National languages and teacher training in Africa

Methodological guide no. 3

EDUCATIONAL STUDIES AND DOCUMENTS

List of titles*

* E = English, F = French, S = Spanish, R = Russian, A = Arabic.

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Practical training documents
for those responsible for language reform

Joseph Poth

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Preface

This is the last of a set of three guides published in the series 'Educational Studies and Documents' under the generic title *National Languages and Teacher Training in Africa.* The first of these guides, as its title indicates,[1] was primarily for teacher-training institutes; it offered them a methodology consisting of a number of activities to be carried out as part of a language reform based on the use of indigenous languages. The aim of the second[2] was to help brief and sensitize teachers and future teachers, those who will be really responsible for this educational innovation. The present guide, also for teachers and future teachers, deals more particularly with practical training, approached through the specific educational problems faced by those with the task of teaching in national languages.

As in the two previous studies, theory is only introduced to the extent that it is essential for an understanding of educational practice. This choice was influenced by the many visits the author paid to schools. The systematic experiments he carried out over several years in different socio-linguistic and political contexts, and his continual contacts with the grass roots, convinced him of the soundness of a pragmatic approach with clearly defined goals. So this study seeks to tackle together all the educational questions relating to oral expression, writing, reading, arithmetic and practical activities, the unifying framework being continual reference to the pupil's cultural environment.

This approach, together with a desire to give educators engaged in everyday classroom activity a working tool, is the original feature of these three methodological guides.

Their author, Joseph Poth, formerly a UNESCO expert in language teaching in Côte d'Ivoire, in the Central African Republic and in Burkina Faso (Institut de la réforme et de l'action pédagogique, IRAP), now holds the same position at the National Institute for Educational Studies and Development (INEADE) at Dakar.

UNESCO wishes to thank A. Biancheri, Inspector-General at the French Ministry of Education, for letting the author have his comments on the educational psychology and methodology in this study.

The ideas and opinions expressed in this work are those of the author, and do not necessarily reflect the views of UNESCO.

Notes

1. *National Languages and Teaching Training in Africa. A methodological guide for the use of teacher training institutes.* Paris, UNESCO, 1979. (Educational Studies and Documents, No. 32.)
2. *National Languages and Teacher Training in Africa. Documents for the information of supervisory education staff.* Paris, UNESCO, 1988. (Educational Studies and Documents, No. 47.)

Contents

Introduction

The introduction of national languages into African education systems has an innovative effect on syllabuses as a whole which goes beyond rebalancing or simply changing the linguistic terms in use. This operation is only the beginning of a process of 'chain reaction' which contains the seeds of a recasting of the content of the curriculum and a rethinking of teaching methods and approaches previously in use. What is involved is a demand for internal consistency whose strictly educational implications are not always clearly perceived at the outset by advocates of the use of national languages in schools.

That the content of education should be affected by a change of medium seems logical enough in itself. A language is in a way the product of the environment in which it develops. It takes account of the realities of this environment and verbalizes its users' communicable experiences. The interaction between the medium and the content of education is thus very obvious in the current educational context in which all efforts at educational reform actually tend to present the environment as the natural foundation of all school activities. Thus the promotion of national languages as languages of instruction is practically never the only feature of the educational reforms undertaken south of the Sahara. It is always accompanied by a change in teaching equipment, which it links up with the specific cultures of the country concerned. It is often accompanied, when it sets out to be more drastic, by the introduction of productive work in schools. Thus the essential organic connection between education and production suffices in itself to reshape the content of education in its technical, economic, human and cultural components.

Methodological approaches are also not exempt from the reappraisal that goes with the use of national languages in schools. A language is, after all, conditioned in depth by underlying logical structures which convey patterns of thought and analysis according to categories that cannot be regarded as universal.

It would be a mistake to try simply to 'transfer' these patterns of reasoning from one language to another. In doing so, one would reach approximations due to phenomena of 'interference' according to the linguistic model of 'reduction' with which educationalists are familiar. These same reduction phenomena turn up again, *mutatis mutandis*, in intellectual processes. They certainly give rise to the 'mental confusion' and 'illogicality' that many teachers—mistaking the effect for the cause—think they can detect in their pupils. In fact it is not the logical individual's capacity that is in question, but rather the methodological approach that is not suitable. For instance, to try to translate a mathematical procedure supported by Western reasoning patterns and equipment term for term into an African language is certainly not the most economical or efficient method. There is a serious confusion here, one which observers frequently stressed in the case of reforms where, in order to 'save time', people have been content simply to translate imported textbooks into national languages. Methodological transfer is a complex and delicate operation, a field in which more than elsewhere translation comes close to treason.

Changing the linguistic medium also affects teachers' educational behaviour. There is a striking contrast between the atmosphere in a preparatory class in which the teaching is done in an African language and a class at the same level in which only the European language is used. In the former case, the class is remarkably lively and animated, each child being willing and able to express himself or herself (which may give rise to problems of organization and even of discipline in particularly overloaded schools). The teacher must remain continually available and vigilant, so as to strike the right balance between laxity and repression which allows intellectual creativity to develop in the

children. In the second case, faced with a language it has not yet mastered, the class remains passive, deceptively attentive. It is a class of 'inert' pupils, in which quietness reflects not freely accepted discipline but obvious lack of intellectual stimulation.

Change of language, change of content, change of methods, change of behaviour—all this means a major effort of rethinking for the teachers whose task it is to introduce the reform in the classroom. Their confidence might falter in the face of so many demands were it not underpinned by continual awareness training tailored to their needs.

The contents of this study are still dictated by the results of a survey of training needs carried out from 1974 to 1981 on 800 teachers and future teachers. Each document is a response to a specific request by those responsible for language reform in different national contexts. One of the countries in which the survey was carried out (Central African Republic) chose to try using a single language of instruction. The other (Burkina) came out in favour of the use of several languages suited to the country's socio-linguistinc situation. Both countries are keeping French as the language of instruction. These two choices unquestionably epitomize the range of situations that apply to the language reforms currently being carried out in Africa.

A more recent survey, carried out in the Burkina experimental schools in March and April 1982, brings out the difficulties teachers come up against in teaching in national languages and confirms the findings of the previous survey on all points. Reading the results, we find that it is the so-called 'scientific' subjects that present the most problems. On the other hand, when teachers have well-designed textbooks available, as is the case for teaching reading in national languages,

only 11 per cent indicate any special difficulty in imparting this fundamental ability. Table 1 comprises all the relevant results of this survey of seventy-four teachers teaching at the first three levels of experimental classes.

If teachers have little difficulty in teaching reading, it is because the elementary learning methodology is no different from what they already use in teaching French, and it is well known. Some 12 per cent of teachers stated that they had problems in this field in the first year, 14 per cent in the second year and only 8 per cent in the third year. But reading is so important for children that efforts must be made to reduce still further the small percentage of difficulties met with.

In compiling these documents the basic problem met was how to remain general enough for the replies suggested in each chapter to be applicable in as many situations as possible, and at the same time to meet the specific needs of each country's situation.

It is true that situations vary enormously from one country to another. First, the linguistic profile of each national community must be considered: the problems of application do not arise in the same way in a country such as Guinea, which uses six national languages in education (Fulani, Maninka, Soso, Kpelewo, Loghoma and Kisiei)[1] and in a country such as Rwanda, where the indigenous national language (Kinyarwanda) is used as the language of instruction throughout the country.

Another important parameter has to do with different countries' experience in the use of national languages. One country (such as Benin) may be still at the stage of research to the experimental phase, another (such as Burkina) may be well into the experimental stage and a third (such as Burundi) may already have

TABLE 1. Burkina experimental schools survey results

Have difficulty in teaching *In national languages*	Number of teachers involved	Percentage (for 74 teachers)	Remarks
Introductory activities	60	81	Mainly history, geography and scientific observation
Arithmetic	40	54	Counting, basic operations, elementary geometry
Speaking	22	30	Oral expression activities based on motivating material (stories, riddles, etc.)
Reading	8	11	Elementary reading and practice in ordinary reading
In French			
Speaking (elementary)	12	16	Method of learning to speak based on the teaching of French as a foreign language

long had its national language in general use in the curriculum. The documents that follow have been designed specifically with an eye to an experimental or pre-experimental context.

But the wide variety of situations found is not an insurmontable obstacle. Even in countries which already have substantial experience of the use of national languages in schools the situation of teaching and training is seldom ideal: they are usually capable of reorganization, not to say improvement, to which the present working tool can contribute.

Recent information[2] indicates that thirty-four out of forty-five countries in black Africa have so far committed themselves to the use of one or more national languages in school syllabuses. Five more countries have started a stage of study in preparation for this operation. Thus thirty-nine countries have now given or are preparing to give indigenous languages full teaching status in their education systems.

Seeing that in 1976 fewer than sixteen countries[3] were engaged in such a process, we cannot but be struck by the sudden acceleration of events and the magnitude of the progress made.

This acceleration lends still greater importance to forethought and training. In this field more than in any other we must avoid being caught in the trap of purely quantitative ambitions. Proliferation of experiments unaccompanied by increased attention to methodology might lead to disillusionment and retrogression, which must be avoided at all cost.

Notes

1. Germain Doualamou, *Langues guinéennes et éducation*, UNESCO, Paris, 1980, p. 7, 28 pp.
2. NEIDA: Information No. 9. UNESCO, BREDA, B.P. 3311, Dakar.
3. Ibid.

How to use the documents in this guide

National languages in schools . . . *how* should we go about it? The four documents in this guide aim to give definite answers to the main questions asked by teachers on specific points to do with 'special teaching'. The fifth document, contained in an appendix, is not in reply to a question; it deals with productive work in relation to elementary studies and national languages. This topic is so important that it was impossible to evade it in a work of this kind.

Each document has four components

The first, *What exactly is the problem?*, aims to put the question asked by teachers and future teachers back into its original context. In this way, the reader will grasp the ins and outs of the question and better understand its scope and meaning. After all, a question that at first seems harmless may in fact mask a basic educational problem.

The second suggests '*draft replies*' which should be submitted to teachers for their consideration. These drafts are presented in such a way that they can easily give inspectors, educational advisors, directors of teachers' colleges and heads of schools the material for an extremely clear and concise educational paper.

The third is organized around *suggested teaching methods*. The teaching of African languages in a formal context is of recent date, and so is not hedged in with routine. The cultural and linguistic setting in which the children are immersed provides new, powerful and unexpected educational resources for anyone who really sets out to put his teaching on a practical foundation. This rubric will whenever possible include examples of games, situations and procedures drawn from the children's environment and capable of being used in the classroom when teaching the spoken language, reading, arithmetic, etc.

The fourth, *Things seen and heard on the ground*, contributes the direct and living testimony of interesting educational situations met with in classes conducted in national languages. Faced with new difficulties, often without adequate teaching aids, some teachers have improvised solutions, procedures and techniques that may be of use to others. This rubric aspires to reflect what can be seen and learnt on the ground, 'where it all happens'.

System of transcription

The spelling chosen to transcribe the names of African languages mentioned in this work is that in the *Provisional list of main languages and language use in the independent states of Africa, south of the Sahara*. This bilingual (English-French) list was drawn up for UNESCO in July 1980 by the International African Institute.

For the languages spoken in Burkina, the spelling is that used by research workers at the Centre National de la Recherche Scientifique et Ministère de l'Enseignement Supérieur et de la Recherche Scientifique in their preparatory document[1] for the socio-linguistic atlas of the languages spoken in Burkina.

A second work,[2] also published by the National Centre for Scientific and Technological Research, serves as reference for the spelling of these names of languages and ethnic groups in Burkina not given in the preparatory document mentioned above.

The spelling of texts quoted in Moore, Dyula and Fulani is that generally used in the testbooks and teachers' guides produced in these languages by four linguists of the Service de Linguistique Appliquée à la Didactique des Langues (SLAD) of the Institue de la Réforme et de l'Action Pédagogique (IRAP): Moore,[3] Jeanne Sidibe; Dyula, Bernadette Sanou; and Fulani,

Julienne Diallo and Djibrilou Dicko. The present work being for use in teaching, it seemed consistent to take account of the options and teaching habits force on the ground.[4]

The reader will perhaps be surprised to find that the names of the languages mentioned do not always correspond to those of the ethnic groups that use them. Thus Gulimancema is spoken by the Gurmanche, Nuni by the Nouni and Mossi children speak Moore in the Moore-speaking area like all the Mossi. The transcription of names of ethnic groups and places corresponds to the official administrative usage in force. The names of languages follow the spelling suggested in the reference works referred to above.

Notes

1. Gérard Tiendrebeogo and Zakaría Yago, *Situation des langues parlées au Burkina Faso: Perspectives de leur utilisation pour l'enseignement et l'alphabétisation*, 1982.
2. Gérard Tiendrebeogo, *Langues et groupes ethniques au Burkina Faso*, May 1983.
3. For this language Michel Ouedraogo, linguist and educational advisor at IRAP, also provided information.
4. This spelling follows the rules promulgated by the National Sub-Commissions for Moore, Dyula and Fulani.

Oral expression work and teaching children to speak the national language of instruction

Theme

Taking a class in speaking
the national language

Question 1

*How can we teach children to speak the
national language when we have no suitable
textbooks?*

What exactly is the problem?

Teaching the spoken language means primarily teaching oral expression, the aim being to give children the ability to communicate naturally and express their thoughts and feelings clearly. Successful spoken language lessons are those that give children a choice of expressions in a given situation, thus enabling them to acquire personal (but correct) ways of communicating.

The queston raised by teachers and trainee teachers will not surprise the practitioner familiar with situations on the ground. It is a fact that teachers are thoroughly spoilt by the European-language documents used in teaching the spoken language. Many methods exist, often very well designed, and they offer teachers detailed briefs which avoid a lot of hassle. Although these briefs are usually very authoritarian, they give the practitioner a feeling of security that enables him to take his class with confidence, since 'everything is provided for'. In addition, the methodology in these textbooks is based on in-depth research in applied linguistics and child psychology, which is an added attraction and motivation for the teacher.

The situation is quite different in the case of oral ex-pression in an African language. In most reforms, which are still relatively recent, the organizers did not have time to compile a spoken-language book suitable for classroom use, readers and arithmetic textbooks usually have priority. Sometimes there is even no textbook at all and it is left to teachers to manage as best they can. Unfortunately speaking a given language is no guarantee of ability to teach it.

Suggested reply

The possible reply to the teachers' question is based on psychological, linguistic and cultural considerations.

Psychological motivation. African languages are essentially spoken languages. To confine the teaching of them exclusively to book-work would be to run the risk of distorting it. Children's real environment is outside books and the classroom; it is the river, the garden, the herd, the market, etc., where the living 'documents' that must give the teacher the material for oral expression work are. Habitual reference to books can stifle the genuine continuing quest for the true environment. Simple methodological notes should suffice the well-trained teacher to carry out oral expression work, since it is not books but rather the environment that is the basic 'document' to be consulted first. Detailed guides may be needed for instrumental disciplines such as reading, arithmetic, etc. They are less necessary for spoken work, which relies primarily on children's own background and experience.

It is also all too rare to find teachers taking a spoken-language class outside the classroom. The walls of the school hide the environment; the real world is outside, often very close at hand. Why look in books for illustrations showing, for instance, the building of the framework of a hut when only a few yards from the

school the children can see and touch the real thing. The general role should be systematically to start with the concrete and to go on if need be to the semi-concrete (pictures) or even to the use of symbols. In this approach texbooks have little place. This is what one educational advisor says:

Our difficulties mostly stem from the fact that we attach little importance to the richness of real life. There is no village, however small, that is not a fertile monument. Every village has had its famous men, its key events, its joys and sorrows. Every day we witness great traditional ceremonies such as weddings, funerals, baptisms and initiations. In every family tools, weapons and ancient artefacts are available to us. At the back of the straw hut our great-grandfathers' spear does not look the same as our decorated spears of today: it has a broad, well-homed blade. The fact is that in the days of our forbears rifles were almost unknown and people often had to fight against wild animals and bandits; it was essential to be properly armed in order to survive.

The sacred wood to which access is forbidden most commonly finds its justification in religious beliefs. That is where the fetishes, the divinities that protect the poor and the rich, are put. Here religious ceremonies often take place, presided over by the sorcerer surrounded by his priests. The words spoken constitute a document of inexhaustible richness. The memory of all the ancestors is conjured up so that through their agency peace, prosperity and happiness may reign in the village. Though oral tradition has been criticized for its lack of objectivity, here it is a sphere in which mistakes are not allowed. The ritual words are passed down without error to succeeding generations, for the slightest mistake can unleash the ancestors' wrath and thus expose the village to evil spells of every kind.

Every housewife has at her disposal kitchen utensils of rare historic value. 'This mortar belonged to my grandmother, who herself inherited it from her grandmother' one woman will say. What a lot of souvenirs have a long history behind them! The decorated basket hanging from the roof and blackened by smoke went with this or that grandfather to his last resting-place; the family often enjoy telling of his life during the evenings . . .[1]

Quite obviously children's environment is infinitely richer than any spoken language textbook.

Linguistic and cultural aspects. The pupils' training in oral expression depends greatly on the teachers' linguistic competence and knowledge of the natural and cultural environment. It is the teacher rather than the textbook that represents the norm of reference for the pupils in the spoken language. Hence teachers must be properly trained in this field; for training institutes to have language laboratories is a key factor in providing this training under satisfactory conditions. The language must also be codified and standardized, for there are often considerable lexical and phonetic variants within a single language area. The compilation of a spoken language textbook obviously requires the prior standardization of the language taught in it. The lack of textbooks is partly due to the practical difficulties in

the way of this standardization. Moreover, environments tend to be highly specific in Africa, where the cultural background within one country is rich and diversified. It is very difficult to design one spoken-language textbook to take account of all the varied components of a national culture. The authors of such a textbook would be obliged to select, and hence to omit and impoverish, so running the risk of arousing only sporadic or artificial motivations. Only a teacher well rooted in the village or town community can generate real motivation out of specific situations that are liable to affect and interest children.

Hence training in oral expression must use means other than written material. Nevertheless, making a spoken-language textbook, or better a card-index, available to teachers has many advantages. Such a tool may be necessary to give experienced teachers methodological guidance. It is also a reliable work of reference for spelling in transliteration. After all, experience shows that in the absence of a textbook this transliteration is not uniform from one school to another. Lastly, a card-index giving examples of the spoken language culled from the socio-cultural riches of the locality (games, stories, narratives, etc.) can be of considerable value to teachers who are not from the area in which they are teaching. Sooner or later it becomes necessary to give teachers a spoken language card-index.

Suggested teaching methods

By following the basic methodological guidelines given below, teachers should be able to do without a spoken-language textbook, at least to start with. A spoken-language lesson usually takes as its starting point:
Stories, narratives and riddles from the area.
Specific events and news items in the village such as births, marriage, deaths, accidents, visits by ministers, etc.
Community activities: seasonal fishing parties, groundnut harvest, etc.
School husbandry activities (gardening, rabbit or chicken-breeding, marketing, etc.).
Reports of investigations carried out by pupils.
Technical appliances and objets d'art observed and described.
Passages from book, pictures, posters, etc.
The procedure listed below is recommended.

For news items and activities in the locality
Begin with one or more immediate motivations that make the children want to talk and need to know more about the item selected.
Get the children to observe the facts.
Get the whole class to reconstruct the features observed or described.
Get the class to make a complete clear summary.

Invite the pupils' opinions and feelings.
Memorize orally certain basic structures.

When using pictures, carvings, comic strips on the board, etc.
Motivation.
Observation.
Identification of characters and scenery.
Interpretation of scenes.
Collective and individual reconstruction.
Mutual use from pupil to pupil.

For tales and narratives
Start from one or more motivations which the teacher must elicit on the strength of his knowledge of the children and the local environment.
Introduce the story. In the case of a narrative or tale told by a pupil, the teacher must see that it is properly pronounced and delivered so that it may be well understood.
Check comprehension of the text. By asking questions and seeking explanations the teacher checks whether all the children have really understood the story or other material.
Have the pupils reconstruct the narrative story or tale orally. This reconstruction should be done sequence by sequence, making sure that the chronological order of the events and actions is respected.
Go on to the stage of use for oral expression. Here it is a matter of letting the children talk, giving priority to pupil-to-pupil dialogue. Hence the teacher only intervenes in case of need. But he or she will correct mistakes of form or substance, and introduce extra vocabulary and suitable new structures as the need arises.

A good way of getting children to talk is to ask them to act out the scene that served as the starting-point for the chosen topic. In the case of a moral tale, the children will be invited to bring out the moral, express a value judgement about the behaviour and personality of the characters, etc.

The success of a spoken language lesson in fact rests entirely on the quality of the motivation, which must be natural. The intimate link between an African language and the environment from which it springs also makes the teacher's task considerably easier. Pupil participation is much more difficult to obtain in a spoken-language lesson in foreign-language lessons.

Here, by way of example, is a key point in the motivation stage preceding a spoken-language lesson on the topic 'The groundnut harvest'. This sequence is taken from a class in Moore.

The teacher has brought in a basket full of groundnuts. The pupils want to eat some, and the whole class is excited.

Teacher:	Yãmb sʊka ãnd n zoe n yĕ nangur tuubu?[2]
	Which of you have already been at the groundnut harvest?
Pupil:	Maam, m zoe n yĕe nangur tuubu.
	I have already been at the groundnut harvest.
Teacher:	La sēn kell-bã? yɛɛnĕ?
	And the others? Where?
Pupil:	M baaba pʊʊgē wã Zagtuli.
	In my father's field at Zaghtouli.
Teacher:	Raopã maanda bõe?
	What do the men do?
Pupil:	B võoda nangurã.
	They pull up the plants.
Teacher:	La pagbã?
	And the women?
Pupil:	B kãanda nangurã n gindē
	They put them in piles.
Teacher:	La kamba?
	And the children?
Pupil:	B wʊkda sēn gil-ba n dʊʊg tɪsã tēngre.
	They collect the piles and put them under the trees.
Teacher:	Rĕ poore bõe n wate?
	What happens next?
Pupil:	Nɛbã faa tigsda taab tɪ-bedr tēngr n na n tõs nangurã.
	Everybody assembles under a big tree to pull the pods off.

The motivation is now well under way. All that is needed is to let the children talk, channelling the discussion, suggesting new angles, correcting the expressions used, etc. The teacher can perfectly well manage without a book.

Things seen and heard on the ground

So teachers, and especially future teachers, must surely know that the spoken language is not learnt out of textbooks. Motivation (and being face to face with a competent adult) is the key to acquiring proficiency. The use of motivational 'triggers' such as tales, riddles, historical narratives, etc. has the added advantage of bringing into the classroom dynamic features from the national culture, and upgrading the latter. By follow-

ing a simple but rigorous methodological line the teacher can put children into communication situations and give them the necessary means of self-expression. This is the very aim of spoken-language teaching.

But for the language learning to be thorough and susceptible of checking the teacher must plan a progression based on points of interest, themselves selected according to actual features of the environment. The progression may also be linked to the topics in the reader or to work activities. The lack of a spoken-language textbook is no excuse for improvisation or anarchy.

For the teacher looking up oral games in the culture reflected by the language is a rewarding activity. Some games of this kind are very sophisticated: they enrich and define the vocabulary, rationalize expression and structure the spoken language by implicity teaching the grammar.

Here, by way of example, is an oral game that fulfils these requirements. It is taken from Fulani.

1. 1/Beero, 2/bodeejo, 3/weerani, 4/ba
   1/Stranger, 2/red, 3/came to visit, 4/father

2. 1/kaalel, 2/ba, 3/hiji, 4/lati, 5/beero, 6/bodeejo
   1/Small horse white, 2/father, 3/whinnied, 4/kicked, 5/stranger, 6/red

3. 1/Beero, 2/bodeejo, 3/jawi
   1/Stranger, 2/red, 3/grumbled

4. 1/Purel, 2/ba, 3/ŋati, 4/beero, 5/bodeejo
   1/Little grey dog, 2/father, 3/bit, 4/stranger, 5/red

5. 1/Beero, 2/bodeejo, 3/jawi, 4/jawidi
   1/Stranger, 2/red, 3/grumbled, 4/grumbled very loud

6. 1/Saye, 2/ba, 3/ʃiraa, 4/beero, 5/bodeejo, 6/yarnaa, 7/biraadam
   1/White cow, 2/father, 3/was milked, 4/stranger, 4/red, 5/was given, 6/to drink, 7/fresh milk

7. 1/Beero, 2/bodeejo, 3/yarli, 4/jali
   1/Stranger, 2/red, 3/accepted gladly, 4/laughed

8. 1/Holli, 2/nyiiyˆe, 3/mum, 4/daneejo
   1/Showed, 2/teeth, 3/his, 4/white

9. 1/Yaafi, 2/suudu, 3/baaba
   1/Forgave, 2/family, 3/father.

