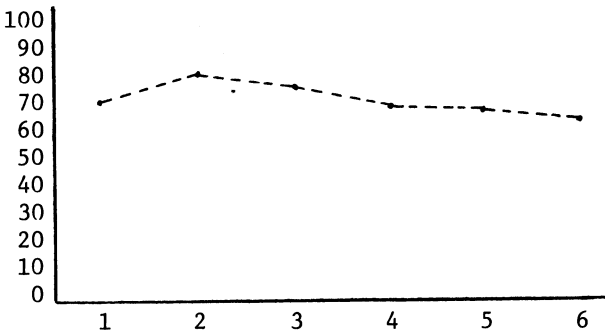
The sensorily perceived objects were unmarked balls and rocks, the conceptualized entities were Nigerien cities. For each of the four tasks the students were asked in Hausa or Djerma:

O yana gaban ko bayan X?
 'Is O in front or in back of X?'⁸

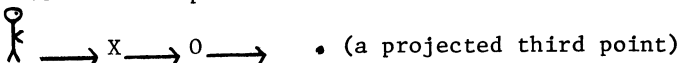
The following represents the percentage of students whose responses reflect an underlying strategy that is typical of the one used by a Hausa or Djerma adult without western education (i.e., []):

Nearer object as reference point	1.		X →	0	:	69.0%
			Ball	Rock		(z=8.83, p<.001)
Farther object as reference point	2.		X →	0	:	79.1%
			Maradi	Damagaram		(z=10.30, p<.001)
	3.		0	X →	:	73.4%
			Rock	Ball		(z=14.03, p<.001)
	4.		0	X →	:	64.6%
			Dogon Doutchi	Maradi		(z=5.10, p<.001)

If the first two tasks involving a single object are numbered 5 and 6, the percentage of students using the indigenous strategy for each of the six tasks may be represented in a line graph:

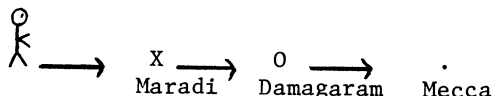


It may be seen that the percentage of students using the indigenous strategy is somewhat higher for the tasks involving two objects, particularly if the object to be located is farther away. It has been argued that the farther object may attract the nearer (which serves as reference point), hence increasing the tendency of ego to create a deictic center in the nearer one which parallels its own. This attraction may become even stronger if the two objects are conceived as attracted towards an even farther point:

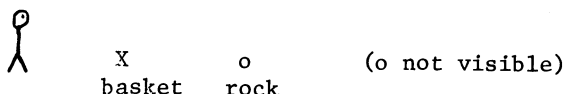


The projection of a third point may explain the particularly high percentage of students using the $[k \rightarrow x \rightarrow]$ -strategy in responding to the geographical task based on a $[k \times o]$ -configuration. Since Nigerian society is strongly Muslim, it tends

to project in an easterly direction in space towards Mecca; for example, this field-dependent projection is realized in architectural orientation of mosques and in bodily orientation during the daily ritual of prayers.



Further support for the above hypothesis of 'attraction' may be found in the pattern of response to the [$\text{stick figure} \rightarrow \text{X} \rightarrow \text{O}$]-configuration, where O was a small rock which was not visible because of the bulk of X, a large basket with no intrinsic front-back.



Only 60.2% of the students made use of the [$\text{stick figure} \rightarrow \text{X} \rightarrow \text{O}$]-strategy in responding to this task, suggesting that the attraction of X to O in a [$\text{stick figure} \rightarrow \text{X} \rightarrow \text{O}$]-configuration depends, to some degree, on the visibility of O.⁹

An initial hypothesis that students might make more use of the imported [$\text{stick figure} \rightarrow \text{X}$]-strategy when dealing with the geographic tasks (i.e., more school-like tasks) was not supported by the results. Some increased use of this strategy was shown when the reference point was farther (tasks 3 and 4), but it was not significant from a statistical point of view. Whether or not the real-world configuration of stimuli was immediately present appears then not to be of significance in determining the choice of strategy. It should be remembered that the choice of gaba 'front' or baya 'back' is normally constrained by the immediate location of the speaker at the moment of his speech act, whether or not the stimuli are immediately present. In other words, the use of gaba 'front' and baya 'back' is deictically anchored in the immediate location of the speaker in typical acts of speech.¹⁰

It is evident from the results of this study that a significant proportion of the bilingual students reflected a [$\text{stick figure} \rightarrow \text{X}$]-strategy in making responses in an indigenous language, whether in Hausa or in Djerma. The use of this strategy may have been motivated by a number of factors in the communicative situation:

- 1) setting (a western-style school);
- 2) task (problem-solving);
- 3) mood (relatively formal);
- 4) discourse frame (artificial, a test-like situation);
- 5) audience (interlocutor was a relatively uneducated native speaker of Hausa and Djerma);

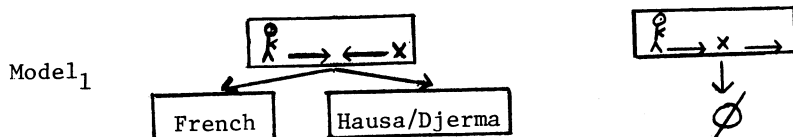
however, educated Nigeriens and Americans manipulated the objects which presented the varying patterns of stimuli).