Translation:
A stranger with pale complection came to visit Papa. Papa's small white horse whinnied and kicked the stranger with the pale complection. The stranger with the pale complection got cross. Papa's little grey dog bit the stranger with the pale complection. The stranger with the pale

complection flew into a rage. Papa's white cow was milked, and the stranger with the pale complection was given fresh milk to drink. The stranger with the pale complection laughed heartily, showed his white teeth and forgave Papa's family.

This amusing little story, which children tell each other mimicking the action with roars of laughter, is both the motivation and the starting point for a very fruitful spoken-language lesson. First, the text defines the vocabulary of colours: *bodeejo* properly means 'red'; but when used of persons it means 'white with a bronzed complection'. The stranger in question is therefore either a Fulani with a pale complexion or a sunburnt white man. The word *daneejo* (8.4) means 'white', and would be used of a European with a pale complection. *Purel* (4.1) is a little dog which must be whitish. *Saye* (6.1) must be a white cow. A black cow would be *ʃalee,* and a yellow cow *oole.* Only a small white horse can be called *kaalel* (2.1): a white horse of ordinary size would be *kaalu,* and a horse of unspecified colour and size *puccu.* A single word thus gives us several pieces of information about the animal's characteristics.

Use of this game not only defines and enriches children's vocabulary; it also introduces cultural points that can be developed further, such as the sense of hospitality, the value of milk as a precious food that overcomes all ill-temper, and so on.

Mossi children (Moore language) also play a vocabulary game that can be used in the classroom. The players are arranged in a circle. One of them goes into the centre of the circle and speaks a syllable, which is supposed to be the first syllable of a word; each player has to find some word beginning with this syllable. After this first relatively easy test, the game gets more difficult. What is needed is to find the name of an animal beginning with this syllable, and then (a further difficulty) the name of a carnivorous animal, and so on.

Thus the game leader speaks the syllable: *BA.*

The children find a word beginning with this syllable, viz:
baaga (dog), *baare* (stump), *baabu* (proper name), *baase* (finished), *barbare* (untidy), *baaba* (papa), etc.

Now they must find the name of an animal beginning with this same syllable:
baaga (dog), *baalle* (sheep), *ba-bila* (puppy), *bakorgo* (migrant bird)

Next, they must find the name of a carnivorous animal, and so on; they carry on by elimination until the end of the game.

This kind of exercise allows the players (children aged 6 to 10) to acquire and learn a vocabulary which becomes more specialized as the game goes on.

Another vocabulary game as played in Bissa country (Garango area, central southern Burkina) is also of definite educational value. This game is usually played before an evening of story-telling. Someone announces

that he has killed a cow and putting it up for sale. Each player in turn buys a part, not necessarily the part he wants but any part so long as it has not yet been chosen by other players. Thus all the bits down to the very smallest are bought, including the hair, the hooves, the genital organs, the eyes, the tongue, the ears, the teeth, the brain, etc., without buying the head itself. Anyone unable to find a bit still intact of course has to take the head (in which there is nothing left to eat), and he is also the one who tells the first story.

By drawing a cow on the blackboard and adding no caption, the teacher can proceed as though it were the beginning of a story-telling evening. The pupils take turns to name the parts of the animal, and the teacher puts appropriate captions on the drawing with arrows indicating the parts. If necessary he also fills in the parts that the pupils have forgotten or do not know. Could there be any better motivation for Bissa children than this exercise on the theme of the cow by way of spoken language lesson?

Another game worth mentioning is *jɔn ka baa tununa* (who has lost his goat?), widely played by children in the Dyula-speaking region (in the Bobo-Dioulasso area). It goes as follows: the game leader goes off, about 20 metres from the others, who remain standing in a line. The game leader then asks:
jɔn da baa tununa (Who has lost his goat?)
To this question the first player in the line answers:
mne (Me)
and thus the following dialogue starts:
e jɔn? (You who?)
mne Paul (Me Paul)
Paul jumɛn? (Which Paul?)
na Sita deen (The child of Mama Sita)
na Sita jumɛn? (Which Mama Sita?
n faa Pierre furumuso (The wife of Papa Pierre)
n faa Pierre jumɛn? (Which Papa Pierre?)
mama Awa deen (The child of Granny Awa)
mama Awa jumɛn? (Which Granny Awa?)
and so on.

One by one all the players questioned give their ancestry, execute dance steps in the fashion of their fathers (a dance executed by the chiefs of noble families when the story-tellers sing their praises) and go and stand beside the game leader.

This game provides suitable motivation for taking a spoken-language lesson based upon a study of the human environment. It combines sociological and historical features. Teachers can take their pupils into the school yard, appoint (or have appointed) a game leader and leave the children to play. To teach local history or that of a big regional chief they will slightly alter the exercise by having the pupils play the role of the children of these historical characters. The game will of course be prepared (like a lesson), and the pupils will have found out beforehand from their parents and the village elders about these characters' descendants and genealogical tree.

Konkoe[3] is also an oral game, which Mossi children find appealing. Ten or more children sit in a circle with their legs strectched out. One of them goes into the middle of the circle and imitates the physical characteristics of an animal (gait, cry, attitudes, etc.). After this exhibition the same child comes to the seated group and, tapping lightly with his finger on the head of one of his schoolmates, questions him, saying *konkoe;* If the boy addressed gives the name of the animal in question, he becomes the game leader. If he gets it wrong, it is the next one's turn. The winner is the one who has been game leader most often. This game sometimes lasts for hours. It can serve as the starting point of a spoken-language lesson on domestic animals, bush and forest animals, or a given animal in particular. It develops not only body expression, through recourse to mime, but also oral expression and elocution. It also stimulates the ability to sift data and group them in context. The players must continually distance themselves from an initial wrong answer, process new data, conceptualize, restructure, evolve, etc., all intellectual activities of great value for training children's minds. Thus as they play they develop mental processes of discovery and synthesis. Next the teacher will get the class to describe the animal whose attitudes have been mimicked, its biotope, its way of life, its habits, its method of reproduction, its usefulness in the cycle of nature, etc. Oral expression will be supplemented by essays on the same topic.

Quite clearly pupils already possess considerable resources within their own experience; all that is needed to foster spoken-language teaching based on a powerful cultural tool is to list them and then use them.

It would, however, be a mistake to suppose that using games relieves teachers of the need to prepare their lessons. Prior documentation and organization guarantee success; improvisation in this field would certainly lead to failure. This preparation for the use of games should be explicitly included in the syllabuses of teacher-training institutes and the institutes for training senior educational staff. Such an innovation is no doubt justified because the heritage of games is part and parcel of a nation's cultural wealth and because games are a useful working tool in the teaching of school subjects.

Many teachers confess that in the absence of a spoken-language textbook in the African language, they try in their teaching to re-use in its entirety the methodology used to teach the European language, this being the only one they have. Now, this methodology cannot be right for both situations, for whilst with the European language learning has to start 'from scratch', with the African language it is a matter of continuing a process already begun. The same approach cannot be justified in both situations from the psychological, the linguistic or the pedagogical point of view.

Teachers responsible for teaching in the national language acknowledge that they have difficulties in

taking a spoken-language class. The most commonly mentioned are: getting the pupils motivated about an event that has happened in the village eventually becomes tedious, since the children always recount the same happenings (disturbances, burglaries, accidents, etc.); the language of instruction is not all the pupils' mother tongue, or even their everyday language, and so the spoken language level is not homogeneous within a single class and some of the pupils do not 'follow'; there are no tests of levels to gauge ability in oral expression; stories, which may serve for motivation, are long in relation to the class and convey an adult philosophy, and while proverbs are shorter, children are not mature enough to appreciate and use them; and there is a lack of visual aids and classroom equipment enabling teachers to vary the motivation and communication situations.

Some teachers have good ideas, one regularly has recourse to older pupils and even to outside helpers to take spoken-language lessons, while another builds a stage set of characters and figurines that provide the initial motivation for spoken-language lessons in conjunction with the childish characters in the reader.

It is perhaps in spoken-language lessons that the best and the worst are to be observed. The quality of the lesson depends in the end on the trouble teachers take to find suitable motivation and then to channel the children's oral expression. They can be greatly helped in this by using games drawn from the children's cultural, ethnic and family backgrounds.

Theme

Taking special environmental features into account in spoken-language teaching in national languages

Question 2

In Africa the environment often varies greatly within a single country. Will these variations be taken into account in the compilation of textbooks and spoken-language materials, and in general in all syllabuses covered in the national language?

What exactly is the problem?

The variations in question here are primarily linguistic, but can also be economic, geographical and socio-cultural. Circumstances vary within a single country, or even from region to region. In one region the rainy

season starts in April, in another not until June. Religions, with the way of life they foster, have their own domains, the boundaries of which are ill-defined. Where agriculture flourishes a sedentary life-style predominates; this is not so where stock-breeding is practised. In one part, watercourses are permanent; in another, they are seasonal; school attendance is twice as high in one region as in another; and so on. Teachers are afraid that a single syllabus for all, drawn up by a centralized edcation authority, will in fact be unsuitable everywhere and will no longer reflect the continuing link between school activities and environment.

Lastly, language boundaries are not watertight. Teachers find that the African language in which they teach is not the mother tongue or even the everyday language of all the pupils in one class. Must they treat both categories of pupils in the same way? Or must they take account of variations in linguistic circumstances and teach according to levels? All these questions apply to expression work, and particularly to oral expression work, which is directly related to children's background and experience.

Suggested reply

Syllabuses and school activities must be designed in the light of the special features of the environment in which the teaching takes place since motivation for oral expression is only real if it stems from children's immediate environment. Spoken-language teaching, whether done from a textbook, index cards or a mere methodological outline, must observe this role strictly.

The task of the specialized teams responsible for compiling textbooks and card indexes becomes easier when the language areas affected by the reform coincide with homogeneous geographical and human entities. This is the case, for example, with Burkina and Togo. But it may also happen that only one language of instruction is selected for the whole of a country, whereas the human, geographical and economic circumstances (and even the linguistic substructure) are very varied. This is the situation prevailing in the Central African Republic, for instance. In the latter case, teachers must have adequate methodological guidelines to enable them to adapt the content of spoken-language teaching to local circumstances.

The diagram that follows illustrates the main relevant parameters that designers of a spoken-language textbook must take into consideration when choosing the subject matter of cards for spoken-language lessons. This diagram, though catering for the situation in Burkina, can of course be used in other contexts. The criteria selected are not exhaustive, but observance of them will help to avoid gross errors in the choice of subjet matter. (For example, it is best not to base a spoken-language lesson at preparatory level in a Fulani-speaking Islamized Sahel area on a canoe trip, the growing of sugar-cane or the building of a pigsty!) It is

be possible, with the aid of illustrations and documents (exchanged between regions), to help to expand the environment of reference and so play a special part in the building of national unity.

When we aspire to instruct children in their mother tongue, we must draw directly on their immediate environment for motivation and understanding; we must be familiar with the everyday features of this environment and the local situation. Experience has shown that many teachers and future teachers often had completely wrong ideas about their own environment. They think, for example, that there are wolves and tigers in the bush (whereas these animals are not represented in Africa) and they cannot tell a hartebeest from a sa-

ble antelope (though these are common animals) or a hind from a gazelle. They ask a little girl to hand things with her left hand (to inculcate the distinction between left and right, for example), when this is contrary to a local customary ban. They do not understand why the villagers will not lend their ritual *balafon,* used only for religious-type ceremonies, to the school orchestra; and so on. The well-known parameters of cultural variability mean that people look at the same thing with different eyes and adopt prejudices that are sometimes contradictory. Thus for Fulani children, the hyena (an animal that comes into tales) is the stereotype of stupidity, whereas for Bissa and Samo children it is a model of cunning and guile where its

Diagram of relevant criteria for the choice of topics and subject matter for a spoken-language card index
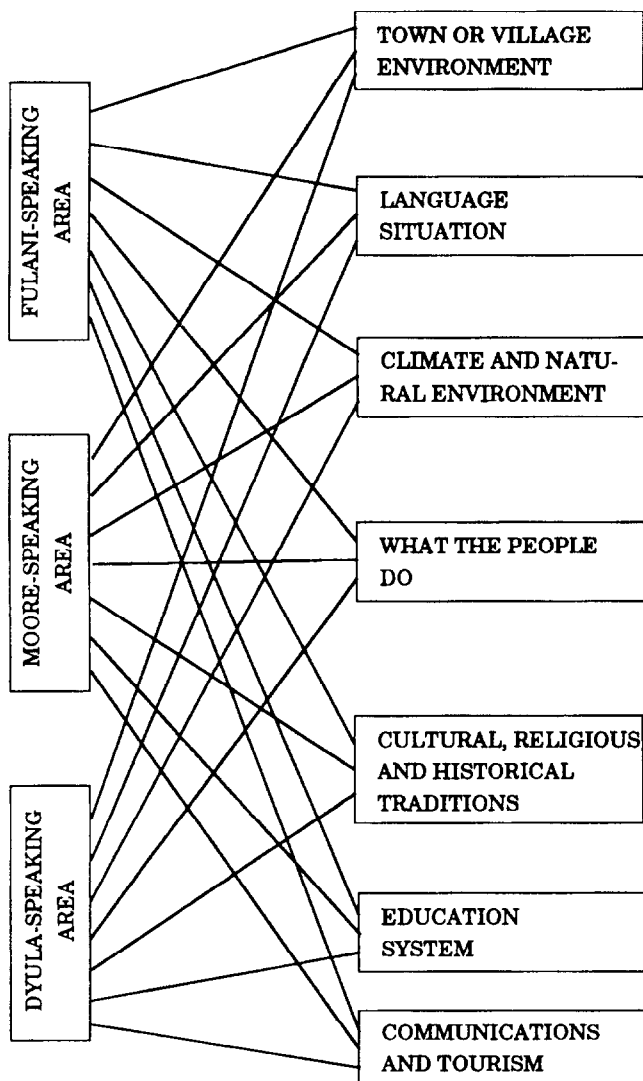
RELEVANT CRITERIA FOR THE CHOICE OF SUBJECT MATTER FOR SPOKEN-LANGUAGE CARDS

Differences in health and hygiene habits; in habitat; in recreation; in dress; in energy sources; in relations with the administration

Homogeneous or heterogeneous? What languages do the children use? What is the children's linguistic status in relation to the language of instruction?

Differences in relief; in vegetation; in rainfall; in temperature; in soils; in humidity. Are watercourses permanent or not?

Commercial crops? Cash crops? Stock-breeding? Agriculture? Handicrafts? Industries? Manufacturing? Mining? Fishing? Hunting? (if the latter, which wild animals and what kinds of fish?)

Religion: Catholic, Muslim, animistic? Local chiefdoms? Traditional kingdom? Folklore? Existence of taboos? Customary ceremonies? Local costumes? Rules of kinship? Famous people in the area?

Which kinds of education are represented in the area—rural, secondary, technical and/or vocational?

Are the roads asphalt or just tracks? Is there a railway? Are there airports? Navigable waterways? Touristic sites?

food is concerned (though still a stupid animal in other ways). A standard diagram similar to the one we suggest would be a good starting-point for people aspiring to set about compiling spoken-language indexes to use to clarify and define their ideas.

Obviously it is mainly in the linguistic field that the disparities are most marked. This is a common situation in Africa and it is to meet the problem that many countries have decided to use two, three, up to seven or eight national languages in school syllabuses. The decision to foster several indigenous languages of instruction is already an initial common-sense solution to the problem of linguistic heterogeneity.

But even in this special case all the difficulties are not resolved for the officially adopted languages of instruction do not always coincide with the mother tongue, or even the everyday language, of a certain number of children. Languages are not necessarily used within the family, unlike Moore and Fulani, which act as family languages in their respective areas of influence. Moreover, the vehicular languages are gradually encroaching on the position of some indigenous languages within the family in the cities; this is not yet the case in the country areas, which cling to their traditions. The needs of children of pre-school and school age, whose concerns operate essentially within the restricted framework of the family and the immediate social environment, can be met by the language used in the family group. In other words, children of this age are not yet necessarily within the ambit of social relationships that call for a more widely used vehicular language.

Consideration of these points ought logically to lead on to attempts to devise a methodology for teaching elementary and advanced oral expression, suited to the various cases that exist, in which practical exercises would be graduated to fit the starting level.

Unfortunately socio-linguistic surveys and investigations carried out by specialized institutes tend to select their reference population from adults, whereas language reform in primary schools affects mainly children, especially those aged between 6 and 8. The statistics collected by the investigators are usually used by literacy training centres to discover the number of speakers or this or that language, which is under consideration as the medium for literacy work; they are of no use to the educationalist who wants to know how many children speak these languages.

So the National Pedagogical Institute must itself, on the ground, with the active support of teachers, carry out a meaningful survey to discover the exact linguistic status of pupils entering classes in which the teaching is carried out in the African language.

Suggested teaching methods

Defining the linguistic status of a class means discovering the number of pupils whose mother tongue coincides with the African language of instruction and, for the remainder, their degree of familiarity with the latter language.

Let 'Ali' be the African language of instruction and 'Mt' the mother tongue; what then are the situations actually met with in the classroom?

First situation

Ali = Mt
In this case the language of instruction is the same as the mother tongue and the child is adequately equipped to express himself from his first day at school.

Second situation

Ali ≠ Mt
In this case the language of instruction is not the child's mother tongue and it may be that the child is virtually unable to express himself or herself or communicate in that language. This second case also covers considerable variations, which must be identified in order to be able to develop operational approaches to teaching and methodology which fit the various specific situations.

To this end we provide a survey questionnaire which is easy for teachers to use.

School	Class		
Situation 1_1: Ali = Mt	Number of pupils whose mother tongue is the language of instruction		
Situation 2: Ali ≠ Mt	Number of pupils whose mother tongue is not the language of instruction		
Situation 2_1: Ali > Mt Ali ≠ Mt	Number of pupils whose command of the language of instruction is better or as good as that of their mother tongue		
Situation 2_2: Ali < Mt Ali ≈ 0	Number of pupils whose command of the language of instruction is less good than that of their mother tongue or is nil		

Teachers will not of course trust their opinions alone in completing this questionnaire. They must check in the children's family circle whether their observations in the classroom hold true outside the school. The results of a survey of this kind can be used in several ways. They give an idea of the work still to be done as regards teacher-training syllabuses, the production of textbooks and the organization of teaching in primary

schools to improve difficult teaching situations. The following are some palliative measures calculated to mitigate or even eliminate the negative effects of situation 2, in which Ali ≠ Mt.

As regards teacher training

Use appropriate recruitment procedures in training establishments to favour candidates who show good practical knowledge of several languages spoken in the country. By virtue of their linguistic situation and the specific training they will receive in teachers' colleges, these future teachers are better equipped than monoglots to identify and correct interference between one African language and another, to remedy dialectal influences on a codified, standardized language of instruction, and to appreciate and interpret individual situations in the pupil/language of instruction relationship.

Set up working groups and workshops in training institutes to arrive at appropriate teaching methods and specific features of teaching on the strength of the situations and variables recorded in schools by teachers in place (using the questionnaire on the previous page).

Foresee early enough the language area to which the future teacher will be posted at the end of his training course so as to be able to adapt his teacher training to the linguistic situation of pupils in the posting area.

As regards production

Include in the cards and handbooks elementary and advanced exercises in the spoken language before going on to reading and written forms.

In general, when the survey shows a substantial amount of Ali ≠ Mt in classes, design handbooks in the form of a main body followed by differentiated exercises of varying intensity depending upon the nature of the situations recorded.

As regards the organization of primary schools

Arrange sessions of practical work suited to each situation represented. For example, pupils in Situation 1 can start to learn reading and writing in their first term, whereas advanced or even elementary spoken language sessions will need to be held for pupils in Situation 2_2. This separation can only be temporary.

If possible, arrange special long extra coaching sessions during part of the holidays for pupils in Situation 2_2. This step would seem to be indispensable when promotion from one class to another is automatic, with no possibility of repeating.

The preceding analysis takes account of the situation of children going to school for the first time. But what about children leaving a pre-school establish-ment and getting ready to start primary school? In many ways their situation is odd, not to say disturbing. The point is that pre-school education is not usually (or at least has not so far been) a priority for African states. Primary schools have far too much to do. Hence the initiative in this field has generally been left to private or religious interests; with the result that syllabuses still exhibit marked variations in teaching and even a certain lack of organization. In the great majority of the cases we have been able to analyse,[4] teaching is done in the European language, except for a few experimental schools (admittedly likely to increase) in which national languages, generally mother tongues, are used.

Below is a chart showing all the possible situations[5] when a child moves from pre-school to primary education.
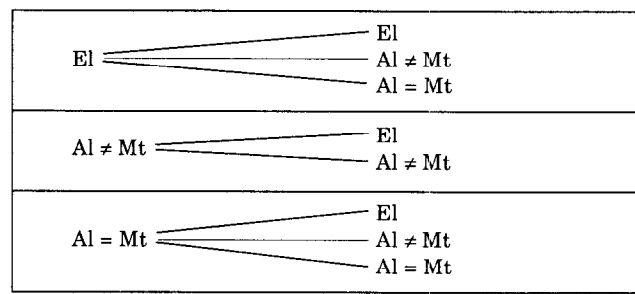
Of these situations, some are favourable from a teaching point of view, some are acceptable, and some are unacceptable as they stand and the children must be helped to overcome the obstacles confronting them. Let us consider these cases one by one.

Case 1:

El → El (from the European language to the European language). This is the usual situation of pupils who leave traditional pre-school establishments to enter primary schooling of the same type. This situation is obviously unfavourable (unless this European language is also the mother tongue, which is sometimes the case in some capitals). The aim of the reforms is actually to abolish the usual case.

Case 2:

El → Al ≠ Mt (from the European language to the African language that is not the mother tongue). This is the case of Bobo children who leave a traditional pre-school establishment to enter a reformed primary school in which the teaching is in Dyula. This case is not favourable, for the children end up faced with two foreign languages, even though Al ≠ Mt, from the same cultural area, is more accessible to them.

Case 3:

El → Al = Mt (from the European language to the African mother tongue). This is the case of Mossi children who go from a traditional pre-school establishment to a

reformed school in their language area. Difficulties arising from interference are to be expected, with children moving from a foreign language to their mother tongue, to return to the foreign language later in a bilingual school context.

Case 4:

Al ≠ Mt → El (from the African language which is not the mother tongue to the European language). This is the case of children who come from a reformed pre-school establishment in which the teaching is in an African non-mother tongue to a traditional primary school. This case is unfavourable, for the children move from a non-mother tongue to a foreign language. This situation should not normally arise if pre-school education uses all the mother tongues represented in the country.

Case 5:

Al ≠ Mt → Al ≠ Mt (from the African non-mother tongue to the African non-mother tongue). This is the case of children who come from a reformed pre-school establishment in which the teaching is in the African non-mother tongue (a regional language, for instance) to a reformed primary school using the same language. This situation does not exist in countries in which pre-school education takes account of all the children's mother tongues.

Case 6:

Al = Mt → El (from the African mother tongue to the European language). This is the case of all children who come from a reformed pre-school establishment in which they have become literate in their mother tongue to a traditional primary school. In teaching terms the process is logical, but in terms of educational psychology it is far too quick and premature.

Case 7:

Al = Mt → Al ≠ Mt (from the African mother tongue to the African non-mother tongue). This is the case of children who come from a pre-school establishment in which their mother tongue is used to a primary school in which a non-mother tongue national language is used. This case may become very common in the future if linguistic policies for primary education and pre-school education are not closely co-ordinated with each other.

Case 8:

Al = Mt → Al = Mt (from the African mother tongue to the African mother tongue). This is the case of Mossi children from Lougsi, for example, who leave a reformed pre-school establishment in which Moore is used for a reformed primary school in which the teaching is also in Moore. It is obviously an ideal situation.

This classification is not a rigid framework; it seeks rather to bring out trends that are favourable or unfavourable for children on the delicate transition from pre-school education to primary education.

In particular this classification brings out more clearly than a long exposition the essential organic link between pre-school education and primary education. Consistent linguistic planning covering both these levels of education must be the absolute role if we are really to give children the best chance of success at school.

Things seen and heard on the ground

We set out below, by way of example, the linguistic situation of pupils in experimental classes in Burkina. These findings are the result of a survey carried out in the country's three main language areas on the basis of the questionnaire given earlier. The figures of course vary from one year to another, but as they stand they represent a trend consistent enough to be reliable.

Language areas	Percentage of pupils in situation 1	Percentage of pupils in situation 2
Moore-speaking	Ali = Mt 95.2%	Ali ≠ Mt 4.8%
Dyula-speaking	Ali = Mt 13.5%	Ali ≠ Mt 86%
Fulani-speaking	Ali = Mt 69.6%	Ali ≠ Mt 30.4%

Nuances within situation 2
(Ali ≠ Mt)

	Percentage of pupils in situation 21	Percentage of pupils in situation 22
Moore-speaking area	Ali > Mt Ali ≈ Mt 62.3%	Ali < Mt Ali = 0 37.7%
Dyula-speaking area	Ali > Mt Ali ≈ Mt 47.7%	Ali < Mt Ali = 0 53.3%
Fulani-speaking area	Ali > Mt Ali ≈ Mt 33.6%	Ali < Mt Ali = 0

These quantified data allow the organizers of the reform to appraise objectively the situations met with in the classroom, to devise textbooks and card-indexes suited to the various situations brought to light and to design teacher-training syllabuses accordingly.

Some teachers have themselves reorganized their class by setting exercises differentiated in level and number in the light of the linguistic situations represented in their class. These practices are to be encouraged except when they are carried out at recreation time or on the pupils' weekly day off.

Theme

Interference and transfer from the first (African) language to the second (European) language

Question 3

How is the problem of interference from one language to another in terms of sounds, grammar and lexicon to be dealt with?

What exactly is the problem?

The use of African languages in schooling is almost never based on the elimination of the European languages previously used and co-existence between two or more languages of instruction has become a definite feature of African school systems today. The simultaneous or even consecutive use of two languages in school syllabuses naturally has an effect on teaching. The learning of a foreign language such as French, English or Portuguese is inevitably influenced by the habits associated with the mother tongue, especially since the learning of the latter is reinforced during the early years at school.

Some teachers fear that the quality of the teaching in the European language may suffer as a result of the institutional use of an African mother tongue, particularly when the time allocated to the learning of this European language is less than before. This raises the whole question of linguistic interference. Teachers usually feel ill-equipped to cope with it and this impression increases their anxiety. When they have not had suitable teacher training they have recourse to empirical corrective measures whose actual effectiveness leaves something to be desired. Hence learning corrective techniques is essential both during initial training and also during further training.

Suggested reply

The problem of interference is a real one and cannot be denied, but it must not be exaggerated unduly, for it arises even in cases in which the mother tongue is not taught at school. Moreover, habits associated with the first language may turn out to be beneficial when, by parallel action, they make it easier to learn the foreign language. They are educationally harmful only when differences of organization between one system and another make the learning of the new language more difficult and more complicated. In the former case teachers can make use of the similarities between the two languages and thereby foster transference phenomena

from one language to the other. In the latter case, they will have to be vigilant and take care to reduce interference phenomena.

To be able to practise this kind of complementary teaching in a bilingual or multilingual school context, teachers must become thoroughly familiar with the principle and the working of interference and transference. They will therefore be given a theoretical briefing beforehand insofar as it is directly related to use in teaching.

THEORETICAL BRIEFING

Teachers will first be told that a language is organized around three interlinked axes which make up three necessary and complementary systems.

A sound system. Clearly no spoken language could exist where there is no system of differentiated sounds.

A grammatical system. It is similarly impossible to conceive of language without grammatical organization and syntax. A certain order and certain markers must be observed in the juxtaposition of the parts of a sentence.

If the structure of a statement involves the order:
Subject + Verb + Object,
then departure from it will produce a wrong meaning, the opposite meaning, or nonsense.

It will be pointed out, for instance, that while English says:

	S	+	V	+	C
	The lion		has eaten		the buffalo,

it would not be reasonable to suggest:

	C	+	V	+	S
	The buffalo		has eaten		the lion,

or:

	V	+	S	+	C
	has eaten		the lion		the buffalo, etc.

Similarly in Moore, the order of the possessive construction
must be:

complementary noun	+	complemented noun
CA	+	CE

Examples:

CA	+	CE
buga		*baaba*
child		father
saara		*doogo*
blacksmith		house

In French, for example, the order is exactly the opposite, the translation being: 'the father of the child' and 'the house of the blacksmith' (CE + CA).

It should also be noted that while in Moore the sequence is immediate (without a genitive marker) in English it is mediate (with a genitive marker, i.e. 's).

A lexical system. To speak, we need vocables whose meaning is perceived in about the same way by all the speakers of one language. Communication would be quite impossible if we stopped at articulated sounds or simple grammatical tools. What would happen to the sentence 'I go to school on Monday morning' if it were reduced to its grammatical elements? We should have 'g', 'o', 's', etc. Moreover, to speak effectively and pertinently we need to understand what different statements represent in terms of social behaviour; this is difficult to master by solely linguistic methods. This is what makes it absolutely essential for teachers to be soaked in the cultural environment whose resources they are using.

It is on the dynamics of these three systems that the proper working of a given language depends.

THE PRINCIPLE OF INTERFERENCE AND TRANSFERENCE

Let us start with the sound system. This is known as a 'closed' system because (as opposed to the lexical system) it has a finite inventory. The point is that the lexicon of a language can always be enriched with new terms; but by the very fact that each sound only exists in contrast to other sounds, already existing new sounds cannot be added. If the sound system peculiar to each language is depicted as an enclosed area, it will be found that there are some items common to both areas, while other items occur in one area only. The following diagram illustrates this:
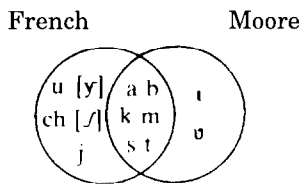
French   Moore

We should remember for teaching purposes that a Moore-speaking pupil who wants to learn French already masters several of the sounds of French, since they ('a', 'b', 'k', 'm', 's', etc.) also exist in Moore. The same of course applies to a French-speaking pupil who wants to learn Moore.

This point is important, since it allows us to identify the first steps in a progression for beginning reading and spoken language practice in small classes. There is no point in harping on sounds that are easy because they are already familiar, but more time and work must be devoted to everything that is different. How many methods observe these elementary principles?

Teachers will be advised to refer to the phonetic tables of the pupils' mother tongues (which have been drawn up by institutes of linguistics for the great majority of African languages). By comparing them with the phonetic table of the foreign language being stud-

ied, teachers will immediately see which are the lessons in which the pupils will have difficulties in reading and pronunciation. They will then be able to adapt the timetable according to their findings and plan more revision for one spoken languages lesson while passing more quickly over another.

Refering to the preceding diagram, it will be seen at once that sounds such as 'a', 'b', 'k', etc. will not present particular problems (they give rise to transference). On the other hand, difficulties must be expected with those sounds that have no counterpart in the other languages; here interference is likely.

THE MECHANISM OF INTERFERENCE AND TRANSFERENCE

To be able to correct interference effectively, it is not enough to know the principle of it; the mechanism must also be understood. Let us suppose that the teacher of a Moore-speaking class asks a pupil to repeat the following sentence in French:

C'est la voiture.

The pupil pronounces it:

C'est la voiti.

What exactly happens to make a pupil produce a distorted sentence from a correct model given by the teacher?

The teacher of course masters all the sounds that make up this short sentence. The same is not true for the Mossi child, who does not have the sound 'u' [y] in his mother tongue. Interference comes about as follows: the sentence spoken by the teacher is perceived by the child's ear and transmitted through it to the brain, a real processing centre which picks up and filters auditory information in accordance with the patterns available to it. These patterns naturally correspond to the sound system of the languages spoken.

The sounds that characterize the words *c'est* [se] and *la* [la] exist in Moore, and hence in the pupil's innate pattern; and so they are reproduced without difficulty. It is quite another matter with the sound 'u' [y], which does not form part of the sound system of Moore.[6]

Teacher (Moore + French)   Pupil (Moore)
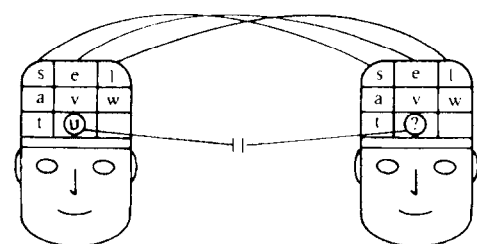
As the following drawing shows the sound 'u' [y] will be perceived and reproduced by the pupil as 'i' [e], which is close to it.
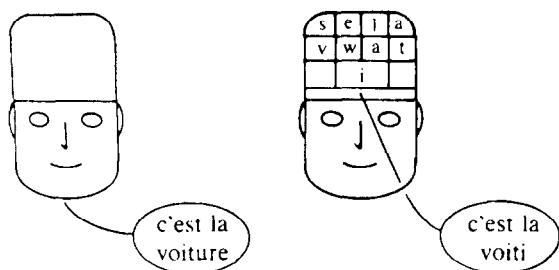
A further point is that interference affects not only sounds but also syllabification.

Many African languages are characterized by the following syllabic structure:

Consonant + Vowel + Consonant + Vowel etc.

French and English, for example, allow consonantal clusters:

Vowel + Consonant + Consonant + Vowel etc.

Example: 'Institution'

The result is that Sangö-speaking children, for instance, when pronouncing this word, will tend to intercalate a vowel between the two consonants, as happens in their mother tongue, and say:
'Ins(i)stution'
Thus they unconsciously and automatically reproduce the alternation of sounds that characterizes their mother tongue.

It would take too long here to go into the problem of the interference that affects the grammatical and lexical systems. Let us simply say that teachers must try to get to know the basic grammatical structures that govern their pupils' mother tongue (structures indicating possession, affirmation, condition, negation, interrogation, concession, etc.) This will enable them to draw up a quick list of them, which will in turn make it easier to foresee the interference that is liable to arise in handling the structures of the foreign language being studied.

If for instance the expression for possession in the original language follows the structural model:
So / mbeti / ti / mbi (Sangö)
It is / book / of / me,
the teacher will know that he must not expect at once to find in his pupils' French copy-books correct expressions of the type:
C'est mon livre   (It is my book)
C'est notre maison (It is our house) etc.

Similarly a sentence of the type 'you and I will go fishing' will regularly be written 'me and you will go fishing', because in a great number of African languages the personal pronoun of the first person precedes other subjects:

1. *mbi / na / mo* (Sangö)
   me / and / you
2. *maam / ne / foo*   (Moore)
   me / and / you
3. *miin / e / aan* (Fulani)
   me / and / you
4. *ne / ni / ele*   (Dyula)
   me / and / you

Interference can also be due to the position of words in the sentence. Thus in Moore it is word order that makes it possible to tell the direct object from the indirect object. In French and English the indirect object may be introduced by a preposition which distinguishes it from the direct object.

Example: In the copy-book of an intermediate pupil the following sentence occcurs: *Il a donné l'enfant un habit* ('He gave the child a coat'). How is the mistake in French to be explained? The essential structure of the Moore sentence is:

a	kõ	buga	fuugu
il	donner	enfant	habit
S +	V +	IO +	DO
Subject +	Verb +	Indirect object +	Direct object

The order is the reverse in French, where we have the following structure:

S +	V +	DO +	IO
il	a donné	un habit	à l'enfant
he	gave	a coat	to the child

The pupil reverted to the syntactical order of his mother tongue and simply transferred it to the French sentence. The teacher can solve these problems by devising structural exercises for motivation adapted to each of the examples of interference he has noted.

The area of vocabulary interference is more difficult to define because the vocabulary constitutes an open system receptive to new elements. It is therefore not possible to draw up an exhaustive and systematic inventory of probable interferences in this case.

Nevertheless, if the teacher masters his pupils' mother tongue, he will have no difficulty in understanding the reasons for the most frequent errors and put his pupils on guard against the pitfalls of pure and simple translation.

Example: I hear the odour of the cigarette
(in the Moore language) m / mumda / sigar / yuugu
I / hear / cigarette / odour

From the pedagogical point of view, an understanding of the underlying principles and production mechanisms involved in interferences makes it possible for the teacher to understand and explain his pupils'

errors. These are logical errors and to some extent errors of reasoning. They are a sign of healthy linguistic reflexes. In dealing with errors due to interferences, the teacher should maintain a flexible if not permissive attitude, at least during the initial period. He will achieve good results through successive approximations and not by penalizing children whom he erroneously believes to be dull or lazy.

Suggested methodology

Here are a few recommendations which will be of help to the teacher in solving the problem of interferences with regard to sounds. Indeed, this is precisely the problem which constitutes an initial obstacle for the pupil faced with learning to read and to express himself in a language which is not his mother tongue.

The elements making up what is generally called 'good pronunciation' in speaking and reading can be summarized as follows:
1. The purity of sound
2. The correct rhythm
3. Proper intonation
4. Adjustment of output
5. Quality of articulation
6. Voice projection.

The first three points mentioned are directly connected with a knowledge of the language and the last three depend upon the speaker himself. It has often been observed that most difficulties of understanding and even of communication are the result of a misunderstanding of these last three points. Reading aloud, for instance, will lose part of the information it is supposed to convey because the delivery is too quick, because the articulation is too slack and because the voice is not projected sufficiently. The same is true when a pupil recites a passage: an audience unfamiliar with the passage often has great difficulty in understanding all of it.

Thus it is a combination of these six components that ensures good pronunciation, and that should also serve as a basis for the rational evaluation of all oral activities (spoken language, reading aloud, recitation, etc.). In general, teachers limit their empirical attempts at phonetic correction to a quest for pure sounds. But this is only one component and there is no reason to give it preference. The problem of pronunciation should always be placed in its overall context. Acquiring a sound in isolation is not enough to produce a good pronunciation; suprasegmental features are the most important.

It is not within the scope of this work to suggest an overall methodology for correcting wrong sounds caused by interference phenomena. But here are some practical methodological guidelines on the strength of which teachers will be able to pick up certain correction

procedures applicable to spoken-language lessons in French in a bilingual or multilingual school context.

First it is necessary to know that three basic vowels, (i), (u) and (a), occur in practically all languages. These three vowels delimit the 'vowel triangle', which may be represented thus:

(a) intermediary vowel
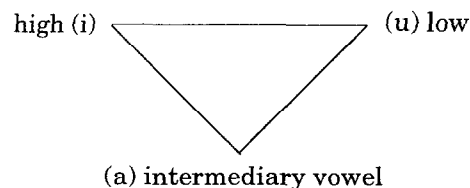
French vowels fall naturally within this triangle. Their acoustic classification is shown in the following chart.
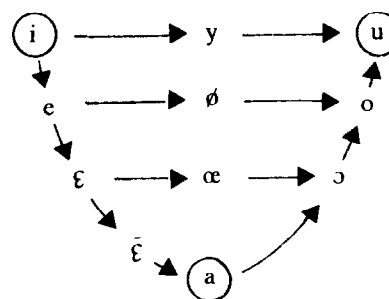
As to the purpose of this chart, it is very simple.

Looking at the basic triangle, we see that [i] is the highest-pitched vowel and [u] the lowest-pitched; and so it follows from this that [y] is lower-pitched than [i] but higher-pitched than [u]. Similarly we see that [œ] is lower-pitched than [ɛ], and [ɔ] is lower-pitched than [œ].

Now we come to practical application. Suppose a pupil of Moore mother tongue pronounces the French word *voiture* incorrectly. We must not forget that this word is written phonetically [vwatyr]: and we know that the sound [y] is not represented in the sound system of Moore. What has happened is that pupil has reduced the sound [y] to the sound [i], confusing these two phonemes which are close to one another.

One of the correction procedures, that of distorted (or shaded) pronunciation, consists simply of bringing out or even caricaturing the difference so as to make it obvious. Since the pupil does not register the low pitch of [y], we compel him to register it by exaggerating the low frequencies, and get him to say [u], i. e. 'oo'. We distort the model as it were, in the opposite direction to the mistake, so that the pupil can achieve a happy medium between the two extremes.

The procedure can be represented diagrammatically as follows:

bivard ← buvard ⇄ bouteille.

The correct pronounciation being [byvar], and the pupil saying [bivar], the teacher makes him say not [buvar], which does not exist, but for instance [butey], in order to come back later to [byvar]. The teacher will so far as possible choose examples containing the sound [y] from words already learnt in previous lessons. These known words help to trigger the right articulatory reflex and are real key words for the pupils.

The procedure relies on the accoustic classification of vowels as well as on their articulatory classification.

A pupil who tends to pronounce the sound 'é' as 'ai' ([e] → [ɛ] will say *ètait instead of était and èpais in*stead of *épais,* etc. He unconciously opens the vowels too much. We give him distorted models which will bring him towards the corresponding vowels.

Let us represent the phenomenon by using the previous model:

ètait ← était ⇄ itait

From the vowel triangle it will be seen that the procedure applies to the horizontal axis as well as to the vertical one. It is also valid in both directions. Thus a pupil who pronounces the sound 'è' [ɛ] as an 'é' [e] will be given models tending towards the sound 'a' [a]:

[e] ← [ɛ] ⇄ [a]

Hence it is essential for teachers to keep continually in mind the data contained in the vowel triangle and the multilateral relationships of each vowel. Moreover, when a vowel is badly pronounced the whole series to which it belongs is likely to show the same defect. In phonetics too there is a logic of error.

In any case we should warn against using this method too systematically or dogmatically. Once again, it is the combination of a number of factors[7] that ensures good pronounciation. The latter is actually an overall process. Purity of sound is a phenomenon that cannot be considered in isolation. Correction absolutely must be restored to its context of intonation and prosody. This applies to all corrections suggested by teachers.

Lastly, a few recommendations to do with teaching. Phonetic correction is not a 'subject' occupying a definite place in the timetable. It is spasmodic and can be carried out as well during a spoken-language lesson as during a reading lesson. Corrections must be short and few in number. In spoken language phonetic correction should be immediate during repetition, but deferred during the stage of re-use so as not to disrupt the pupil's spontaneity of expression. The teacher will simply note down the main errors of pronunciation and hold a little phonetic correction session at the end of the lesson.

These interruptions must not of course take up so much time that they encroach on the main lesson, with the danger of upsetting its unity and impairing its in-

terest. Teachers must therefore choose the timing and amount of the exercises judiciously, and not persist too long if they do not secure exactly correct pronunciation straight away. Children cannot learn to distinguish and reproduce the sounds of a non-mother tongue language at one go, or in two, or even in ten. Phonetic correction is a long-term job; learning is cyclic and gradual. The same exercise can be repeated later several times, but each time the teacher will be more demanding. In phonetics too, the saying is true that 'Rome was not built in a day'.

Things seen and heard

1. Here, by way of illustration, is an example of the correction procedures that teachers of experimental classes in Burkina have been taught. The object here is to correct the u/i interference in French.

Mistake made by pupils

'u' becomes 'i'

Examples drawn from the lesson

La l*u*ne, *u*ne r*u*e, un n*u*age, au-dess*u*s, all*u*me, *u*ne min*u*te, *u*tile, le tiss*u*.
Thus,   – allume → 'allime'
        – minute → 'minite'
        – le sucre → 'le sicre'.

Correction procedures

a) The teacher uses the distorted pronunciation procedure:
'La line'   la lune   le loup
'la rie'   la rue   la roue

The teacher makes the pupils repeat loup/lune; roue/rue, etc. So far as possible he puts examples containing the 'u' sound in sentences themselves selected from previous lessons already learnt by the pupils.

b) The teacher makes the pupils use the 'u' sound in a monosyllabic word in a falling intonation which favours the production of this sound. The teacher points to Lucy and asks her: 'Is this Lucy?'
Then the teacher makes the pupils nod their heads and answer: 'Yes, it is Lucy'. Next the teacher speaks to a pupil (pointing to Lucy):
'Tu l'as vue?' (Have you seen her?) 'Oui, je l'ai vue.' (Yes, I have seen her), etc.

c) Contrasting 'u' with 'i'.
Examples: t*u* l*i*s? L*i*s-t*u*? (Are you reading?); T*u* r*i*s? R*i*s-t*u*? (Are you laughing?), etc.
From time to time the teacher checks whether 'u' is still being pronounced right even in an unfavourable

environment, such as the immediate proximity of the sound 'i'.

Examples: m*i*n*u*te, d*i*m*i*n*u*er, f*u*s*i*l, etc., and in a rising intonation.

2. Linguists and teachers have too often stressed the differences between languages and the danger of interference, and have not sufficiently brought out the remarkable similarities which can be used in teaching to make the learning of a second language both easier and more thorough.

In cases where there is a similarity in syntactic construction, the teacher can use it to make it quicker and easier to learn the corresponding structure in English. The reverse process is also valid. An exercise which uses graphic representation as an aid to motivation and memorization is useful for driving home the syntactic arrangement of the parts in an interrogative sentence.

Notes

1. *Une expérience d'étude du milieu au cours élémentaire,* by G. Bogoré. Burkina Faso, Centre for Documentation and Educational Studies (duplicated document, p. 75.) (Documents pédagogiques No. 9.)
2. The transliteration used in this work follows a few simple principles. Whenever the language in which an example is given has already actually achieved the status of a language of instruction (as is the case with Sangö, Moore, Dyula, Fulani, etc.) it is transliterated in the spelling used in the official school textbooks designed in the national educational institutes. Other languages are transliterated either phonetically ([ ]) or, when possible, phonologically (| |).
3. This seems to be an onomatopoeic word intended to imitate the drumbeat used to attract attention before conveying a piece of news.
4. Senegal, Burkina, Niger, Côte d'Ivoire, Benin and Togo.
5. These are *current* situations, which are liable to evolve rapidly in a country in which pre-school education is changing. All these situations are not necessarily met with in the same country.
6. This explanation and diagram are intended as illustrations of a phenomenon in teaching, not as rigorous scientific descriptions.
7. The verbo-tonal method from which these recommendations are derived has been developed by Professor Raymond Renard, whose books on the subject may be obtained from the Centre de Phonétique Appliquée, Université de Mons, 17, place Warocqué, 7000 Mons, Belgium.

Written expression work: spelling and grammar in the national language of instruction

Theme

The spelling of African languages of instruction and the need for it to be independent

Question 1

Why not use the spelling of European languages, which many people can read, to transcribe our national languages? Would this option not avoid the difficulty of learning a new spelling?

What exactly is the problem?

The initial question was raised by very many teachers and future teachers (although many medium- and higher-grade supervisors ask the same question). No doubt the weight of established habits has something to do with this costive attitude towards special spelling for the national languages. But the problem is more serious. We need to understand the state of mind of teachers who have already made a big effort to learn to read in a European language and suddenly find themselves faced different symbols, or even with the same symbols pronounced quite differently. This is certainly why the question of special spelling for African languages still arouses controversy in many countries, even though an official decision has already been taken in favour of this or that option.

In fact the question is ticklish and complicated. For a spelling to be really scientific, and hence credible, it must take account all the significant facts. Now purely linguistic criteria, which have often been improperly favoured, are not the only relevant ones. A spelling must also fit the psychological, hisorical and sociological situation of the region or country concerned. Now that African/European bilingualism seems a solution with a future for many African nations, most children and adults will read in at least two languages, the national language and a language of international communication. So we can understand teachers' anxiety to see scripts adopted which make maximum use of the similarities between the various languages of instruction.

Nor should it be forgotten that a substantial literature is available in many African languages. These books, often written by englightened amateurs, have been transcribed with direct reference to the language of the European transcriber, whether missionary, administrator or teacher. Obviously we cannot at a stroke obliterate everything that already exists in this field.

Lastly, some teachers have admitted to being discouraged by the problem of the tones that must be taken into account in the correct spelling of many languages. The laws of tonetics and tonology have not yet been clearly established and the notation of tones requires a real effort on the part of the transcriber, even if he is a speaker of the language transcribed.

Those, briefly, are the arguments that explain, at any rate in large part, some teachers' hesitations about the new notation.

The solution to the problem lies essentially in giving them a suitable briefing in linguistics. It must in particular be explained to teachers that by and large their preference cannot be met without doing serious violence to the distinctions between one language and another.

Suggested reply

European spelling such as that of English has a history. It rests on foundations that in themselves have a certain stability, not to say a certain logic. However, it cannot be taken as a standard for other languages whose origin and development are different. The obvious irregularity of some European spellings results from the fact that the spoken language having evolved more quickly than the written spelling, distortions accumulated over the centuries, and the modern spelling has ended up representing linguistic phenomena that are no longer simply phonetic.