No doubt, these factors contributed to the significant use of a $[\overset{\circ}{\text{K}} \rightarrow \leftarrow \text{x}]$ -strategy. The communicative environment called for a response based on the strategies entailed in speaking French.

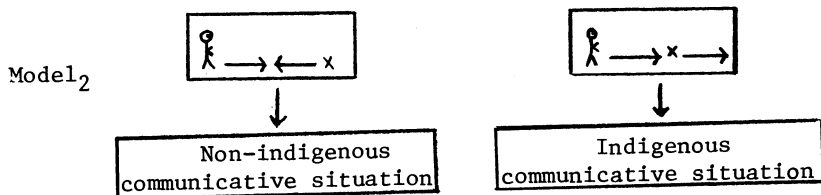
It should be noted, however, that many bilingual Nigeriens (and Nigerians, too, for that matter) claim to use the same strategy for both languages. Indeed, they claim never to have been aware of conflicting strategies. Some insist that the $[\overset{\circ}{\text{K}} \rightarrow \leftarrow \text{x}]$ -strategy is used by native speakers of Hausa and Djerma, just as it is used by native speakers of French and English. Others argue that the $[\overset{\circ}{\text{K}} \rightarrow \text{x} \rightarrow]$ -strategy is used by native speakers of French and English, just as it is used by native speakers of Hausa and Djerma. For example, the $[\overset{\circ}{\text{K}} \rightarrow \text{x} \rightarrow]$ -strategy was consistently reflected in responses made in English to the above tasks on the part of an eighteen-year old Djerma student who had lived with American missionaries in Niamey since she was a young child.¹¹

Thus it is possible that any use of the $[\overset{\circ}{\text{K}} \rightarrow \leftarrow \text{x}]$ -strategy in response to the tasks may have reflected

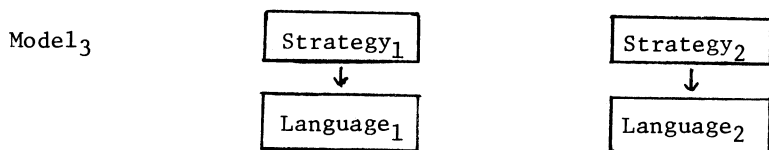
- 1) a relatively stable strategy that the bilingual individual uses in responding in Hausa or Djerma, as well as in French:



- 2) a strategy that was elicited by factors in the communicative situation (in indigenous communicative situations a $[\overset{\circ}{\text{K}} \rightarrow \text{x} \rightarrow]$ -strategy would be used, irrespective of what language was spoken:



Since language itself is so crucial a factor in a communicative situation, it would, of course, be reasonable to assume a strong correlation between choice of language and kind of communicative situation. However, as the results of the study indicate, there is no consistent matching of a $[K \rightarrow x \rightarrow]$ -strategy with use of Hausa or Djerma in a significant proportion of the responses. This lack of matching suggests that a static model (like Model₃ below) does not adequately account for the cognitive strategies of these bilingual speakers:



Whether model₁ or model₂, or some synthesis of the two, best explains the strategies of bilingual students in Niger awaits further research.

Notes


1. The school was organized at the lycée Kasai by the Niger Peace Corps. I would like to thank the following persons who made this study possible: James Eckstrom, director of the Niger Peace Corps; Bob Vivolo, Sue Rasmussen, and all other Peace Corps volunteers who helped execute the project; Mohammadou Yacouba who spent long hours conducting the interviews; and, most of all, the Nigerien students who responded willingly to the interviews.
2. Age and school class do not correlate as closely in Niger as they do in most western countries.
3. The order in which these six tasks will be discussed does not reflect their order of presentation to the students. Tasks were systematically varied in order except for the one which allowed the students to choose their own terms in describing a spatial relation; this task was always presented initially so that the linguistically free choice would not be affected by the subsequent linguistically constrained choice between gaba 'front' and baya 'back.'
4. The linguistic cues used in the tasks will be given only in Hausa with an English gloss. The Djerma cues correspond closely to the Hausa ones.
5. Although the face-to-face norm of social interaction may be the ultimate model to which we refer, I suggest that the culturally patterned interaction with machines like typewriters and telephones may be more immediately instrumental

in our assuming that non-fronted objects are facing us. After all, Hausa and Djerma culture did not traditionally provide these face-to-face patterns of man-machine interaction. Furthermore, preliminary investigation seems to indicate that non-industrial cultures, lacking these interaction patterns, typically make use of a strategy like that of the Hausas and Djermas.