The work of grammarians has also been a key factor in this evolution, in that they have emphasized the etymological function of spelling. They have in fact continually tried to bring out genetic links such as between the English and the Latin word or the English and Greek; which has led to a further complication for the non-Latinist.

On the other hand phonetic spelling (which is the referent for most African languages that have recently acquired the status of a written language) aims faithfully to represent the spoken language. Hence if problems of script and transcription are ignored, there will no longer be an actual spelling problem in these languages. The enormous advantage of phonetic spelling over spelling of English or French type is immediately obvious. It saves the expenditure of much energy in sterile effort; and it saves precious years to produce a more productive mastery of the language.

But what actually is phonetic spelling? To understand this, a little theoretical information is needed: and first we need to distinguish general or comparative phonetics from functional phonetics.

Phonetics in general is the detailed study, as delicate as possible, of sounds as pronounced or perceived. Thus general phonetics studies all possible human sounds through the natural languages. Comparative phonetics studies the sounds of two or more languages by comparison with each other. Thus the general or comparative phonetician is interested in all sounds irrespective of their function.

Functional phonetics, sometimes also known as phonology, is the science that studies the sounds of speech from the point of view of their function within the system of linguistic communication. The point is that not all sounds are important for communicating the message. Behind the tangle of sounds there are a limited number of basic ones which functional phoneticians recognize as relevant and significant. These sounds are called phonemes. A functional phonetic transcription takes account only of the phonemes of the language and neglects superfluous phonic details.

A spelling can thus be regarded as functionally phonetic when it lays down a one-to-one relationship between graphemes (units of writing) and the phonemes (units of sound) in language (i. e. same symbol for same sound).

The English and French spelling is not phonetic because the relationship between sound and symbol is not one to one:
1. There are cases in which the same phoneme is represented by different graphemes:
Examples:
[o] in French: *sot, seau, saut*;
[s] in French: *soleil, garçon, station, pince, assurance.*
2. There are cases in which different phonemes are represented by the same grapheme:
Examples: vol*e* [ə]
        vol*er* [e]
        vol*eur* [œ]

On the other hand the spelling adopted for African languages is in general phonetic because:
1. The same phonemes are represented by the same graphemes.
2. Different phonemes are usually represented by different graphemes.

The advantages of a spelling of this kind for teaching are very obvious. Ambiguities, which are so many pitfalls, are virtually excluded, and there is no mute symbol. Children pronounce 'as it is written', and write 'as it is pronounced'. The code for the spelling of African languages is much clearer and more economical than that of European languages. What is the point of looking for difficulties all costs? The argument that learning a new spelling would involve greater difficulty than simply transferring English or French spelling to African situations is also devoid of serious foundation.

Experience shows that children and teachers pick up the new spelling very quickly. In the classes in which it is used, mistakes are few and usually due to inadequacies in the spoken language. The link between writing and reading also becomes much easier for movement from one to the other is almost immediate.

Moreover we may reasonably wonder how many people in a single African country (apart from intellectuals) master French spelling. In areas where the illiteracy rate reaches 80 per cent, it is difficult to claim that people should be sent on refresher courses, for it is initial learning that is in question. As for the 20 per cent who have more or less assimilated English or French spelling, it would be easier for them to learn a logical spelling in addition to an illogical one than to be faced with two illogical spellings at once.

Lastly, we must not forget that to use English spelling to transcribe national languages would mean robbing the latter of many of their special features. The point is that there are sounds specific to African languages and sounds specific to European languages. Vowel length, for instance, plays a very important part in many African languages. How can this be brought out if the spelling system chosen does not have this feature? The truth is that to reduce one spelling to another would be to truncate the actual linguistic facts.

Suggested teaching methods

To be able to transcribe national languages correctly and justify this transcription, teachers must acquire the following knowledge, skill and behaviour, which will be inculcated in the syllabuses of training institutes:

- Get to know the value of the symbols of the phonetic-alphabet (*knowledge*).
- Put in perspective the spelling of the European language used (*behaviour*).
- Learn to distinguish the phonemes of the African language out of the multitude of sounds perceived in the spoken language (*skill*).
- Get to know and master the particular phenomena that affect the spelling of the national language (*knowledge and skill*).

GET TO KNOW THE VALUE OF THE SYMBOLS OF THE PHONETIC ALPHABET

There are several phonetic alphabets, but the best known and most widespread in Africa is the international phonetic alphabet (IPA). This alphabet uses letters borrowed from the traditional alphabet (Greek and Latin), and also other symbols devised by phoneticians. The principle of the phonetic alphabet is 'same symbol for same sound'. But actually no language can achieve a perfect match between phonemes and graphemes.

The symbols used for the transcription of African languages are taken from the IPA and the International African Institute (IAI). Some symbols have been taken over from European spellings.

PUT INTO PERSPECTIVE THE EUROPEAN LANGUAGE USED

Obviously historical arguments do not carry sufficient weight to justify copying spellings. Just because the earliest transcriptions, by enlightened amateurs, were modelled on European spellings does not mean that we must continue along this path.

National spelling alphabets exist and develop independently. Thus the national alphabet of Burkina is the product of the work carried out by national commissions set up for the purpose.[1] All the phonemes in the languages so far studied were listed and symbols agreed to represent them. The symbols chosen were borrowed from the IPA and IAI, and take account of transliteration already in use in other African countries. Hence the national spelling alphabet is capable of development and allows the introduction of new symbols needed to transcribe the Burkina languages so far little studied (as with certain symbols recently introduced to transcribe Cerma, the language of the Gouin).

LEARN TO DISTINGUISH THE PHONEMES OF THE AFRICAN LANGUAGE OUT OF THE MULTITUDE OF SOUNDS PERCEIVED IN THE SPOKEN LANGUAGE

To define a sound as a phoneme, phoneticians use 'minimal pairs' taken from the language studied. A minimal pair is a pair of words or morphemes almost identical in form and only distinguishable by one sound used in uttering them. They must be different in meaning.

The sounds that then differ are regarded as phonemes.

Examples in English

rain / pain	r ≠ p = 2 phonemes
king / ring	k ≠ r = 2 phonemes
tired / sired	t ≠ s = 2 phonemes

Examples in Moore

paga / baga	p ≠ b
(woman / soothsayer)	
dʋ/ tʋ	d ≠ t
(to climb / to insult)	
naam / maam	n ≠ m
(chiefdom / me)	
sa / za	s ≠ z
(to finish / to tie)	

Unlike full phonetic transcription, which takes account of all the physical details, functional phonetic transcription (on which spelling is based) only shows the phonemes of the language; hence it excludes the useless phonic language. The following examples well illustrate the selective process involved in functional phonetic transcription.

Full phonetic transcription in Moore	Functional phonetic transcription in Moore	
[bahe]	/base/	: leave!
[ĸjɛ̃nɛ̃]	/kênê/	: walk!
[baɣa]	/baga/	: the soothsayer
[ĸjɛlɣe]	/kelge/	: listen!

GET TO KNOW AND MASTER THE PARTICULAR PHENOMENA THAT AFFECT THE SPELLING OF THE NATIONAL LANGUAGE

A certain number of particular phenomena occur in the spelling of a language. They are landmarks which the scribe must observe if he wants to write according to accepted standards.

Assimilation:

This is the change undergone by a phoneme in contact with a neighbouring phoneme. When a word is pro-

nounced its component phonemes do not necessarily remain intact: they influence one another. Assimilation occurs when a sound 'copies' all or some of the characteristics of a neighbouring sound.

Examples in Moore:

| kambā | pronounced кammā | (the children) |
| rūndā | pronounced rūnnā | (today) |

Epenthesis:
This is usually a vowel inserted in a word for reasons of euphony, either to avoid an unwanted sequence of consonants or to distinguish two words with different meanings.

Examples in Moore:

wênga (evil) ≠ wēnega (kind of dance)

pônge (to shave) ≠ pōnege (to leave to rot)

Elision:
In this phenomenon a final vowel is dropped before the initial vowel of the following word:

Thus in Moore:

ti a biigā watame (. . . for her child to arrive)

becomes: t'a biigā watame

Compound words:
These are very common in some African languages. The practical problem is whether to spell them in one word, as two separate words, or with the various components joined by hyphens.

Borrowings:
Their spelling usually reflects the changes they undergo in passing through the phonetic constraints of the host language.

Examples in Moore:

| sitorgo | for *citron* (lemon) |
| sāmbriyεεre | for *chambre à air* (inner tube). |

Reduplication:
This is the doubling of a whole word. In the languages of Burkina, for example, words may lose their final vowels or syllables in cases of reduplication.

Example in Moore

tâab - tâabo (three by three).

Things seen and heard on the ground

To avoid confusion and interference between the spelling of the national language and that of the European language, the following advice is given in the language-teaching syllabus of teacher-training establishments in Burkina.

STAGGER THE LEARNING PROCESS

It is not sensible to tackle both spellings at once. Children must master the spelling of the mother tongue before starting to study French spelling. Experience shows that, in the case of spelling based on phonetic principles, assimilation is rapid and lasting.

GO FROM THE KNOWN TO THE UNKNOWN

The known for African children is the mother tongue or the everyday language, which should really be the same as the African language of instruction. The study of a new spelling system must therefore take account of what the children already know and start from what is common to both systems. The following progression should be followed in going from one system to another:
a) Spellings and sounds common to both systems
b) Different spellings and sounds
c) Different spellings for the same sound

Thus in going from Dyula to French:

| D: | e | ε | | u | ɔ̃n | ɛ̃n | |
| F: | é | è (ai, ait . . .) | | ou | on | in | etc. |

d) Same spelling for different sounds.

USE CONTRAST TO IMPROVE DISCRIMINATION

In the event of mistakes the teacher makes the differences more perceptible by using deliberate contrast.
a) For mistakes due to different sounds with the same spelling:

Dyula	French
m*u*so (woman)	m*u*r (wall)
*c*aaman (much)	*c*ale (dock)
*j*ula	*j*oli (pretty)
taga*f*e (loin-cloth)	cara*f*e (carafe)

b) For mistakes due to the same sound with different spellings:

Dyula	French
bεn (reach agreement)	*bain* (bath)
berε (real)	béret (beret)
kɔrɔ (elder)	école (school).

These contrasts should be as often as possible used in the form of games.

INDIVIDUALIZE WORK

Since each child has personal spelling needs, the teaching of spelling calls for work on an individual basis (by building up little personal or group card-indexes).

REVISE REGULARLY

Revision of the spelling of words must be systematic, rigorous and methodical.

USE SUCCESS-ORIENTED TEACHING

Spelling sessions must take place in a climate of confidence. Neither the teacher nor the rest of the class must criticize.

This advice, based on a few elementary principles of teaching practice, enables teachers to minimize problems and pitfalls. At any rate, it does not gratuitously create additional difficulties for the children.

Theme

African languages and the teaching of grammar

Question 2

Is it not possible to keep the nomenclature already used to describe European languages for the grammatical analysis of African languages? This nomenclature is well known to us. Is not changing the terminology gratuitously increasing the number difficulties?

What exactly is the problem?

So long as an African language does not have its own metalanguage,[2] it will have to borrow one from European languages. The choice of this metalanguage must, however, rigorously observe the original grammatical categories of the language in question. Now teachers and future teachers generally consider that French grammar, with its certainties and subtleties, is an exemplary 'model'. They have usually had practice during their training in taking grammar lessons in a European language. They have gone over the main features in detail and are fairly well equipped to teach this discipline at school. It is understandable from a human point of view that they should cling on to this knowledge and try to subordinate what they do not know to what they already know.

Moreover though African languages have been subjected to fairly detailed analyses, there are still few grammatical descriptions that come within the range of elementary schoolmasters. The work that exists in

this field is still in an esoteric language accessible only to the initiated. Moreover these nomenclatures and terminologies, already offputting for the layman, often vary from one research worker to another, which does not exactly encourage good will. Lastly, when it comes to actual teaching, teachers mostly find nothing they can immediately use in their classes, grammatical descriptions being nearly always designed as university theses or high-level treatises.

Hence it will be easily understood that teachers accustomed to using terms such as 'adjective', 'subject', 'verb', 'noun', 'complement', 'object', 'article', 'preposition', etc. in an equivocal way are doubtful about the need for change as soon as it comes to recording grammatical data in the national languages.

There is also the point that teachers seldom receive adequate linguistic training, apart from transcription courses in the national languages, although teaching about these languages is beginning to be diffidently introduced into the syllabuses of training institutes. The point is that the idea of 'teacher' covers very varied situations in Africa. Apart from this or that specially favoured country whose teachers hold school-leaving certificates or have graduated from a teachers' college, the bulk of teachers consists of *instructors or assistant teachers* whose education stopped at the *Certificat d'études de l'enseignement du premier degré* (CEPD) or at best at the *Brevet élémentaire du premier cycle* (BEPC). This staff, recruited on the spot, does not always enjoy initial training. As for in-service training, this still concentrates mainly on conventional vocational training, in which linguistics is not taught. Training situations are no doubt changing and are very different from country to country; but as a general rule the teaching of linguistics applied to language remains *unfamiliar ground to teachers in post and to future teachers*.

There is no doubt that this staff has a universalist conception of grammar. They quite naturally project on to African languages the phonetic, morphological, syntactical and semantic categories of the European language they have studied.

Suggested reply

A priori there are syntactic grammatical functions common to all languages, such as that of predicate. The concept of subject also has a consistent definition in all languages. In Moore, for instance, it is called *maanda* ('he who does'). Hence it is preferable to speak not of systematic rejection or appropriation but of continual readjustment of terms and definitions to the circumstances of a language.

Beyond the universals of language and the affinities that all languages show, special characteristics and also specific features persist; and there are many examples of distortion between the grammatical termi-

nology that applies to European languages and the linguistic characteristics peculiar to African languages.

Thus the word *kas* in Ngambaye (a Chad language) means 'red', but functions as a verbal even when it expresses a concept identical to that of the adjective in English. The idea of adjective does not cover the same area in these two languages and the ideational discrepancy affects a large part of the defining properties of this signifier. The word *kas* must therefore be defined as a verbal in Ngambaye, and not as an adjective.

By the same token English speaks of a 'white sheep', bringing in two distinct and independent semantic lexical items. On the one hand here is a sheep on the hoof and on the other the white colour of its fleece. The same concept is constructed differently in Gulimancema, namely:

ō	—	pè	—	píen	—	ō
the		sheep		white		the

The parts are syntactically and semantically intertwined and the whole makes up only one unit. A Gurmanche cannot separate 'white' from 'sheep', since for him the white is in the sheep and the sheep is in the white. Hence in Gulimancema the qualifying adjectival entity does not function as in English; and the same applies in many African languages, in which the qualifying group is characterized by being composite.

The idea of gender is also not transferable from one linguistic system to another. In Moore, for example, the masculine/feminine antithesis works differently from in French, for example. It does not cover the same linguistic area. What may be called masculine/feminine in that language is in fact only a differentiation of sex. Moreover, this division is more justifiable and logical than the one in French, which is arbitrary and unmotivated (why '*la* chaise'? why '*le* banc'? etc.). There are *a/ba*, *ga/se*, *ga/do* genders, etc., where *a*, *ba*, *ga* and *se* are suffixes that fulfil a function similar to that of articles but are not articles. These genders, instead of designating masculine and feminine, designate in particular a certain division of the objects in the world as it appears to the Mossi. Each gender in fact covers elements of a single semantic field.

In Dyula also the distinction between masculine and feminine genders does not cover the same area as in French:

Il est venu (he came)	:	*a* nana
Elle est venu (she came)	:	*a* nana
Une maison (a house)	:	boon
Un arbre (a tree)	:	yɪrɪ

In this language signifiers do not undergo a formal change as in French: there are objects for men and for women, and the nominalization process takes place by composition or the formation of complementary syntagms.

musofani
woman/garment : woman's garment
cɛfani
man/garment : man's garment

We also find that the order of the parts of the syntagm is complementary/complemented, whereas in English it is the other way around.

Still in the category of nouns, the distribution of nominants often corresponds to a particular classification of the lexical stock by strictly semantic criteria. This is the case with the class languages, which include languages such as Swahili, Fulani, Gulimancema, etc.

In Moore, for example, the class suffixes (-a/-b) which 'correspond' to the singular/plural in French are specific to nouns for human beings and agentives in countable nouns derived from a verb.

Nouns for human beings:

paga	:	woman
pagba	:	women
baga	:	soothsayer
bagba	:	soothsayers

Derived agentive nouns:

tʋmda	:	worker
tʋmdba	:	workers
koaada	:	farmer
koaadba	:	farmers

This language has about twelve classes.

In Gulimancema there is a distinction, for instance, between superior or normal human beings, the nouns for which the classifiers have (-o) in the singular and (-ba) in the plural, and inferior or abnormal human beings, marked by (-o) in the singular and (-a) in the plural. Animals carry the class suffixes (-o) in the singular and (-i) in the plural, etc.

'Normal' human beings:

/bád-ō/	:	chief	/bád-ā/	:	chiefs
/cuadō/	:	son-in-law	/cuadbā/	:	sons-in-law

'Abnormal' human beings:

/wòm-ō/	:	deaf	/wòm-ā/	:	deaf (plural)
/máan-ō/	:	blacksmith	/máan-ā/	:	blacksmiths
/gáad-ō/	:	madman	/gáad-ā/	:	madmen

Animals:

/tāam-ō/	:	horse	/tāam-í/	:	horses
/kpāan-ō/	:	guinea-fowl	/kpāan-í/	:	guinea-fowls
/piāl-ō/	:	hind	/piāl-í/	:	hinds

In view of this classification based on semantic criteria, we are led to call these suffixes 'class morphemes', 'classifiers' or 'specifiers'. In any event, maintaining the singular/plural distinction inherited from English would prevent our taking account of the semantic distinction and would lead to mistakes.

Terms as simple as 'noun' also lead to confusion when they are transferred from one language to another. In French, for instance, nouns are characterized by taking the marks of gender and number, taking an article (definite or indefinite) and fulfilling certain syntactic functions. In Moore nouns are characterized by ability to take a class mark and the mark of the definite and fulfil certain syntactic functions. There is obviously no homogeneity of defining terms.

The same applies to the verb, which remains the central element in the statement in both French and Moore.

Let us consider the following sentences:
1. La femme pile: pagã toodame
   (the woman pounds)
2. La femme pile le mil: pagã tooda ki
   (the woman pounds the millet)
3. Les femmes pilent le mil: pagbã tooda ki
   (the women pound the millet)

To analyse grammatically the verb in the French sentence we must use the following terminology:	In the case of Moore, what observations can we make about this terminology?
Infinitive: piler (to pound)	No equivalent in Moore: /too-/ is an injunctive or aorist.
Conjugation of the verb: 'piler' is a first conjugation verb.	No equivalent in Moore. Some verbs are essentially perfective or imperfective.
Mood: Here it is in the indicative; it could also be in the conditional, the imperative or the subjunctive.	Indicative and imperative are possible.
Tense: It is in the present.	The verb selects a mark of aspect: it is complete or incomplete.
Person: French has three persons in the singular and three in the plural.	There are 'weak' and 'strong' forms.
Endings: For the verb 'piler' the endings of the present indicative are: e, es, e, ons, ez, ent.	Not relevant in Moore.
Agreement of the verb: The verb agrees with the subject in person and number.	Not relevant in Moore.

Present participle: first conjugation verbs form their present participle in *ant*: 'pilant'	Not relevant in Moore.
Past participle: the past participle of first conjugation verbs ends in *é*: 'pilé'	Not relevant in Moore.
Behaviour of the verb when it introduces an object complement: when a verb introduces an object complement, its form remains unchanged	When the verb introduces an object complement the group -me is lost or at any rate shortened.
elle *pile* elle *pile* le mil	pagã toodame pagã tooda ki

The above analysis clearly shows that the linguistic make-up peculiar to Moore does not fit into the terminological mould that suits the grammatical phenomena of French.

Another fundamental difference has to do with tones. Tones are not relevant in English or French, whereas in most African tongues they play a significant role. Tones have a distinguishing function both with nouns and with verbs.

Examples in Dyula:	só	=	house
	sò	=	horse

In Dyula a verb is changed into a noun by raising the tone. Thus:

tágà	=	to depart
tágá	=	departure.

This operation of changing verbs into nouns has no counterpart in English or French, and to transfer terminology copied from the grammar of these languages would naturally be impossible.

Another phenomenon which could not be constrained is that of determination. In French the articles act as determinants. The article is a necessary part of the nominal syntagm, but is separate from the noun and precedes it. In Dyula the mark of the definite is a complete form, viz. a tone modulated on the following model:

só a house   + /^/ – só ^ = the house
só a horse   + /^/ – sò ^ = the horse.

In Moore the mark of the definite is 'wa', which unlike the English or French definite article always follows the noun:

ꞰꞮ   =   millet
ꞰꞮwã   =   the millet

Many examples could be given of distortion between the grammatical terminology appropriate to English or French and that specific to African languages. All the cases analysed clearly show that sytematic transference from one language to another is simply pseudo-scientific botching.

Suggesting teaching methods

The grammatical categories listed in African languages are specific and cannot be constrained to fit those of other linguistic systems. By virtue of suitable training, teachers and future teachers will appreciate the need to study African languages for themselves and not by reference to European languages.

In practical terms, we need to give students in teachers' colleges and teachers the briefing and the theoretical training essential for the scientific study of their mother tongue, and thus lead them to an objective understanding of the latter. This training will start with some general linguistics. Teachers will gradually come to master the scope and meaning of the terminology used in African linguistics, while at the same time continually checking that it actually corresponds with the phenomena of the language.

Below is a non-exhaustive syllabus for this training.

THEORETICAL FOUNDATION

Phoneme, phonetics and functional phonetics; moneme, lexeme, morpheme and grapheme. These various points must be very clear in the teachers' minds, for they are the starting-point for ideas about linguistic system and structures.

Language as a system. This will deal with systems of grammatical and phonetic contrast, and with the required circuits that determine the proper working of the language. The idea of system will also be applied to vocabulary.

Syntagm and paradigm. This is the key to all analysis of a grammatical system. In particular, definition of the criteria of admissibility in a permutation. Idea of axis and of functional pair.

Graphic systems for representing functional linkages and subordinations ('trees', 'boxes', etc.). These systems have the advantage of not requiring the use of this or that particular grammatical metalanguage at the outset.

Signified and signifier. These ideas replace the unproductive distinction between form and substance, thought and style. They will be studied in their practical aspects.

PRACTICAL WORK

Learning the phonetic script: elementary phonetic diagrams, work on the physical mechanisms of speech. The system of sounds, their functional value. Role of optimal and minimal environments through precise examples. Implications of the verbo-tonal perspective and suprasegmental phenomena.

Comparison of the phonetic system of the national language with that of the foreign language. Comparisons within the phonetic systems of several national languages.

Comparison of syntactical points in the national language and in the foreign language. Comparisons within the phonetic systems of several national languages.

Interference and transference (positive and negative) from the mother tongue to the foreign language. Interference and transference from the mother tongue to the national language (if applicable).

This syllabus is no more than an indispensable minimum. Each of the key points mentioned above in fact represents a theme or topic around which the whole linguistic briefing can be coherently structured.

But grammatical culture is a whole. Remodelled teaching of European languages can be an *enormous help* towards an objective approach to the morpho-syntactic systems of African languages whenever the teaching of these foreign languages comes before or at the same time as that of the national languages studied as subjects. When students arrive at teachers' college, the grammar they have learnt in their first year at secondary school is essentially traditional. The phenomena of language have been presented to them in an imported language via a normative grammar incapable of taking accurate account of linguistic phenomena. Hence they tend to transfer grammatical terminology indiscriminately from one language to another.

The grammatical approach to the foreign language training institutes must be based on the most reliable lessons learned from linguistics applied to language teaching. In practical terms training specialists will proceed as outlined below:

Deconditioning stage: They will show that normative or traditional grammar starts from properties and builds functions on them; and hence that it involves chopping sentences up into their simplest components without taking account of the functional groups or subgroups that convey meaning. This excessive chopping up of the chain of speech or writing into separate links produces a superfluity of labels claiming to represent the subtleties of the language; but teachers and pupils end up getting lost amongst them.

Restructuring stage: By means of suitable exercises, they will get the trainee teachers to see that the sacro-

sanct grammatical and 'logical' analysis does not take account of all grammatical facts and will show that functional analysis makes it possible to resolve most ambiguities. They will use the following directions in the exercises: state the function of the following terms; state the function of the following groups; cut the sentence up into functional groups and subgroups; etc. They will simplify and rationalize grammatical nomenclature and, by means of practical substitution exercises, actually show the trainee teachers that notions as diverse as adverbs, adverbial complements and adverbial subordinates all have the same functional value.

Relearning stage: They will get the trainee teachers to recognize the major groups in a sentence and the rules for their organization. More precisely, teaching specialists will arrange their explanations around the following themes: a sentence is a group of *terms* linked to each other; the meaning of a sentence rests on the reciprocal *links* between the various terms; these relational links are the *functions*; and function is not a property or quality—it is a *relationship* between two terms. They will then go on to the functional breakdown of the sentence, stressing its superiority to logical analysis and pointing out the close relationship between breathing groups and functional groups.

Obviously in practice these stages will dovetail into each other according to the pupils' motivations and needs. They are not fixed in relation to each other; each stage should be regarded as a focus of interest, not as a strict list of subject-matter. This approach makes it possible to *start from an already firm (and hard-earned) knowledge of grammar.* It gradually challenges basic traditional linguistic concepts, not by an upheaval of terminology, which might be superficial and traumatic, but by thorough rethinking of what is common to all linguistic systems. Lastly, it not only brings about a better objective and subjective knowledge of the second language, it also gives trainees and teachers *a general framework, suitable diagrams, and a concrete and evolving terminology—in short, the background of grammatical knowledge needed later to tackle the morphology and syntax of the national languages* (whenever this comes concurrently with or after the study of the foreign language).

Things seen and heard

The problem of terminologies must be solved quickly in countries in which the teaching of the national languages as a subject requires sound grammatical training for teachers. It is interesting to consult the textbooks already compiled and used as aids for this training on the ground. Here are the chapter headings of two books for teachers compiled by the National Institute for Pedagogical Research Action in the Congo

(publisher: Nathan, Africa). The grammatical terminology adopted by the authors certainly makes it clear that some grammatical phenomena in French and in the African languages in question *can be classified under similar headings, and that other phenomena remain irreducible.*

It is admittedly difficult to pass a value judgement on the scientific rigour of the analysis itself; but the clear and pedagogical presentation of the grammatical facts collected and the efficiency of the explanations given make these textbooks particularly attractive and should guarantee their impact in the classroom.

TERMINOLOGY ADOPTED FOR KITUBA

SOUNDS AND THE SYLLABLE
    Sounds
    The syllable
    Punctuation
THE PARTS OF THE SENTENCE
    (a) *Nominal group*
        The noun: its morphology
            Structure
            Lexical items
            Number
            Nominal derivation
            Verbo-nominal derivation
        Determinants of the noun
            The complement of the noun
            Qualifiers
            Possessive adjectives
            Demonstrative adjectives
            Numerals
        Noun substitutes
            Personal pronouns
            Possessive pronouns
            Demonstrative pronouns
    (b) *Verbal group*
        The verb
            Simple verbs
            Derived verbs
            Person
        Moods
            Indicative
            Conditional
            Imperative
            Subjunctive
        Tenses
            Present indicative
            Habitual present
            Instant present
            Recent past
            Remote past
            Future
        The complements of the verb
            Marked nominal
            Unmarked nominal
            Adonal syntagm

Sᴛᴀᴛᴇᴍᴇɴᴛ ᴀɴᴅ sᴇɴᴛᴇɴᴄᴇ
> Forms of statement
> The sentence
>> Nominal and verbal sentences
>> Elementary and complex sentences

Tᴇʀᴍɪɴᴏʟᴏɢʏ ᴀᴅᴏᴘᴛᴇᴅ ғᴏʀ Lɪɴɢᴀʟᴀ

Pʜᴏɴᴇᴛɪᴄ ғᴇᴀᴛᴜʀᴇs ᴏғ Lɪɴɢᴀʟᴀ
Vowels; consonants; tones

Tʜᴇ ɴᴏᴜɴ
Nominal prefixes; nominal suffixes; the radical or root

Nᴏᴜɴ ᴄʟᴀssᴇs
MO-MA class; MO-MI class; LI-MA class; etc.

Dᴇʀɪᴠᴇᴅ sᴜʙsᴛᴀɴᴛɪᴠᴇs
Derived substantives; derivatives of substantives; abstract substantives; derivatives of reduplicated verbs

Cᴏᴍᴘᴏᴜɴᴅ sᴜʙsᴛᴀɴᴛɪᴠᴇs
Noun + qualifier (adjective or noun). Noun + noun (with 'ya' understood)
Noun + (ya + noun). Past participle (agent) + noun. Abstract derived noun + noun. E . . . A + verbal root + noun

Tʜᴇ ᴠᴇʀʙ
Person; derived verbs; verb with double radical.
Transitive and intransitive verbs; reflexive verbs; tenses of verbs.

Tʜᴇ sᴇɴᴛᴇɴᴄᴇ
Forms of the sentence; the nominal sentence; the verbal sentence; expansion of the minimal sentence.

Tʜᴇ ɴᴏᴍɪɴᴀʟ ɢʀᴏᴜᴘ
Qualifying adjectives; possessive adjective; demonstrative adjectives; numeral adjectives.

It should be explained to teachers that while the grammatical terminology peculiar to an African language cannot all be reduced to that applicable to a European language, it also varies from one African language to another.

But problems of terminology must not obscure the fact that grammar is learnt by practice. 'Learning grammar through the language, not the language through grammar' should be the golden rule for teachers.

Teachers would therefore be well advised to base their grammar lessons on play activities wherever possible. Implicit grammar games exist which can serve as motivating starting-points for real lessons.

Here in Fulani is a modern type of play exercise suggested by an educational adviser. The aim is to choose

the right form of the adjective for the noun it qualifies. (The point is that the form of the adjective changes according to the noun it relates to and only the radical remains.)
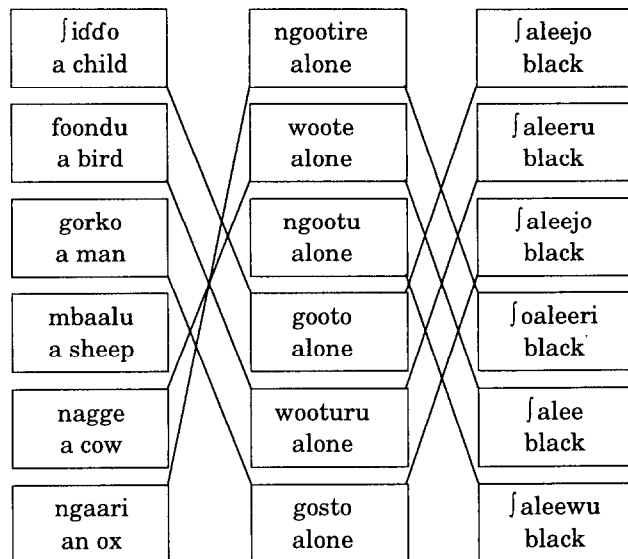
The children, of course, must draw lines joining the adjectives and the nouns they qualify.

African culture also has some traditional games, firmly rooted in custom, which are actually real grammar exercises perfectly suitable for use by teachers.

The following example is from Fulani (used in the Sahel area of northern Burkina Faso). It actually involves the description of a grammar game and its use in teaching.

1. Game of noun classes

Within a group of children gathered in the open air, the game leader turns to one of his schoolmates and says:

Riiw　　　/　　ndi
Drive away /　　it!

The information given by the pronoun *ndi* is of course pretty vague, but the grammatical system of Fulani requires that this pronoun be applied exclusively to a male animal. On the strngth only of the information given by the pronoun, therefore, the player addressed must guess the meaning of the order given (i.e., prove that he knows the relationship between the pronoun and the category of nouns it represents) and carry out the order properly. Depending on the setting in which the game is played, he must drive away from the group of players a bull, a he-goat, a ram, etc., not a hen, a she-goat or a cow, which would infallibly cause general hilarity and the taunts of the audience. The game continues with different variants:

Riiw ...   :   nga
(drive away)   (a she-goat, a she-ass)

:   kol
(a young ewe, a young she-goat,
a heifer)

Waddu ... :   nge
(bring back)   (a cow)

:   ngal
(a hen, etc.).

Nga, nge, kol and *ngal* are classificators like *ndi*. The player demonstrates his grammatical skill by correctly interpreting each of the orders received. Teachers can easily devise a preparation card based on this game for a systematic grammar lesson on the pronoun in the classroom.

2. *Syntax game*

This game is played in Marka country (Nouna area of Burkina). The game leader challenges his schoolmates to pronounce complex tongue twisters, or a sentence with complex syntax. He always begins with the simplest exercises and ends with the most complicated. A player who makes a mistake is out. For instance, he will make them say successively:

20 times: márú   mōni
            (rice)   (gruel)
            ('rice gruel')

10 times: bɔ́nflán   kùlà   flá   pà
            (cap)   (new)   (two)   (full)
            tiyán   kùlà
            (peanuts)   (new)
            ('two new caps full of fresh groundnuts')

5 times: kakàa   kòròn   kùmàn   kòròn
            (basket)   (old)   (bowl) (old)
            kòròn   kɔ̀rɔ̀   beènà
            (mortar)   (old)   (fallen)
            kɔ̀rɔ̀   kòròn   sɔ́
            (well)   (old)   (in)
            ('An old basket, an old bowl, an old mortar
            fallen into an old well')

Once: márúyáa   mɔ̀   mɔ̀   múɔ̀
            (shameful) (person) (person) (twenty)
            mìì   márú   mɔ̀nī
            (who)   (rice) (gruel)
            mùɔ̀nímàan   mí
            (cooked)   (drink)
            ('Twenty respectable people drinking
            cooked rice gruel')

These games are very common. They illustrate nearly all the essential sections of grammar. They cover the practical study of sound and their associations, the various procedures of syntax, etc. Starting with these statements, teachers can gradually bring out all the sounds met with in these sentences, then their associations, and then the syllables that form the words. They can then go on to associating the words that make up a sentence. They will also deal with the tone structures of the syllable of the word, and lastly with the whole prosody of the sentence.

3. *The tone riddle*

This game is played by Mossi children (Moore-speakers). One of them asks his or her schoolmates a kind of riddle and the rest of the group has to find the appropriate sentence from the melody and the syntactical and tonal parallels. Thus the child can suggest the following tonal structure in a meaningless jingle:

Bàmbàmbàmá

Another player has to respond with an identical tonal sequence, thus:

f [you] zùgaá [head] nè [is] wá [like] réoog [warthog] n [which] pǎb [hits] tǎ [ground] dàgá [dry]
('Your head is like clods of earth broken by a warthog').

or else:

m [me] sà-piàagá [piece of canary]
yèsg [ant] rǔm [sting] f [you] ti [and] f [you] sǎ [catch] kòaagá [diarrhoea]
('An ant has stung you and you have caught diarrhoea');

or else:

seǐ [he] dògá [who] foóm [give birth] dòg [you give birth] fàooré [a vacuum]
('She who gave birth to you gave birth to nothingness').

This exercise is an excellent way of familiarizing children with the problems of the tone structure in African languages, whose intonational curves are varied and sometimes indicative.

One variant of this game is more elaborate. It still involves recognizing the prosodic structure. A child (A) utters a short sequence, for example:

m   dàagĕ   tóm
(me)   (market)   (dust)
('my dust of the market').

A child (B) must quickly reply with a saying or proverb whose tonal structure corresponds to that of the

sequence uttered. The sequence and the saying must also have a *common semantic link*. Thus player (B) could reply:

yalem yi̅ m a sàà mĕ sɔ́m,

meaning: 'The ingrate has forgotten my good turn of yesterday'. The good turn forgotten has become like the dust of the market: it is gone with the wind.

Notes

1. Examples of application to Burkina languages are from *Cours de transcription en moore*, by Mr. Pierre Kouraogo, Professor at the *Institut de la réforme et de l'action pédagogique* [Institute for Education Studies and Reform].
2. A metalanguage is a language whose object is another language. The word 'adjective', for example, belongs to a metalanguage because it does not refer to any object. It simply serves to designate words which themselves refer to objects. For example, it designates 'blue' in 'the blue sky'.

Learning to read and write in the national language

Theme

Good ways of learning to read in the national language

Question 1

We have already been trained in the various procedures for teaching children to read in the European language (global method, mixed analytic-synthetic and synthetic). Can these methodological habits already acquired be used again to teach children to read in the African language, or must we be retrained for that too?

What exactly is the problem?

The question asked by teachers and future teachers is not without relevance. The point is that to be able to teach people must have learnt to teach and the training so far given to teachers has usually been carried out in the European language for the European language. In other words, even when teachers have mastered their spoken language they do not know the written forms, or only have a smattering of them. Hence a certain fear of the unknown partly accounts for the high proportion of future teachers who have asked this question.

To this must be added that even in English learning to read is not without problems. Every methodology has its suppporters and its detractors; it is very hard for teachers to get out of the habits they have acquired and move on to another methodology when they have been trained by and for a particular method. As one of them put it, it is rather like taking a leap in the dark.

Hence practising teachers' anxiety is legitimate and must not be taken lightly. The introduction of national languages into school syllabuses contains the seeds of a general rethinking of the teaching methods and procedures previously used. This necessary change back involves strenuous efforts on the part of teachers to adapt or re-adapt to new situations. So everything possible must be done to try to minimize false problems and plan to avoid unnecessary difficulties. At a time when methods of learning and teaching to read are being questioned on all sides, teachers and future teachers should be given credible technical replies to the anxieties they express.

Suggested reply

The methodology of learning to read can be transferred from one language to another when these languages use the same script and the same arrangement of lines (which would not be the case with French and Arabic, or French and Chinese, which have a different spatial organization and different characters). African languages in general adopt the same organization as European languages (they read from left to right on all the lines and from top to bottom of the page, and use the same system of punctuation, etc.). Hence when teachers start their pupils off on reading in the national language they can legitimately rely on the technical and methodological skills they acquired for teaching reading in English. Ability to read must be regarded as a technique in itself, independently of the language in which a person learns to read; children who have acquired the ability through their mother tongue will have no difficulty in transferring their knowledge to another language. This skill is learnt once and for all,

and when the reading mechanisms are there they do not need to be relearnt: they are automatically transferred from one language to another, and within a given language from one purpose to another (reading aloud, silent reading for useful ends, silent reading for cultural ends, and so on).

The problem is not so much in transferring the methodology from one language to another as in knowing which method to use. Obviously we ought not to go into the genesis of the various reading methods or analyse them at length within the confines of this guide, especially since the disagreement between the proponents of a synthetic method and the supporters of a global method is tending to diminish in favour of mixed methods combining the positive features of both.

It is probably worthwhile briefly restating here the principles underlying the methods usually used and (rather than taking sides in favour of this or that methodological option) bringing out the essential practical features of good teaching methods applicable to learning to read in the national language.

The synthetic method turns on some basic principles: (a) *going from the known to the unknown*, i. e. combining new letters and sounds with those already learnt (starting with vowels, then syllables and so on); (b) *going from the easy to the more difficult*, in particular using frequent revision as an aid to memorization; and (c) *dealing with each letter* and each sound in a separate lesson.

The main criticism of this method is that the practice of decyphering syllable by syllable and word by word makes the delivery halting and artificial. A child preoccupied by this decyphering cannot devote attention to understanding the text and reading becomes a pure school exercise devoid of vitality or dynamism

The so-called global method starts from entirely different principles. First, it makes learning begin *with the reading of complete sentences*. In other words it imparts at one go a set of key words which will be used in depth later on. This first job, in which the key words are recognized by the child and combined in varied settings, is a powerful motive for reading proper. Second, it continues the learning process with an *analytic-synthetic stage*, linked over a fairly long period with associative, comparative, substitutional and transformational activities. Third, it promotes *genuine creative activity* on the child's part by integrating reading with other expressive activities, particularly speech, drawing and physical education.

The problem is that children perceive things as wholes, rather vaguely. Words are for them initially pictures, shapes, drawings. It is difficult to get them to break them down completely and precisely into simple elements and rebuild them again. What they lack is precise perception, whence incorrect recognition and frequent confusion. For the global method to give good results, the teacher must be competent and know how to apply the method correctly. Also the children must have a complete command of the spoken language.

So which approach should be adopted? The promoters of linguistic reform in African schools are lucky to be able to transcend these sterile disputes, which are part of the history of European school systems. They are for most of the time in open ground, where innovations in teaching methods are possible because they are perceived as urgent needs. Instead of keeping to the beaten paths of antiquated teaching methods they can start from scratch and on the strength of good or bad experiences elsewhere try to build up a methodology that gives children every opportunity.

The following section states and briefly comments on the essential teching methods that in our opinion underlie a good method of teaching reading in the mother tongue in an African context.

Suggested teaching methods

A good reading method in the national language must take account of the following requirements:

Cater for old enough children (6 to 7). Ability to read presupposes a certain degree of psychological and mental maturity. Admittedly children of 4 and 5 are commonly taught to read, and this often happens in Africa in pre-school establishments in the private sector, where under pressure from parents (who make something of a cult of writing) learning to read becomes a priority. Experience has shown, however, that in most cases nothing was gained by this. According to many psychologists and teachers it is *age* rather than the method used that determines the speed and certainty of the results. Usually after a few months of learning and practising reading children who have learnt to read precociously are no longer distinguishable from those who began at a normal age.

Be linked to a prior sensorimotor education. The act of reading is complex and involves a child's whole body. He must perceive written signs *by sight* and then turn these visual perceptions into motor activity first by using the *organs of speech* and then by a sort of cognitive sweeping which goes straight from a text to the units and structures of information the text contains (the phenomenon of 'rapid reading'). The eye must also get used to following the line of writing from left to right and from top to bottom. Hence children must be taught to organize space, to master handedness, to use *their right hand and their left hand* as well as possible, gradually to control their bodies and to co-ordinate their movements so that instead of a scrawl they gradually arrive at proper handwriting. They must also learn to limit themselves in space (the limitations of the sheet of paper, the slate, the line and the sentence). Synchronizing reading actually involves movements *of the eyes, lips, mouth, respiratory apparatus, fingers, hands, arms, etc.* Hence a good method of starting reading and writing will be associated with lessons

in physical education. A command of horizontality, verticality and handedness, and a mastery of space (upwards, downwards, in front, behind, above and below)—all these skills can be reinforced and even acquired with the help of physical education exercises. All it needs is a little daring and thought to make the traditional gymnastics lesson an excellent aid to the teaching of reading and writing. In Africa this sensorimotor education is perhaps even more desirable than elsewhere: to understand this it is necessary to have visited classes in the bush. Having seen the benches and desks, made sometimes of ill-trimmed logs, on which the pupils hold their shaky slates, and having seen these same pupils sitting six or seven to a bench and desk originally intended for three, it is no surprise that poor motor habits should establish themselves so quickly.

Be linked to the spoken language. Children are only really capable of reading (that is understanding) sentences they can produce orally. This condition is fulfilled when the children's mother tongue is the same as the African language of instruction, i.e. when Ali = Mt. But we know that there are certainly many cases in which Ali ≠ Mt or even Ali = 0. Children in this last situation are unfairly placed by comparisonwith their schoolmates for whom Ali = Mt. This unfortunate situation is reinforced if there has not been intensive prior teaching of the spoken language. The ideal in all cases is for reading texts to be made up entirely of words and structures already well inculcated by spoken language lessons.

Be linked to written expression. Writing exactly corresponds to reading. 'Reading' consists of decoding graphic signs that translate a thought and interpreting this thought: 'writing' consists of expressing one's though by graphic signs. The learning of reading and writing should therefore be carried on in perfect correlation and the graphic fixation of the spoken word must be in the hand as well as in the eye. The written language, like the spoken language, has an inherent communication function. By writing to fulfil their need for self-expression (which teachers will if necessary have to bring out and reinforce) children consolidate their reading ability, prepare themselves for detailed analysis of the elements of the words and gradually learn to spell correctly.

Be linked to life. The written language, like the spoken language, is a communication tool. Now in Africa, except perhaps for a few particularly well-to-do circles, children are not subject to the same demands as regards reading and writing as their European counterparts, especially since the school and administrative correspondence their families receive is usually in the European language. In fact generally speaking writing is not yet part of the system of functional relationships so far as African children are concerned.

To avoid the danger of making the learning and teaching of reading a pure scholastic exercise, not transferable to everyday life, it is essential that teachers and the method they use make up for this lack of motivation by creating conditions in the classroom for the spoken language to be used in situations very similar to the children's daily life. Exchanges of letters between classes, correspondence between schools and so on are good ways of creating functional situations calculated to link reading and writing to the children's real interests and needs.

Things seen and heard

Though African children of pre-school age are not, like their European counterparts, soaked in a civilization of the written word which continually offers them the products and example of writing, they are not completely oblivious of the written word. They even show a spontaneous interest in this activity, which starts with elementary writing on media such as sand, mud, etc. and gradually develops into more sophisticated forms of writing.

This spontaneous bent for the written word should of course be encouraged, canalized and put to use beginning at pre-school age. Now it so happens that there are games (sometimes very elaborate ones) in African cultures which teachers can use to teach children to organize space and regulate the act of writing. These play procedures are an excellent starting-point for motivating sensorimotor exercises. Here are some examples of exercise games of gradually increasing difficulty from Fulani culture (Djibo area of north-west Burkina):

Exercise No. 1
The sheep of Mecca (traced with a finger)
This game, which has obvious religious connotations, is played on fine sand from which impurities (pebbles, twigs, etc.) have first been removed. The child kneels or squats on his heels. He first traces with two fingers the following symmetrical marks:

‖		‖		∣
‖		‖		∣
‖		‖		‖

Then with one finger he must complete a stylized drawing of the sheep, starting from the original diagram and passing through every single one of the marks in it.

starting-point
and finishing-point
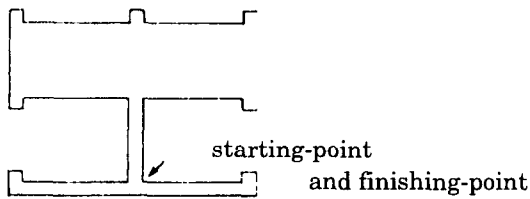
This game, which has something in common with the so-called 'maze game', requires a sure hand and a practised eye. It fosters motor equilibrium and the structuring of space, particularly since the hand that begins the drawing at its starting-point must end up at the same point, which is only possible when the drawing has been carried out correctly.

Exercise No. 2: The Prophet's rod
(drawn alternately with one and two fingers)
This game also is played on clean sand.

drawn with one finger
(middle finger)

drawn with one finger
(index finger)

drawn with two fingers
(index and middle fingers)
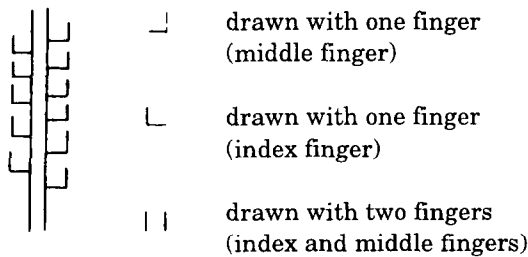
The middle two unbroken parallel lines are actually drawn in *sections*, since the child draws each branch (alternately with his middle and index fingers) before going on drawing the double line with two fingers. This game also calls for good co-ordination between eye and hand, the latter needing to carry out really aerobatic movements.

Exercise No. 3: The bird of paradise
(drawn with three fingers)
This game is played on a sandy surface that has been flattened and cleaned. The child first simultaneously draws the following marks with three fingers:
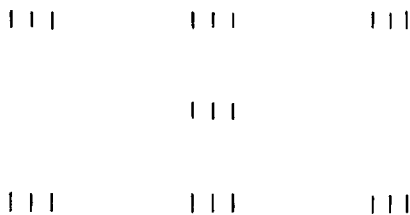
Then, still with three fingers and still simultaneously, he must produce the following figure, passing through the marks he previously drew:
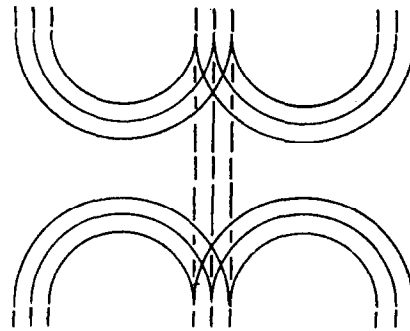
The lines in this drawing are parallel and symmetrical in space. Hence this game is particularly indicated for giving children practice in keeping lines parallel. It also calls for recognition of shapes, orders of magnitude, directions and symmetries. It leads into the making of letters in cursive script, which mostly go anti-clockwise (a, b, c, d, e, f, etc. in cursive script).