6. It is not claimed that these strategies govern the speech of French children or of Hausa and Djerma children. There is some evidence to suggest that competence in using the terms 'front' and 'back' in relation to objects lacking a front-back may be acquired fairly late (Kuczaj and Maratsos: 1974). The testing of pre-school Djerma children seems to indicate that the adult strategy has not been internalized in any systematic way at all.


It should also be noted that an empirical study has not been made of the strategies of adult speakers of Hausa and Djerma without western education. Informal testing, however, provides strong evidence that the $[\overset{\circ}{X} \rightarrow x \rightarrow]$ -strategy is as typical for these speakers as the $[\overset{\circ}{X} \rightarrow \leftarrow]$ -one is for a French or American adult (cf., Harris and Strommen: 1972 for a study of American adults using 'front' and 'back' in relation to non-fronted objects). A study of the strategies of Hausa adults in a rural village near Damagaram, Niger will be carried out in the coming year.



7. The object that is selected as reference point is encoded in complement position.

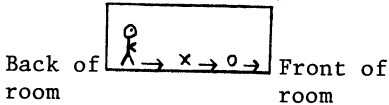
	<u>A est devant B.</u> 'A is in front of B.'	<u>A yana bayan B.</u> 'A is in back of B.'
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Of course, in a question like "Where's A?" B is not encoded at all. Its salient presence in the environment makes such encoding unnecessary. Throughout the rest of the paper X will be used to represent the object taken as reference point, O to represent the object whose relation to X is to be specified.

8. As mentioned earlier, the order of tasks in this study was systematically altered. At one point, it was suggested that the ordering of gaba 'front' and baya 'back' in the linguistic cue should be altered as well. Such alternation, however, would have violated a natural constraint in language, namely, that the unmarked category precede the marked. Usually, we do not say, 'Is it in back or front?' just as we do not say, 'Is it little or big?' In each instance the unmarked takes precedence, unless, for some reason, we choose to mark the unmarked category.
9. In a natural speech act it is quite likely that the percentage of use of a $[\overset{\circ}{X} \rightarrow x \rightarrow]$ -strategy would be even lower. The use of that strategy in responding to the other tasks probably

led to some kind of carry-over to this task. In a previous publication I had suggested that Hausas would typically describe O as baya 'in back' of X in a [ X O]-configuration if O were not visible. This suggestion was based on informal interviews with a limited number of informants (Hill: 1974).

As to the effects of field-dependence, it has been suggested that some native speakers of English shift to a [ → X →]-strategy if they are facing the intrinsic front of, say, a schoolroom in responding to a [ X O]-configuration.



An informal test that I conducted with adult students at Teachers College suggests that such shifting is very slight. However, more testing needs to be done on field-dependence effects in the use of 'front' and 'back' in encoding spatial relations.

10. The deictic point of reference may, of course, be shifted. For example, the addressee's spatial location is used as the deictic point of reference in the following speech act:

'John, please give me that book in front of you.'

 →
John

-
book



speaker

Or it may be shifted to a point in space not at all related to the spatial location of the speaker and hearer at the moment of the speech act. For example, two Hausas conversing in Niamey could say,

Daga Paris Bruxelles tana gaban ko
bayan Amsterdam?

'From Paris is Brussels in front or in
back of Amsterdam?'

As shown by the gloss, 'front' and 'back' are not naturally used in English (nor French either) to describe the relation of one point to another in geographic space. Any tendency for the bilingual students in Niger to shift to a French strategy in dealing with a school-like task (i.e., relating points in geographic space) may have been counteracted by the fact that devant 'front' and derrière 'back' are not normally used in this way.

11. It is of great interest that the 78 girls included in the study made significantly greater use of the [ → X →] -

-strategy than the boys did on all six of the tasks. In fact, on certain of these tasks more than half the girls made use of this strategy. This shift to the non-indigenous strategy is not surprising since in a strongly Muslim society only girls whose social background reflects western values attend secondary schools. Boys, on the other hand, are drawn from a wider section of society. This correlation between social background and choice of strategy will be presented in detail in a forthcoming publication in Studies in African Linguistics.

It should be noted that a group of eight students, either Nigerian métisses or Africans from surrounding countries, responded to the same tasks in French, since they spoke neither Hausa nor Djerma. For the most part, the Nigerian métisses used the $[\overset{0}{\underset{x}{\rightarrow}} \rightarrow \leftarrow x]$ -strategy; however, the Africans from neighboring countries (speakers of Fon, Wolof, etc.) tended to make use of a $[\overset{0}{\underset{x}{\rightarrow}} \rightarrow x \rightarrow \leftarrow]$ -strategy. As pointed out in a previous publication, the $[\overset{0}{\underset{x}{\rightarrow}} \rightarrow x \rightarrow \leftarrow]$ -strategy appears to be widespread in West Africa (Hill: 1974). More research needs to be done on the choice of these strategies by West Africans when speaking English or French.

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