Drawing games that pave the way for writing are not of course peculiar to the Fulani-speaking area: they exist also in other languages and cultures.

In Mossi country

The child must draw a star in the sand with one finger; he must not lift his finger. He must draw it in one go and so that the final join is not visible. The player who does not fulfil all these conditions is eliminated from the competition.

Another game consists of doing a stylized drawing of a grey lizard, viz:
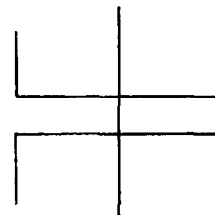
This drawing contains the letters u, m, n, w and i. In geometry it introduces the ideas of a straight line and a perpendicular.

In Gurmanche country (Fada N'Gourma area, eastern central Burkina)

This game is called in Gulimancema: *òtién tãnbĩ púalo* [God sand striker] (the sand player of God)
The players are two children of 6 to 12. Player A with his middle finger draws a continuous line as winding as possible in the sand, while player B turns his back to him. Here is a sample drawing:
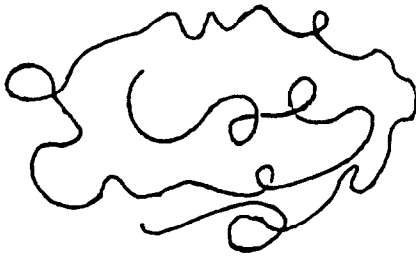
Player B must follow the exact line of the drawing from the inside to the outside with his little finger, without 'skidding off' and without once lifting his finger. (Player B uses his little finger in order to have a better chance of drawing a steady line in case he has a bigger middle finger than player A.) Player A then acts as a geomancer and interprets for player B what the sand has said, i. e. God's message.

By means of these drawings, first simple and then more and more complex, the teacher will impart to the children the psychomotor mechanisms that are a precursor to writing. Then he will suggest a drawing like the one shown here, in which certain letters (e, m, v, p, o, a and k) can be clearly seen. These exercises can be done in the sand, on the blackboard or on slates. They gradually bring the children into the world of letters, not artificially as too often happens but via their experiences and habits.
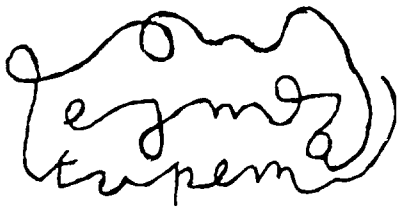
N.B. The game also has some value for the approach to certain mathematical notions (open line, closed line, simple or looped line, internal field, external field, frontier, double point, closed looped line and open looped line).

In Marka country

The children who play this game call it 'the Jenne tree'. Jenne is the mystery town for the people of Marka country (Nouna area, Burkina). It is the far country, where nature and people are shrouded in mystery. The children draw in the sand ten rows of one to ten equidistant vertical strokes, then connect up the strokes with horizontal lines and continue the process downwards. On each stroke in the top row they draw a little circle. The result is a kind of mythical tree with ten branches and ten fruits.
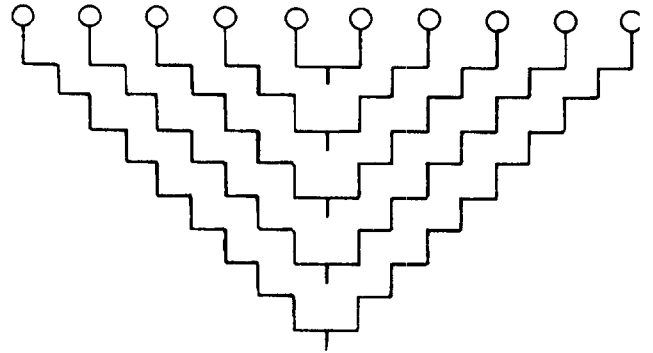
The children together check each drawing; whoever has made the fewest mistakes is allowed to choose another game.

Through this game the children learn to draw lines from left to right and top to bottom. They get their strokes firm and exercise their fingers, wrist and elbow, while at the same time co-ordinating all their movements. In addition to its undeniable artistic motivation the game contains the seed of the formation of certain letters and numbers:

o	=	o, a, 8
		=	i, 1, etc.
o +		=	q, d, p, b, 2, etc.

In Mouni country

This game is called 'kalo' in Muni (Léo area, central southern Burkina). The children must draw in the sand a stylized grey lizard, a familiar animal if ever there were one. Here are the stages in the drawing:
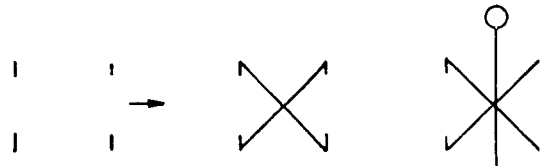
The letters to be directly discoverd are: o, i, v, k and x.

Drawing and writing have always fascinated those unfamiliar with them, even little children of four to five, who make them the objects of games and amusements.

The games presented above give teachers working in the relevant regions a wide and varied choice to practise their pupils in the sensorimotor training that leads up to controlled drawing and writing. They cannot of course be used as they are everywhere: play situations used in the classroom must be drawn from children's *genuine experience*. It is being part of the cultural context they spring from that ensures their great power of motivation.

Theme

Evaluation of the level of competence acquired by pupils in reading in the national language.

Transition from reading the national language to reading the European language.

Question 2

How can we check whether our pupils have really learned to read in the national language? At what point in the curriculum should we go on to learning to read in the European language?

What exactly is the problem?

The evaluation procedures used in primary education are often lacking in rigour. Empiricism and subjectivity reduce the credibility of comparative evaluations between one class and another, and even within the same class. It certainly seems in general that the syllabuses of teacher-training institutes *attach insufficient importance to this precise point* when dealing with special teaching methods. In short, everything to do with evaluation seems to have remained aloof from the great reformist trends that have advanced teaching by objectives so spectacularly; it is striking to find that the evaluation procedures used in the classroom are by and large still the same as those used thirty years ago.

Nevertheless teachers remain deeply attached to honest forms of evaluation and feel the need for a reliable methodology in this field. Moreover the evaluation of learning to read in the national or the European language presents them with a particular problem. Teachers know that this learning is done at the beginning of schooling not because it is easy but because it is essential for the acquisition of the other instrumental skills such as arithmetic and writing. There is a sense in which reading and writing have become a cult among pupils and parents, for whom a good level of reading ability is a measure of the worth of a method or a teacher.

Hence it is not surprising that teachers attach great importance to methods of evaluating this learning. Now how do they currently go about it? In general there is a regular monthly evaluation. On this occasion the teacher makes pupils read aloud and marks them according to fairly well defined criteria. It will be immediately obvious that this method of proceeding is *slow and subjective*, and above all that it does not en-

able the teacher to judge understanding of the text, which is after all the object of reading. Admittedly this understanding is tested later, but at the time of other examinations (textual commentary) and on the basis of different texts. To give practitioners a homogenous and objective methodology for evaluating reading is thus a pressing and clearly felt necessity.

This necessity is all the more obvious given that it is only when a child has mastered the techniques of decoding his own language that he should pass on to the European language. To check whether pupils have really acquired this capacity it is of course necessary to have reliable and relevant instruments of evaluation that take account of all the components of the act of reading, particularly *understanding* of the texts being read. The design and use of such instruments comes under the section on suggested teaching methods: these practical aspects will therefore be dealt with there. The suggested reply below deals with the transition from reading in one language to reading in another, that is, it answers the second part of the question.

Suggested reply

In the context of a bilingual school, reading in a foreign or second language can be tackled once two essential prerequisites have been met.

The first prerequisite is that a child can already read in his own language, or at the very least be familiar with the decoding technique in that language. Learning to read represents, after all, a considerable effort, always underestimated by those who can already read. Hence it is best not to confront pupils with all the obstacles at once, and so *to stagger the learning.* Now to pass on too soon to reading in a foreign language produces various kinds of interference and confusion, since the children find themselves faced with two systems which though identical on certain points are utterly different on others. Thus Mossi children (mother tongue Moore) are bound to be confused if they must assign different values to the same letters or the same values to different letters depending on whether the day's lesson is devoted to reading in French or in Moore. Examples of such difficulties are not uncommon. They are all the more serious because they come at a time when children are particularly vulnerable, being faced at the same time with the writing code and the learning of a new language. If on top of all this they must simultaneously improve their proficiency in the national language (which is unfortunately not always their mother tongue), it is understandable that the difficulties are almost insurmountable when one sets out to do everything at once.

Hence it is wise to stagger the two learning processes. As to how long the interval between them should be, it is admittedly difficult to be very precise; the

make-up and timetabling of the syllabus (which differ from one country to another) need to be taken into consideration. But experience seems to suggest that an interval of two years between learning to read in the mother tongue and the same process applied to a foreign language is by no means too long—always provided that the way for the learning of the second language is prepared by a thorough introduction to the spoken language.

The compilation and distribution of reading primers in national languages has long been discouraged, especially in the French-speaking countries, on the grounds that the time devoted to them would encroach on that devoted to French and so bring about a lowering of standards prejudicial to teaching in that language. The reasoning is false from beginning to end: first because the teaching of French *deteriorated long before national languages were introduced into the curricula,* and second because ability to read can regarded as a technique in itself, independently of the language in which reading is learnt. When the reading mechanisms are there, they do not need to be re-learnt: they are automatically transferred to any other language that uses a similar graphic code.

Thus the staggering of the processes of learning to read naturally benefits *the mother tongue,* the command of whose written form is given all the time necessary; it also benefits *the foreign language,* whose acquisition is both easier and quicker because there is much transference from one system to the other; it benefits *the teacher,* who can teach more in less time; and above all it benefits *the children,* who are doubly enriched by a smooth transition from one system to the other.

The second prerequisite for going on to reading in a foreign language is that the child be already familiar with the spoken use of that language. Teaching the spoken language must come long before the beginning of learning to read, because a child can only really read (i. e. understand) sentences that he can 'produce' orally. In the context of a bilingual school using one mother tongue and one foreign language the approach to the foreign language, whether European or African, must first be oral. This approach must give the children the tools needed for communication and must be carried out by active teaching methods calling for continual pupil participation. The point is that children feel only a limited need to have a new language, since they already have their mother tongue, the prime tool for communication and self-expression. Hence they must be won over to this learning process by efficient *motivation.* When children are familiar with a basic vocabularly and some basic structures in the foreign language, and can use them and express themselves, even in a rudimentary way, it will be possible to go on to reading in this language, whilst at the same time making sure that the key words in the reading coincide with and repeat the *basic vocabulary* already acquired.

Moreover, this discovery of the relationship between a written passage and the reality it represents is a powerful motivation towards reading proper.

The need to make learning to read in the foreign language come after the learning of the spoken language is variously understood in practice. Some allow a very short time, while others begin the learning of the spoken foreign langauge in the first year of school and delay the approach to reading in that language for two years. The results so far obtained show that the latter method pays.

But the complicated language situation on the ground makes it impossible to enunciate a general rule applicable to all cases. In some capitals, for instance, there is a high percentage of children from well-to-do socio-cultural circles *for whom the European language is a mother tongue,* or at any rate an everyday language. Obviously for these children there is no need to postpone reading in this language.

Suggested teaching methods

Anyone who aspires to evaluate reading achievement on a large scale, at national level for instance, must have evaluation procedures which are: *simple* (easily accessible to pupils and teachers), *standardized* (the same procedures must be used in all schools if the results are to be comparable), *economical* (easy and quick to analyse), *relevant* (as regards the results) and *usable* (from a teaching point of view).

Obviously individual reading by every pupil in every class is out of the question, since it does not fulfil the above requirements.

Here is an example of a test in the form of illustrations that makes it possible to evaluate reading ability. In this particular case the pupil is expected to understand the meaning of the story, grasp its idea, and bring out the temporal and causal relationships between the various stages of the action. This test could be used for a preparatory course.

— Salifou takes his catapult to go hunting.
— He walks into the forest.
— In a tree there is a nest.
— Salifou climbs the tree.
— A branch breaks.
— Salifou has fallen to the ground.

The set of drawings is out of order, but the sentences are in order. The pupil must read the story of Salifou to himself and then give each drawing the number of the corresponding sentence. The numbering will be right if the pupil understands the meaning of each sentence.

Obviously such an exercise needs to have been prepared by similar exercises presented in the form of games: a child in primary class runs the risk of being confused by the unconventional form of the exercise.
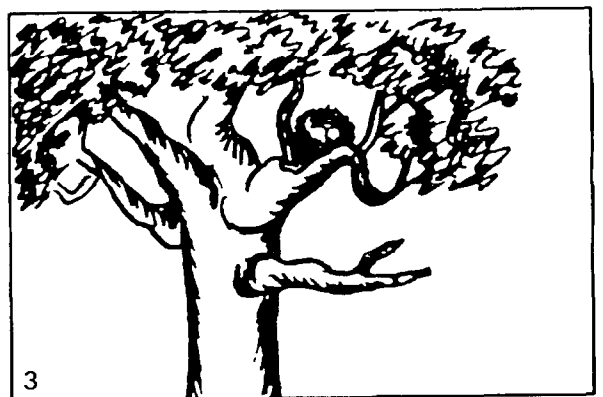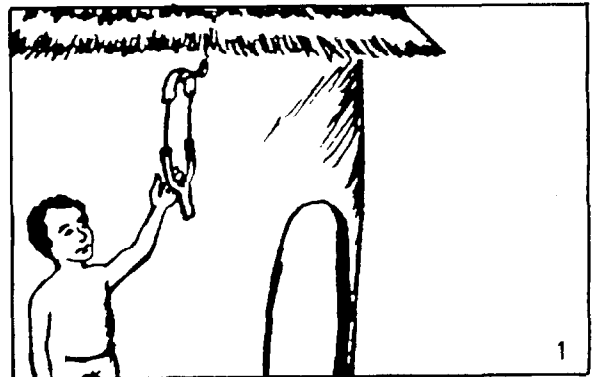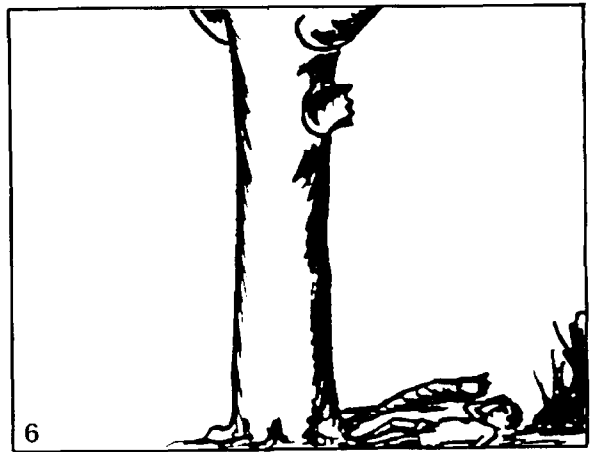
A complementary test consists of getting the children to choose the caption that best fits the meaning of the story. Thus the children can choose among the following captions.

— Salifou catches birds.
— Salifou goes for a walk in the forest.
— Salifou is on holiday.
— Salifou is out of luck.

This exercise is of course difficult for preparatory course level; but it enables the teacher to see whether the children have really grasped the main idea of the story, and hence whether they have understood the text.

Things seen and heard

Visits to classrooms and teaching tours of course give educationalists and teachers much information both about the kind of progress achieved by pupils and also about the development of teaching methods and psychological practice in classes where a method of initiation to reading in the national language has been introduced. But the need for regular quantified evaluation that takes clear account of the qualitative and quantitative results obtained remains crucially important for subsequent teaching activities.

We give below some examples of tests in the national language which were actually used on a large scale on the ground. These tests meet the five criteria of reliability stated above; they are designed to check whether the objectives assigned to the first year of school have actually been achieved or not. Moreover these objectives do not claim to apply to the natural reading of continuous passages, that is, the fluent and expressive reading whose command transcends the scope of one introductory year. They aim to equip the pupil with a basic skill in which it is convenient to distinguish essential features.

• Material recognition and also discrimination between signs and written combinations.
• Understanding of the meaning associated with the decoding of simple texts.

Test No. 1 (in Fulani)

jaljallo	jallo	jullu	jalo
ɗadi	ɗidi	ɗati	duko
pullo	palle	paali	pale
laatake	lekki	laataki	leeke
deeka	daake	diiku	diina

This first test comprises a number of words which look almost identifcal. The pupils must circle the word spoken by the teacher. The exercise is particularly convincing because the words chosen are extremely close to one another and often differ in only one letter. The pupils must therefore discriminate systematically and

show their ability to decode. This test only measures acquisition of the mechanisms of decoding writing; it does not take account of intelligent reading.

Test No. 2 (in Moore)

This test aims to check whether or not the child has achieved intelligent reading and has passed the stage of mechanical decoding. It consists of matching sentences and pictures deliberately dissociated from each other. It is after reading and undestanding the meaning of the various sentences—and only then—that the child will be able to re-establish the link between the pictures and the text. This test fully evaluates reading ability.

a rabi pekda weefo

pag a fatɩ pekda fuugu

a tẽne belgda biiga

a tẽne rãmb zɩ karẽn-doogẽ
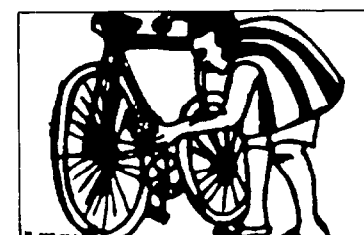
a rabi-rãmb tãoda balle

These tests were accompanied by a guide for the teacher containing in particular the following recommendations.

1. Read the instructions in order.
2. Administer the tests first thing in the morning.
3. Put on the blackboard an example of what needs to be done. A pupil chosen out of the class will be invited to make this demonstration in front of his schoolmates.
4. Here is an example of a demonstration for test No. 1:
    (a) The teacher writes the following words on the blackboard:

    roogê   roore   maoore   raaga.

    (b) The teacher calls a pupil to the blackboard and tells the pupil to read these words silently.
    (c) The teacher then invites the pupil to circle 'roore'. This then produces the following model:

    roogê   roore   maoore   raaga.

    (d) The teacher calls another pupil to the blackboard and gets him to do the same demonstration starting with another set of words.
    (e) The teacher makes sure that everyone has understood what needs to be done.

5. All information and discussion is in the national language.
6. About five minutes is devoted to administering each test.
7. In the case of pupils clearly handicapped (hearing, vision, etc.) or behind because of irregular attendance, the teacher marks accordingly in their record-books.
8. The analysis of the tests if done by a team under the suspension of the head teacher.
9. The tests are transmitted through the School Inspectorate to the Institute for educational Studies and Reform (IRAP), where they are processed by a team of specialists.
10. Schools can preserve their anonymity.

The results of the tests given by way of example were as follows:

Pupils tested	Very good or good	Pass	Clearly unsatisfactory
Test No. 1 (in Fulani)			
226	37%	45%	18%
Test No. 2 (in Moore)			
847	62%	17%	21%

Counting, arithmetic and mathematics in the national language

Theme

The teaching of mathematics in African languages

Question 1

It is sometimes said that African languages are poor in logico-mathematical connectors and abstract terms. Can we seriously envisage teaching mathematics under these conditions without devaluing education?

What exactly is the problem?

Of all the prejudices that give African languages a pejorative connotation, the most deeply rooted is the one that represents these languages as being essentially resistant to logico-mathematical thought. The specious nature of the arguments deployed in support of this thesis is not always clearly appreciated by teachers and future techers, who readily see European languages as the most efficient and valuable tools for tackling the teaching of mathematics in African classes.

Practitioners are of course well aware of the difficulty of designing and introducing new mathematics syllabuses through the medium of African languages. In an attempt to diminish the methodological and didactic difficulties, those in charge of this teaching have sometimes been tempted simply to translate the content of European textbooks into the national languages and transfer over the methodology. In other cases they have preferred to give the European language the task of mediating the learning of mathematics, while reserving for the national languages what they consid-

ered to be the less technical content. There is undeniably a problem in teaching mathematics in the African languages newly upgraded to the status of languages of instruction. But this problem as introduced by the question is badly put.

Suggested reply

First of all it must be understood that logico-mathematical concepts do not pre-exist in a given language and that no language in the world has a monopoly of them or is alone in possessing them. No doubt some languages, for historical or socio-cultural reasons, give acccss more readily than others to this or that concept at some time or another in their history; but this development is a matter of circumstances. No language is congenitally imprecise in representing the concepts that relate to communicable human experience.

Next, it is incorrect to claim that African languages are lacking in abstract terms: these terms certainly exist, even though they are not often used in ordinary conversation. African languages practise abstraction in the most varied fields. Experience shows that they can produce from their own resources the expressions needed to verbalize most of the concepts and ideas in school syllabuses, including those in the exact sciences.

Counting systems have also come into being in Africa under the pressure of need; but they have not generally used written symbols. The owner of a big herd, for example, relied on keeping an exact equation between a set of pebbles and his heads of livestock. These pebbles were usually divided between three jars, one for the males, one for the females and a third for the young. The shepherd kept his accounts up to date by adding or subtracting one or more pebbles each time the herd increased or diminished in number. Here we find again the old Roman procedure responsible for the

etymology of the word 'calculate' (*calculus* = 'little pebble').

There are also languages which, without abandoning abstractions, *prefer to use concrete expressions*. In Latin, for example, the sentence 'the crowd maintained silence' is better translated by a construction such as 'the people were silent', in which the qualifying adjective replaces the abstract word. Likewise 'the good man' is preferable to 'the goodness of the man' and 'the rich man' to 'the wealth of the man', and so on. Yet no one regards Latin as a language refractory to abstract investigation. So it is best to be very cautious in this field and mistrust received ideas.

In fact the problem lies elsewhere. If African languages in general have no immediately available mathematical lexicon, it is essentially because these languages for long economized on writing. Now writing is an essential prerequisite for the development of mathematics; memory is too limited and too unreliable for a rigorous mathematical thought to be fully deployed with no other medium to use. The Mediterranean and European languages enriched the registers of mathematics precisely because from the outset they had the incomparable medium of writing.

In fact it is also possible to find a precision in African languages which is lacking in European languages such as English and French, for example. Thus when we say that Peter *and* Pauline are married it is understood that they are married to each other; but Peter might be married to Jean and Pauline to Andrew, and we would still say that Peter *and* Pauline are married. There is an ambiguity here which is unknown in Moore. If Peter and Pauline are married to each other, a Mossi will say without ambiguity:

a Piεrmara ne Polin: 'Peter and Pauline are married to each other';

or: a Piεr ne Polin marame taaba: 'Peter and Pauline are married to each other'.

In the latter case it suffices to omit 'taaba' to make the second interpretation possible, i.e. that Peter and Pauline are married (but not to each other).

Likewise in English the expression '*a* woman' is ambiguous, since it can mean either 'a (one) woman' or 'a (any) woman'. In Dyula and Fulani this ambiguity is impossible:

Dyula:	muso kelεn	:	a (one) woman
	muso dɔ	:	a (any) woman
Fulani:	debbo gooto	:	a (one) woman
	debbo gom	:	a (any) woman.

Another example is that when we say in English 'He took his bicycle', it is not clear whether the bicycle really belongs to the subject or whether the subject uses it occasionally (as in: 'He missed *his* train'). This ambiguity does not exist in Bwamu (spoken in southwest Burkina), which has two quite distinct ways of expressing it:

a la *mi* hanlocoa : he took *his* bicycle (and he owns it)
a la *wo* hanlocoa : he took *his* bicycle (but he does not own it)

Lastly, we must not forget that logical relationships are not always expressed through clearly defined locutions, as is usually the case with European languages. African languages have other ways of expressing them, using in particular the syntactic structure of the statement or tone of voice. Thus when there is no morpheme to designate the cause-effect relationship, this relationship is conveyed explicitly by a series of statements.

Suggested teaching methods / Things seen and heard

If there is a field in which games can directly enrich teaching, it is mathematics. Bringing mathematics into a play situation is not a third-rate teaching method. Indeed, it is a very serious matter for the teacher, since it gives children a chance to put into it their imagination, their vitality, their creativity and their ability to make individual and collective statements. To eliminate games from the mathematical approach would mean depriving oneself of all that.

Now there is an abundant variety of games in African cultures which lend themselves admirably to the teaching of mathematics, not only as an initial motivating factor but also as an actual feature of the learning. The suggested teaching methods that follow are directly linked to observations made and experience acquired on the ground. They aim to give teachers 'starting-points' to introduce children to the explicit mastery of counting, arithmetic, geometry, etc. through authentic pathways based on indigenous channels developed in childhood.

STARTING-POINTS FOR COUNTING

In Dyula there is a game that gives practice to counting very quickly from 1 to 10:

kelen [one] an [we] be (future) ta [go] **kelen**dugu [country] la [there]
(we will go and live alone)

fila [two] an [we] be (future) ta [go] **fula**dugu [Fulani country] la [there]
(we will go to Fulani country)

saba [three] **saban**ınw [three little ones] baa [mother] saara [die]
(the mother of the triplets is dead)

naani [four] naan [sauce] bεε [every] n'a [with its] munucogo [turn] lo [way is]
(every sauce is made in its own way)

duuru [five] dugu [country] bɛɛ [every] n'a [with its] lɔcogo [build] lo [way is]
(every country has its particular architecture)

wɔɔro [six] woro [cola nut] bɛɛ [every] n'a [with its] wɔrɔcogo [shelling] lo [way is]
(every cola nut is shelled in a particular way)

wolonwula [seven] wɔlɔ [partridge] bɛɛ [every] n'a [with its] ŋenyecogo [marking] lo [way is]
(every partridge is marked in a different way)

seegı [eight] segı [baskets] bɛɛ [every] n'a [with its] da cogo [weave] lo [way is]
(not all baskets are woven in the same way)

kɔnɔntɔn [nine] kɔnɔ [bird] bɛɛ [every] n'a [with its] pancogo [fly] lo [way is]
(all birds have their way of flying)

tan [ten] cɛɛ [man] bɛɛ [every] te (negative) den [children] tan [ten] sɔrɔ [have]
(not all men can have ten children).

This game is very simple. Reading these sentences we see that the number is repeated either completely or partially, with a particular meaning in each statement. The exercise is very motivating for children, since it gets them used to counting and at the same time teaches them some natural truths.

In Marka country (Nouna area, Burkina) there is a counting game based on a somewhat different principle. The child has to say the following set of sentences without drawing breath:

ñ [I] waàrà [go] ǹ [me] màmá [grandmother] tārā [found] nómi [pancakes] yìrà [make] só (imperfective)
(I went to find my grandmother, who was making pancakes)

kù [that] ŋā [I] **cèrè** [one] b [take] nā [I] **cèrè** [one] b [take]
(She wanted me to take one and I took one)

kù [that] ŋā [I] **flá** [two] bɔ [take] nā [I] **flá** [two] bɔ [take]
(She wanted me to take two and I took two)

kù [that] ŋā [I] **sábá** [three] bɔ [take] ŋā [I] **sábá** [three] bɔ [take]
(She wanted me to take three and I took three)

The child will continue thus as far as ten and beyond, so long as he still has the breath. When he is out of breath he must say:

ǹ [I] paàrà [sated]
(I have had enough)

This game is played by children aged 5 to 8. The winner is the one who says the most numbers without drawing breath. Thus counting is tackled by way of a game. In the classroom, of course, the teacher will not maintain the rule about drawing breath, except perhaps as a piece of initial motivation.

In *Mossi country* (Ouagadougou area and central Burkina) there are several counting games. One of them is especially interesting because it can virtually be transferred into the classroom as it is. The children sit in a circle; one of them goes round and touches each participant's head, at the same time saying a number. When he has gone all round, each player draws in the sand (or on a slate) a number of strokes corresponding to the number the game leader said when touching his or her head. Those who make a mistake are eliminated. The winners are those who at the end of the game have made no mistakes.

Admittedly for children to be able to count items verbally does not entitle us to say that they have learnt the idea of numbers. The act of counting by units (one, two, three pancakes etc.) comes to no more in the last resort than individualizing the items. The idea of number is actually more complex, for it implies an inventive organization of operations. Thus the number three implies a series of inclusions: 1 is included in 2; 2 is included in 3; the same number also implies a series of units—1 plus 1 plus 1.

It is the synthesis of these two structures, the inclusion of sets by the joining of units, that makes number a particular structure capable of having operations (3 = 1 + 1 + 1 = 2 + 1, etc.) carried out on it that are reversible.

Thus the games above do not really make children acquire the idea of number; but they are an ideal motivation and also a fruitful source of specific exercises for the achievement of this objective. They lead in to *verbalization* and then to the *writing* of the specific manipulations to be carried out, in the arithmetic class, on suitable teaching equipment (counting, operations, measuring, etc.).

STARTING-POINTS FOR ARITHMETIC AND OPERATIONS

Addition

Here is a Senufo game (extreme southwestern Burkina) called *boni* [throw]; it is played by children aged 5 to 11. Two can play; they take turns to throw four cowries into the air and then count points according to which way up the cowries fall. The method of scoring is as follows:

— for 2 cowries that come down 'heads' and 2 'tails' = 2 points
— for 4 'heads' = 5 points
— for 4 'tails' = 10 points
— for 3 'heads' and 1 'tails' = 0 points
— for 3 'tails' and 1 'heads' = 0 points

The players keep their score by means of marks drawn on the ground. When one of the players has got a given number of points (determined by agreement in advance), he or she 'eats' his or her opponent's marks.

The teacher can, for instance, bring two players to the blackboard. The cowries (or failing them peanuts or bottle tops) are thrown on to the desk or the ground and the score marked on the blackboard. At a given moment the game is stopped and the results worked out.

Result for player A: ///////	=	8
Result for player B: ///////	=	7
Total score accumulated:	=	15

Another game comes from *Mossi culture* (Moore-speaking). Called *kokre*, it is usually reserved for little girls when they take the goats and sheep to graze in the bush.

After some exercises of skill (in particular throwing stones into the air and catching them in flight), each player collects up the stones that belong to her and starts on an amusing counting system.

They say:

sāamb a [strangers] *tāabo* [three] (three strangers), and they make a group of three stones;

b [they] *waa* [come] *b* [they] *tāabo* [three] (they came in a group of three), and they add three stones;

b [they] *ru* [eat] *b* [they] *tāabo* (they ate in a group of three), and they add three stones;

t'a [then] *ye* [one] *pa* [alone] *laagē* [stayed flat] (and one of them stayed on the table), and they add one stone.

This game can be a manipulation prior to addition.

Multiplication
The following game was observed in Bissa country (Garango area, Burkina), but there is no certainty that it is indigenous. Twenty or so can play (which is valuable for possible use in the class). The players are arranged in a circle. The one who starts proposes a number between 1 and 9. Then the players number off: they must not say the number first proposed, or any of its multiples between 1 and 20. The players whose places coincide with this number or one of its multiples say nothing, but clap their hands, and those next on the right go on with the counting. The numbers and multiples are of course regularly changed. Those who say the forbidden number or a multiple of it instead of clapping their hands are eliminated. The game is played quickly and continuously.

This game is an excellent introduction to the multiplication table and is even an intelligent procedure for learning this operation.

All operations
Here is a particularly fruitful game, given us by an educational adviser stationed at Manga (Mossi country, central southern Burkina). Called *kafa*, it is a very simple game often played by shepherd children. While some children watch the flock, others gather under a

shady tree and dig holes 20 centimetres deep in the ground. Then they cut boughs or herbaceous plants, most usually the green stalks of false millet, and cut them into sticks 10 to 15 cm long. For five or six players about 60 sticks are needed. These sticks are buried in the hole made for the purpose and the earth is packed down over the hole.

The game is played squatting or standing. The object is to hit the sticks buried in the ground with the sharp end of an arrow. The players take turns. If a player's arrow hits and transfixes some sticks, the player must pull the sticks out without removing the earth covering them. If a player is successful, he has another turn: if not, it is the next player's turn. In this way the game goes on until all the sticks have been pulled out of the hole. Then everyone is graded to find the best player, the one who pulled out the most sticks. There is a second, and so on down to the last.

How can this game be used for teaching? Let us suppose that the players are graded as follows:

1st player	=	19 sticks
2nd player	=	15 sticks
3rd player	=	13 sticks
4th player	=	6 sticks
5th player	=	4 sticks
6th player	=	3 sticks.

From this result it is possible to go on:
(a) *to grade the numbers obtained:*
    (i) in decreasing order: 19, 15, 13, 6, 4, 3; or
    (ii) in increasing order: 3, 4, 6, 13, 15, 19;
(b) *to problems on addition:*
    The *kafa* players have pulled all the sticks out of the ground, i.e. respectively 19, 15, 13, 6, 4 and 3. How many sticks were used?
(c) *to problems on subtraction:*
    The *kafa* players buried 60 sticks before the game. During the game 19 were pulled out and then 15.
    (i) How many sticks have so far been pulled out?
    (ii) How many sticks have still to be pulled out?
(d) *to operations on unequal shares:*
    In a game of *kafa* the player graded last got 3 sticks and one but last 1 stick more than the last. The second got 5 times as many as the last, and the first got as many as the second plus 4 sticks. Find:
    (i) how many the one but last got;
    (ii) how many the second and first players got;
    (iii) how many sticks the other players have if 60 sticks were buried to start with.

The teacher can ask the children to think of problems like this on the game of *kafa*. Since the game is played in groups, several groups may be set up. It will be played under a tree and each group will suggest a problem. These problems can be collected together by the teacher. Some will serve as written exercises. Using them in this way of course goes beyond the scope of mere motivation: it is already an arithmetic lesson in itself.

Starting-points for geometry

The game described below is played in Marka country by children aged 7 to 8 and over. Of the two players, one has four pebbles and the other four bits of wood or straw. They draw on the ground a square inside a circle: the square is divided into eight compartments, as shown in the drawing:
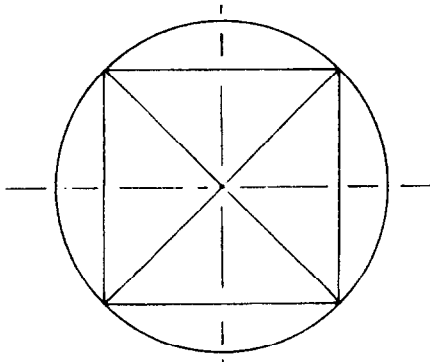
Players line up their four pebbles or twigs on one line. The one who does this first scores a point, and the game begins again. This game illustrates most of the geometrical figures the children will have to study: circle, square, rectangle, triangle and diamond. This game is not only efficient motivation but also an excellent practical starting-point for a lesson on the circumference, the square, etc. After manipulation the teacher will easily be able to go on to verbalization and the study of the various properties of these figures.

The game that follows is very well known among children in the Dyula-speaking part of the Bobo-Dioulasso area. The player has to use a piece of string with its ends tied gogether to make various geometrical figures, such as a triangle, a trapeze, a rectangle, etc. Each figure has a name. Thus we have:

sɪsɛ [chicken] *seen* [foot] (the chicken's foot)
suruku [hyena] *boda* [anus] (the hyena's anus)
musokɔrɔnɪn [woman old] *sɪn* [breast] (the woman's breast)
jɔɔ [net] *nyɛkunba* [eyes big] (the big net)
jɔɔ [net] *nyɛmɪsɛn* [eyes little] (the little net)

Here is the 'little net':
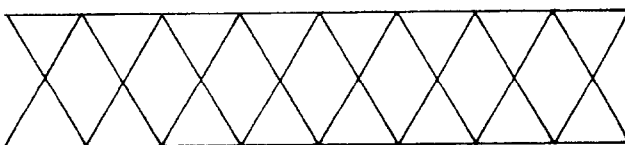
Teachers can use this game as a starting-point for manipulation. Then they get the children to draw the figures obtained on the blackboard, explaining their various properties. The children's creativity comes into play in inventing new geometrical figures, to which they give the names of familiar objects or animals.

The circle

This game is well known among Mossi children aged 5 to 10, who call it *si lala ĸiĸi*. The children, except for one, each draw a circle in the sand. The one who has drawn nothing is the chief, whose role is to check all the circles one by one and choose the one nearest to perfection as home (traditional huts are round among the Mossi). The 'chief' sits inside the chosen circle and allots the other circles, beginning with the best ones, to his wife (the queen), his children (the princes), his pages and his domestic animals. This game naturally encourages each child to make geometrical figures as perfect as possible, in order to win a prize.

The diamond

This game, whose origin we have not been able to discover exactly (Bissa area), is called by children *nihaboni* (meaning 'ghost'). It is played on sand or loose earth, and consists for the players aged 4 to 7 of drawing a series of diamonds with the two index fingers placed alongside each other. The feature of a ghost is supposedly much taller than it is fat, and the best ghost will be the one made up of the most diamonds. The final result is something like the following:

The way to use this game is obvious. Even before the geometry lesson on the diamond, teachers can start from this game and explain that the diamond is the uniform figure used to represent the ghost. They can then go on to the study of its properties: the four sides must be equal because what the left index finger does must be the same as what the right index finger does.

All these games are of course only useful as examples and teachers cannot use them in a vacuum. They can only be used in the regions in which they are actually played. Nevertheless the variety of games African children play is enormous, and it would be very surprising if teachers could not find similar games whatever region they were teaching in.

There is no doubt that games, songs and stories contribute to children's psychomotor, affective and cognitive development in traditional education carried out informally. The fostering of national culture and languages—which is a major objective of most of the educational reforms currently in train or in preparation in Africa—presupposes that these games, songs and

stories be fostered and upgraded simply because they are an actual product of mother tongues. Play procedures should therefore be regarded not only as motivational factors but also as fitting ways of giving children a natural insight into their linguistic and cultural environment. Regular use of games must, in short, form part of a revived African paedology and quickly rise to join the ranks of the teaching procedures most highly esteemed in teacher-training institutes and most used in schools.

Theme

The teaching of mathematics in African languages (continued)

Question 2

Can the same methodology and procedures be used interchangeably to teach arithmetic in a European and in an African language?

What exactly is the problem?

Teachers usually receive their mathematics training in and for the European language. Hence it is not surprising that they should want to transfer their methodological knowledge to teach mathematics in national languages. Moreover the wish to transfer methodology is a constant among teachers that has been pointed out throughout this study. Whether in reading, writing or spelling, teachers want to reinvest their knowledge and skill in another language. This transfer is sometimes possible and even desirable, as in the case of reading; sometimes it is impossible, as in the case of spelling and grammatical analysis. It may also be partially possible, as in mathematics.

Suggested reply

No culture is without logic, but the Cartesian route is not the only way to reach it. Although the mathematical referent is essentially transcultural, the procedures by which this referent can be aimed at depend on cultural factors. We must not believe in the possibility of direct transference of logico-mathematical connections from one language to another any more than we must believe in the possibility of direct transference of linguistic structures (whose irreducibility has already been demonstrated).

There may of course be similar approaches and identical progressions in some areas; but in any event it is necessary to identify and bring out for each language the verbally underlying logico-mathematical representations, taking account of which conditions the proper development of children's mathematical thinking.

The result is that some approaches used to teach arithmetic and mathematics in the European language are perfectly transferable to a new linguistic context. Other methodological doctrines, on the other hand, must be rejected in favour of new procedures identified by research applied to the teaching of mathematics in African languages.

In short, teaching mathematics to children amounts to setting them at once (on the basis of equipment and manipulations whose structural constants they must discover for themselves) three types of problems.

Problems of formalization and symbolism (figures, symbols, signs, etc.). Children will of course have to make an effort whatever language they are taught mathematics in. But the difficulty is particularly apparent for African children who are not used to connecting the numeral with the number because in their traditional environment elementary operations are carried out mentally and orally. Hence there is an early specific problem there which will need to be solved.

Problems of formulation. Of course when mathematics is taught in a foreign language these problems are increased, because at primary school level African children have not yet sufficient mastery of the linguistic tool. Only the use of an everyday language reduces this difficulty, always providing the mathematical terminology used is intelligible, unequivocal and relevant.

Problems of conceptualization. Language/conceptualization is an indissociable pair. African languages favour different trains of thought from those of European languages and it is on the strength of these trains of thought that mathematics in an African language must be taught to African children. It is a mistaken approach that consists of simply 'translating' into the African language an arithmetic textbook produced in Europe, keeping the same contents and the same methodology. Such an approach sometimes seems to save time, but it cannot be justified in terms of teaching methods. The point is that the problem lies not in the vocabulary but in the concepts. Verbalizing a concept is not enough to ensure the learning of this concept, even if this verbalization is necessary for this learning and is an essential precondition for any operational or logical abstract construction by the child. Understanding a number, for instance, is not 'saying' it or 'seeing' it but 'conceiving' it. This conceptualization must be carried out through logico-mathematical confrontations and manipulations based both on the equipment and on the underlying logical structures peculiar to the languages in question. The following suggested teaching methods clarify and illustrate these points.

Suggested teaching methods

The teaching of mathematics, if it is to be efficient, will have to fulfil three fundamental conditions.

1. IT WILL BE BASED ON THE REAL-LIFE EXPERIENCE OF AFRICAN CHILDREN, CENTRED ON THEIR INTERESTS. HENCE IT WILL REST AS FAR AS POSSIBLE ON FAMILIAR SITUATIONS PRESENTED IN THE FORM OF GAMES

It is by long experience of play situations (during which children must manipulate, experiment, feel their way, discover, make mistakes and correct themselves) that a realistic understanding of the relationships between objects, sets of objects, sets of sets, etc. will be attained. The perception and conceptualization of geometrical space also rest on experience. It is the child's hand that must describe, draw, explore and very the perspective before transcending and universalizing the experience acquired. But this process of taking account of the child's experience is not without problems. Many African languages have specific systems of couinting; and herein lies the first difficulty for the teacher when it comes to tackling with pupils the four operations (addition, subtraction, multiplication and division). And even mere counting. How, after all, is the teacher to build the children's experience into mathematical work when there are such big distortions between the original numeral system and the imported decimal system?

Let us take the example of a pupils whose language is San,[1] spoken by the Sami people in the Toma area of northwestern Burkina. In that language everything is arranged as though 8, 80, 800, etc. were the basic numbers at the top and bottom of the counting system. Thus for 70 we have fū.bɔ.má.lɛ́, literally '10 take away from', 'take away 10' (from 80, understood). Eighty is pàá. bi e (literally 'value become'). This is easy enough to understand: 80 is a basic reference, and from then on a sum becomes appreciable. The figure 90 is conveyed by a syntactic construction: pàá. biɛ.ká. fū, i. e. literally '80 with 10'. Counting goes on in this way using multiples of 80, the preceding ten being expressed either with the new unit minus ten or with the name of the preceding unit plus seventy. Thus 150: biɛ. pàa. fū. bɔ. má. lɛ́, that is '80 x 2 (160) – 10', or else: pàá. biɛ. ká fū. bɔ. má. lɛ, that is '80 with 70'.

170 is a syntactic construction: biɛ.páa(ka) fu, '80 x 2 (with) 10'.

180 is expressed as follows: biɛ. páa fùɔ́, or '80 x 2 + 20'. Beyond 800 (dúu. goòn) the biggest unit is used.

This system was convenient when it was a question of counting cowries. Moreover pàá, which comes into the composition of pàá. biɛ (80), has always meant 'cowrie' ('valuable'). It is obviously more difficult to superimpose this system on top of decimal counting. Hence when a Samo talks about money he uses expressions such as '500 French francs' or '500 Muslim

francs', although cowries still survive as accounting units, e.g. for funerals and dowries.

One advantage of this method of counting must be mentioned: the system is completely logical. Eleven is 'ten + one' (fūlù.goòn); twelve is 'ten + two' (fūlù.páa); thirteen is 'ten + three' (fūlù. sɔ̃ɔ̃); and so on.

For teaching purposes this genuinely makes things easier compared with English for numbers eleven to nineteen. The English system, after all, has no logical basis. Why 'eleven', 'twelve' and 'thirteen'? Children cannot make the link between them and the Anglo-Saxon words from which they are derived. However, the opposite is true for larger numbers. Thus the number 150 mentioned above is easier in the decimal system.

But the problem remains of how much importance for teaching purposes should be given to the traditional system, and how and when the learning of the decimal system (knowledge of which is an essential prerequisite for later learning) should be introduced. Recourse to modern mathematics, in which the bases of arithmetic are variable and their relativity is stressed, can certainly provide an original solution to this teaching problem. Moreover the approach to number is not necessarily the same from one African language to another, even when the respective areas of linguistic influence are adjoining. Moore and Dyula traditionally use the decimal system (at least for counting things), although the latter language is thought to show vestiges of a quinary system.

It may happen that the language itself by its statement structure favours the learning of certain operations. Thus in Bwamu (a language spoken in southeastern Burkina) addition and subtraction are operations that already exist in the counting system:

11 is expressed as	10	+	1
	piru / na / don		
12 is expressed as	10	+	2
	piru / na / nyu		
13 is expressed as	10	+	3
	piru / na / tin		
35 is expressed as	40	–	5
	(1)	(2)	(3)
	bwara nyu hono mian		
	(1)	(3)	(2)
55 is expressed as	60	–	5
	(1)	(2)	(3)
	bwara tin honu mian		
	(1)	(3)	(2)

Obviously in this case use of the mother tongue facilitates and considerably accelerates the learning of arithmetic, since it brings together the children's linguistic experience (with all the implicit skill it contains) and their first formal school learning. The mother tongue is eminently 'pedagogical', if only because it makes it possible to say the same thing in different ways.

Introduction to formal geometry also can and must be based on the children's experience. The African scene is much richer in implicit geometrical figures than is usually supposed: strips of cloth cut at right angles suggest the idea of the square or rectangle, as do the *seko* panels used for making screens. Strips of cloth cut on the cross make other geometrical figures, such as the diamond, for instance. Some plots of ground (25 x 25 metres) actually called 'carrés' (squares) in the Ouagadougou area give a precise idea of this figure.[2] In architecture, sculpture, ornamentation and even children's games the most complex geometrical figures are also found. Some Bobo and Mossi masks very distinctly represent figures such as the diamond, parallelepiped, circumference, triangle, etc. Drawing directly on these living, authentic examples from the African scene unquestionably makes it easier and quicker for children to grasp the corresponding concepts.

Learning the concept is what counts. The term that will serve to denote it in the national language will of course have to be carefully considered, and will also have to be as little polysemic as possible. Thus *kɔrɔlen* in Dyula means circle for some, but for others the thing encircled. The term chosen will also have to be standardized: should one say *kɔrɔlen, kɔrelen* or *kɔrilen?* But this lexical problem is after all a mere technical problem relatively easy to resolve. What matters is not so much knowing what African name to give to the concept of square, rectangle or triangle but knowing by what manipulations and confrontations these concepts can be constructed and getting the pupils to grasp them for good.

2. THE TEACHING OF MATHEMATICS MUST BE CLOSELY GEARED TO THE CHILDREN'S PSYCHOLOGICAL AND MENTAL DEVELOPMENT

While this development is admittedly determined by age, it is so just as much by the customs of the environment in which the children grow up. Now in the field of numbers these customs are usually characterized in Africa by two remarkable constants: counting and enumerating have always been based on concrete manipulations; and arithmetical procedures and operational progressions are essentially mental and oral, and do not rely on any figurative symbolism.

That counting and enumeration are usually done by concrete manipulations soon becomes apparent to an observer walking round an African market. An educational adviser[3] explains as follows the operation as it is carried out in the Dyula-speaking area: 'If you have to buy 500 francs worth of groundnuts, the saleswoman measures out 1, 2, 3, . . . twenty times with her receptacle. Then she puts one nut on one side, and does this operation five times. Since each measure costs 5 francs, she accordingly calculates 5 francs x 20 = 100 francs. This means that each peanut put on one side stands for

100 francs. Then she makes a second calculation: 100 francs x 5 = 500 francs. Children are daily faced with this way of proceeding, with which they are already familiar by the time they start school.' Consequently when it comes to practical teaching methods the teachers will always be well advised to tackle the day's lesson by means of *concrete* objects chosen from the children's environment. To start with they get the children to handle sticks, bottle-tops or seeds during a first concrete stage. The second (*semi-concrete*) stage then takes place at the blackboard, or with the help of communal equipment (drawing, diagrams, graphic representations of concrete objects, etc.). The third leg in this progression of teaching methods is an *abstract* stage drawing upon mathematical symbols and figures.

As regards arithmetical procedures, it is undeniable that in a great many African languages they are essentially mental and intuitive. A young Ouagadougou drinks merchant, asked by a trainee educational adviser[4] about his arithmetical techniques, explained the steps in his reasoning. It should be noted that this young man had never been to school, and consequently used traditional arithmetical procedures.

Question:
'The Bravolta salesman delivers to you 15 cases of beer at 1,125 F a case. How much do you give him?'

Answer:
'First I consider 10 cases; obviously if it were 1,000 F a case he get ten 1,000 F notes, which makes 10,000 F for ten cases. Now we consider the 125 F: there is also 10 times 125 F. But we know beforehand that 100 F x 10 = 1,000 F. That leaves ten times 25 F, which is 250 F.
For the 10 cases at 1,125 F a case the amount comes to 10,000 F + 1,000 F + 250 F.'

There remains to work out the price of five cases. By the same procedure we soon realize that at 1,000 F a case five cases cost 5,000 F (we know by experience that whenever we give change for 5,000 F there are five 1,000 F notes). For the remaining 125 F, let us first consider 100 F. So it is 500 F. As for the 25 F, that is 125 F. So the price of five cases at 1,125 F a case is as follows:
5,000 F + 500 F + 125 F = 5,625 F.
For the fifteen cases we get: 11,250 F + 5,625 F.
This last calculation is done in the following way:
10,000 F and 5,000 Fd = 15,000 F + 1,000 F = 16,000 F.
It remains to add 250 F to 625 F:
600 F + 200 F = 800 F.
800 F + 75 F = 875 F.
The amount to be given to the Bravolta salesman is 16,875 F.

This complicated method of calculation is admittedly not very economical, but it avoids recourse to written figures or manipulation. It also has the advan-

tage of training the mind in an intellectual acrobatics that will turn out to be an advantage for mental arithmetic at school. Hence teachers are strongly recommended to hold short mental arithmetic sessions at the beginning of each arithmetic lesson in the national language. By so doing they will be promoting a fruitful exercise with which the pupils are already quite familiar. Mental arithmetic, first done aloud, will gradually give way to writing; this will enable the pupils to record the results and the teacher to check them better.

3. THE TEACHING OF MATHEMATICS MUST BE COMPLETELY INTEGRATED WITH THE TEACHING OF MOTHER TONGUES

During and after the manipulation stage verbal expression is essential in order to transcend, extrapolate and symbolize what has been experienced. With mathematical work children are brought to become aware of their own thinking, to know what they are doing and why, and to express it in varied and always precise verbal or graphic language. Proficiency in the national language will thus be improved by taking account of these requirements and giving priority to words and structures necessary for this symbolization and this growth of awareness.

Many African languages, at any rate in their traditional and current usage, cater hardly at all for operations such as multiplication and particularly division as such. It would be a mistake not to develop these registers on the grounds that it is not traditional, and that the language dislikes these acrobatics, which are not part of its customs. After all, the four operations are an essential skill; and when the national language has been adopted to acquire them, some problems (and solutions) can arise for the teacher who has to get the children to learn these operational techniques in writing.

Addition
This presents no major difficulties. But all the observations we have made in African classes suggest that children instinctively start from the biggest figure and go to the smallest. It is the highest number that is the referent; 6 + 3 will be preferred to 3 + 6. Children must of course acquire the *notion of commutativity*, which is essential for addition; but introducing this notion does not mean that linguistic habits must be infringed at the outset. By many manipulations the pupils will be brought to discover for themselves that five sticks and two sticks really do represent the same total number as two sticks and five sticks. In any event the way of setting out addition is not the same in all languages. For every case clear and efficient procedures will need to be found that take account both of linguistic peculiarities and of the transcultural necessity to arrive at the con-

cept of the commutability of terms. Another problem, which applies to all types of operations, is that of 'carrying' a number (often expressed in African languages as 'keeping' a number or 'putting it on one side') and immediately re-using it. Children hesitate to pick up again at once what they have just 'saved up' and 'put on one side'. Teachers know from experience that this difficulty is not theoretical, and they need much skill to link deeds to words and regularly start off from concrete manipulations that will make the children acquire the carrying 'reflex'.

Subtraction
This exercise can give rise to a reading difficulty, inasmuch as the way of setting out the operation can differ from one language to another. Thus in English we say equally correctly 6 minus 2 = 4 or 2 from 6 = 4. These formulations may not fit in with the habits of this or that African language. Thus in Dyula the number subtracted will come before the higher number from which it is subtracted. Subtraction reads horizontally: 2 from 6 (not 6 minus 2). Hence there may be a difficulty for children when they have to interpret the operation set out vertically, because the usual custom is to read from top to bottom of the page or the blackboard, and this lay-out does not agree with the habits of the language. But both horizontal and vertical arrangements (6 − 2; 6-2) must be practised, because children cannot be deprived of a universally accepted mathematical formulation. Here again the mistake would be not to transcend the habits of the language.

Multiplication
It seems that multiplication, in addition to the carrying difficulty already mentioned, also raises a problem of diagrammatic representation. Here is the point of view of a trainee inspector[5] analysing the phenomenon in Dyula:

'Some teachers see no difference between 4 x 3 and 3 x 4, for the good reason that the result is the same. Admittedly 4 x 3 and 3 x 4 both give 12, in accordance with the principle of the commutativity of terms in multiplication. But there is certainly a difference in diagrammatic representation between the operations 4 x 3 and 3 x 4. Let us consider the following diagrams:
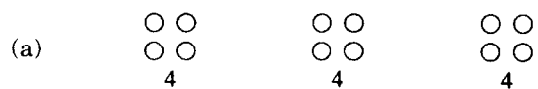
We have above three piles of pebbles, hence four repeated three times, which is represented as three times four. But:
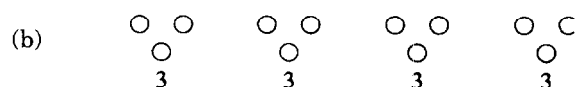
Here, on the other hand, we have three four times, i.e. we have four piles of three pebbles. This is represented as 4 x 3.

If we ask a child to choose between three piles of four mangoes and four piles of three mangoes, the child (without first counting them) will certainly be attracted by the four piles of three mangoes.'

Here again the solution lies in prior manipulations and in the skill of the teacher who should already have clearly grasped the fine distinction between 'number of times' and 'quantity expressed' each time.

Division

Division is undoubtedly the most difficult operation to teach: it presupposes at the outset ability to resolve the other operations (addition, subtraction and multiplication), but also it presents a particular psychological difficulty in an African environment. A Dyula-speaking educational adviser[6] explains the problem thus: 'The idea of sharing in the African tradition has never been egalitarian. Sharing means giving to someone else. Thus if food or work must be shared, traditionally the youngest gets the biggest share and the eldest the smallest share. It is the other round when it comes to money, kola, drinks, etc. Equal sharing, hence division as we know it, is unknown to African children. This explains why, during the preparatory course, when a child is asked to share five sticks between two pupils, he is not surprised that one of them gets two sticks and the other three.' Here again prior concrete manipulations will enable the children to overcome this psychological handicap; but in any case the teacher will only go on to the teaching of division when other operations have become familiar.

THINGS SEEN AND HEARD IN THE FIELD

There is no mathematics that is purely African, western or anything else. There are only approaches that differ or are specific as between one culture and another. Methodological transference from a European to an African language cannot be systematically practised, since each language has its own underlying logical structures. The techniques of counting themselves can differ from one language to another, which prohibits the straightforward translation of problems. Here is the same arithmetical exercise set out in Fulani and English. It will at once be seen that the basis of calculation, while consistent in itself in each case, differs from one system to the other.

Cogguuji

Ali yehi to Suleymana nyooni kaddulem fijo. O soodi meetereeji bagi *4*; meetere fu buuɗi **450** meetereeji bagi hippere *2*; meetere fu soodaakano **150**. Suleymana du yami buuɗi **600** hakkem

[*Purchases*
Ali went to have his best clothes made by Slueiman. He bought *4* m of cloth at **2,250** F a metre and *2* m of lining at **750** F a metre. Suleiman asked **3,000** F for the tailoring.]

Kiisee

1. Ko bagi oon e huppore ndeen cooda
2. Coggu kaddule deen fu

[*Questions*
1. Work out the price of the cloth.
2. Work out the cost price of the clothes.]

Piirtol

1. Coggu meetereeji bagi *4*
   b **450** x *4* = b **1,800**
   Coggu meetereeji 2 hippere
   b **150** x *2* = b **300**
   bagi e hippere coodaakano
   b **1,800** + b **300** = b **2,100**
2. Coggu kaddule deen darake dow
   b **2,100** + b **600** = b **2,700**

[*Solutions*
1. Price of *4* m of cloth
   2,250 x *4* = **9,000** F
   Price of *2* m of lining
   750 x *2* = **1,500** F
   Purchase price of the cloth
   9,000 + **1,500** = **10,500**
2. Cost price of the clothes
   10,500 F + **3,000** F = **13,500** F]

Jaabu

- bagiiji diin coodaamaa
  b **2,100**
- coggu kaddule deen
  b **2,700**

[*Answers*
- price of the cloth
  10,500 F
- cost price of the clothes
  13,500 F]

N.B. Identical figures are in italics. Different figures are in bold-face.

There are many examples of such specificity. They clearly show that much work remains to be done and much investigation carried out to harmonize the teaching of arithmetic and mathematics in bilingual or multilingual primary education without infringing the rules of representation in one language or the other. On this point, empiricism and trial and error should not be elevated to the status of a method or systematically come before research. In the realm of mathemat-

ics in relation to national languages there is still a wide field of applied research and investigation to be pursued, in which linguists, mathematicians, psychologists and teachers in the field must obviously collaborate.

Notes

1. The information about San was provided by Mrs. Madeleine Ki, linguist at IRAP, Ouagadougou.
2. The word *carré* is now often used to designate rectangular plots and should therefore be used with caution.
3. M. Carama, *L'enseignement du calcul en langue nationale jula*, IRAP, Bobo Dioulasso, 1979.
4. Nana Bassé, *Concepts mathématiques dans la société traditionnelle en milieu Mossi*, Training dissertation, 1980.
5. Batiemoko Kone, *L'enseignement du calcul en jula dans les classes EB-1 et EB-2 de la réforme; problèmes et suggestions*, Training dissertation, 1982.
6. Carama, op. cit.

Document No. 5

National languages and productive work

The connection between national languages and productive work is a special but crucial aspect of the connection between education and production. Bringing out this organic link does not at all mean that the use of African languages is reserved for essentially practical, concrete activities. For obvious reasons of educational psychology which will not be developed here, these languages must also be used as the medium for the other skills and cognitive knowledge that school aspires to impart to children.

Nevertheless it is worth stressing this point, for although most of the educational reforms carried out all over Africa set out, first, to use national languages and, second, to introduce productive work into school syllabuses, all too few of them have managed in practice to reconcile these two fundamental aims. It is true that this connection, attractive though it is in theory, is very difficult to plan and implement on the ground. The difficulty stems from the fact that the idea, while not altogether new, runs counter to the compartmentalization of subjects which is firmly entrenched both in syllabuses and in habits. Moreover scattered experiments here and there have not generated a methodology sufficiently tested and credible to serve, if not as a model, at least as a source of inspiration.

Admittedly colonial schools were not fundamentally opposed to productive activity. The pupils of those days were already faced with the hard but fruitful reality of manual work, and under the control of their masters worked fields of millet and sorghum, tended vegetable gardens, made baskets and ropes, etc. Unfortunately these activities were only juxtaposed to the school syllabus proper and there was no systematic link between work in the fields and school lessons. Now people do not produce solely in order to produce. Productive work obviously has an economic aim, but it also and especially has an economic and social one. The school of the past divorced schooling from action, whereas the process of learning, to be complete, cannot manage without practical application. There certainly is a need for inner consistency between the theoretical knowledge imparted by education and the practical application of production which the new teaching methods cannot evade.

This consistency is especially apparent when we analyse the organic relationship between the teaching of national languages and productive activity. The integration into a village community of a new unit of production such as a school is unquestionably mediated by the use of the languages which are that community's medium of communication. The use of a tongue alien to the surroundings is certainly not the best way to live in harmony with the environment. The everyday language is the only realistic medium for schooling: it acts as a real professional tool, allowing the workers of the village or district to play a direct part in the pupils' training and give them the benefit of their practical experience. In the methodology of learning to work, the local language is as good as a training tool, for it ensures the transference of technologies from the surroundings to the school and from the school to the surroundings.

On the other hand, while national languages are a medium for verbalization necessary for productive activity, this same activity is essential for the development and improvement of the linguistic tool that verbalizes it. Leadership of productive work through the medium of national languages is a powerful tonic for thse languages, for it compels them in a way to mobilize all their available lexical resources. By confronting them with new situations—particularly transfers of exogenous technologies—it brings out and makes them apply all their cognitive expressive potentialities. All progress in productive activity becomes progress for the language, which is continually enriched by new verbalizations. Every new linguistic acquisition in turn

fosters better communication, and thereby improved application and fuller use of productive work. In short, this is surely the classic progression followed in their particular contexts by all the great languages of communication now used in the world.

But it is not enough to show why the connection between productive work and national languages is necessary for active teaching methods, which bring thought out of action. We must pursue the analysis by studying the mechanism of this completely reversible connection; and (since where teaching methods are concerned it is good form to practise what one preaches) some precise examples will bring out the how of this interaction.

Let us suppose that a school or group of schools in the Sahel wants to start breeding cattle. How can the local language be an asset for the profitability of this productive work? How are the activities appropriate to this enterprise a means in return of enriching and and developing the language used?

How can the local language be an asset for the profitability of productive work?

Where French or any other language speaks in vague terms of herding and grazing, Fulani employs a multitude of extremely precise words and operational locutions that give those engaged in the work unambiguous understanding and ensure a job well done and economical. When it comes to going to or returning from the pasture, Fulani offers the shepherd a whole range of expressions lacking in ambiguity and well defined in time and space.

Thus the Fulani shepherd makes the following distinctions:

mi durowi: I leave the village with the herd to go to the grazing-ground
mi oori: I have just left with the herd to go to the grazing-ground
mi weetowi: I graze the herd from morning until midday
mi yutini: I bring the herd back to the village around midday
mi oorti: I have just left with the herd for the grazing-ground for the second time today
mi winyowi: I graze the herd in the afternoon
mi jaanyi: I bring the herd back to the village at sunset
mi hoornowi: I watch the herd for more than a day before taking it to the watering-place

and so on.

The list is still far from finished, but it will suffice to show that the local language is the most efficient instrument for expressing the local situation: it is the ideal tool for technnical and professional communication. Every expression in Fulani contains precise information about time and place and the nature of the task

to be carried out. A foreign language would be exceptionally poor for conveying the specificity and diversity of the herding tasks to be carried out in the Sahel. It would take long, imprecise, uneconomical periphrases to arrive at an identical result using other languages.

Also, of course, in Fulani the name given to the cows and oxen in a herd is settled once and for all by each animal's colour. In fact the Fulani have several systems of classification which complement one another, but the commonest system, at any rate in the Burkina part of the Sahel, is based on the colour of the hide. These specialized classifications and terminologies in Fulani are working tools essential for the proper conduct of stockbreeding. Thus it would be quite impossible for teachers and pupils to follow buying and selling transactions at a cattle-market unless they were familiar with the proper terms to designate the animals they wanted tobuy orsell. It would also be difficult for them to take part in watching a herd or taking it to the grazing-ground or watering-place. Every head of cattle has a specific name to which it answers and which the other herdsmen know. Taking part in herding becomes risky when the specialized lexicon is lacking or only approximate.
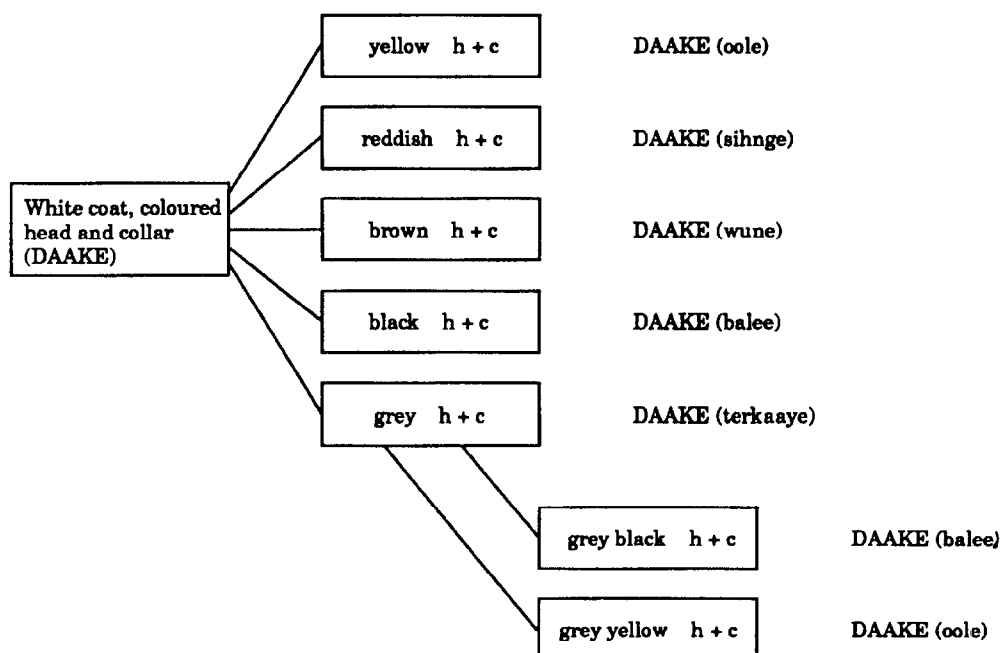
The point is that the system of classifying names of cattle is for the Fulani not merely a terminology but actually a means of action through which they can efficiently and economically carry out their pstoral tasks.

Here are some examples which are more convincing than a long disquisition.

A cow with a white coat can have twenty-one different names in Fulani depending upon the colour of the neck, collar, head, etc. (See diagrams opposite.)

This classification of cows with white coats is not complete and gives only a feeble idea of the richness and resources of the Fulani herdsman's working language. Cows with red, black, yellow, etc. coats would need to be added to it. Each of these new groups gives rise to differentiated sub-groups. The deepness of the patches of colour, their size and their distribution over the body are also relevant and are superposed on the criteria of colour. Details insignificant for the uninitiated (for instance a white spot on the head) introduce new unambiguous information for the breeder. Finally, the placing of the horns (more or less curved, straight, curved inwards or outwards), the animal's temperament, the circumstances of its birth, its way of walking, etc. also give rise in Fulani to names that can be added to those already given for colour, thus making observation still more precise and detailed.

Theoretically there are over 4,000 words in Fulani to identify a particular animal in a herd, and the extraordinary richness of this vocabulary makes it possible to place a cow or ox even among a varied group of animals clustered on the edge of a lake or in the ring at a cattle market. Knowledge and use of this nomenclature are a necessity for the success of the school's cattle-breeding. The Fulani no longer mistrust strangers

yellow h + c	DAAKE (oole)
reddish h + c	DAAKE (sihnge)
brown h + c	DAAKE (wune)
black h + c	DAAKE (balee)
grey h + c	DAAKE (terkaaye)
grey black h + c	DAAKE (balee)
grey yellow h + c	DAAKE (oole)

White coat, coloured head and collar (DAAKE)

Here is another example:

yellow h	WOHE (oole)
reddish h	WOHE (sihnge)
brown h	WOHE (wune)
black h	WOHE (balee)
grey h	WOHE (terkaaye)
grey black h	WOHE
grey yellow h	WOHE

White coat, coloured head (DAAKE)
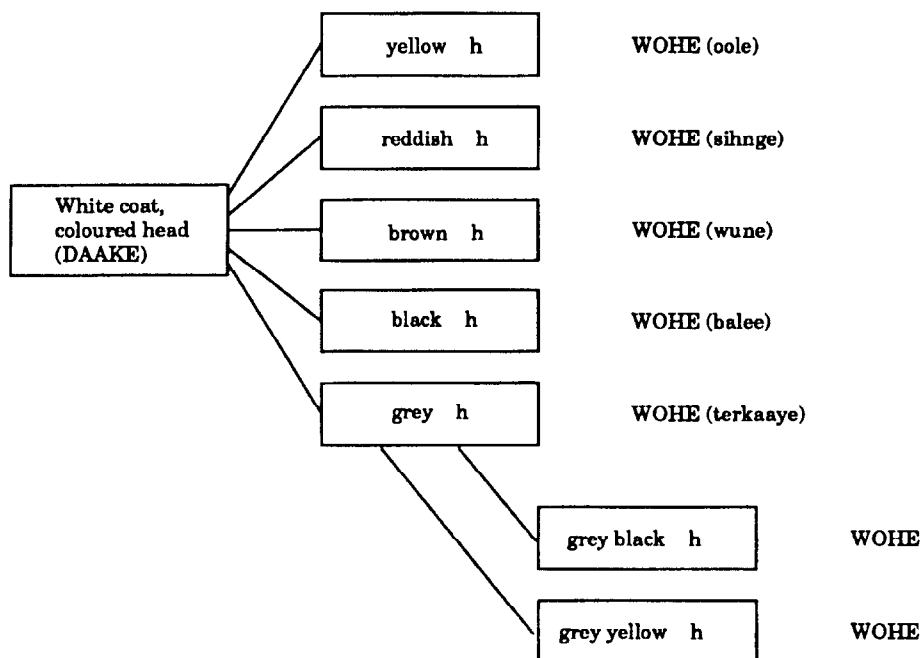
and officials who know the names of cattle (*inde na'i*). They are inclined to trust them and accept them in their community, for cows and everything to do with them are at the heart of their own lives.

In the particular case we have quoted, Fulani is thus certainly the most efficient linguistic tool for carrying out the productive work undertaken. To get a grip on the everyday realities each language (like a fisherman) uses a net the fineness of whose mesh is relative. The linguistic net of Fulani has a very fine mesh, to grasp the realities of its environment. The point is that the language/environment pair is genuinely indissociable, and the net woven by a foreign language is too coarse to be suitable.

In Gurmanche country also (in eastern Burkina) pupils wanting to go in for sheep-farming will have to be able to recognize the different varieties of sheep's fleece and their distinctive appellations in Gulimancema; otherwise they run the risk of making a very bad choice when buying these animals and being unable to sell them again.

The point is that the Gurmanche[1] buy the animals on the strength of each individual's colour. For them there are 'lucky' fleeces and 'unlucky' fleeces. The butcher himself refuses to slaughter some animals whose colour is suspect. The Gurmanche also know that by crossing they can obtain a given colour from a ewe and a ram of this or that colour. These are linguis-

tic and cultural facts, which absolutely must be mastered to be able knowledgeably to buy the first animals that must form the nucleus of the flock. If it happened that the colours of the flock were 'accursed', there would be no way of disposing of these animals anywhere in the language area in question.

For the Gurmanche, there are in fact four 'lucky' colours, two 'neutral' colours and two 'unlucky' colours. Every 'lucky' colour is specific in the good it brings. 'Neutral' colours may be good or bad according to the buyer's personal luck. As regards 'unlucky' colours, the owners do their best to sell these animals very young, since they give rise to particular calamities in the flock or in the owner's family (especially if the animals of this colour have been in the flock for more than three years). The terminology to be recognized is as follows:

/pè lúō gaalī̄/ [sheep/tied/saddle]

This sheep has a round blotch on its back (shaped like a saddle). It retrieves all the evil lying in wait for the flock and neutralizes it in its black blotch. It is in a way the guardian angel of the flock.

/pè tù múanú/ [sheep/neck/red]

This sheep with a red neck has the ability to guide the flock to rich pastures, where the ewes will be able to conceive and suckle several lambs.

/pè gūdlī̄/ [sheep/hedgehog]

This animal with kinky wool (usually white or reddish) symbolizes the prosperity and growth of the flock. Each tuft of kinky wool is supposed to correspond to a new arrival in the flock.

/pè pién tū boānū/ [sheep/white/neck/black]

This white or black sheep can be used for gifts or sacrifices. If its owner sells it, he will have great good fortune.

Sheep of a neutral colour have the following names:

/pè kál boānū/ [sheep/side/black]

The black blotch, according to which side it is on and the owner's personal luck, can bring both good and bad.

/pè yìn kúānlī/ [sheep/horn/broken]

This type of sheep is not bad in itself. But if it is black it will be the cause of grave misfortunes for the owner's family.

As regards sheep of 'accursed' colour, the following are their names:

/pè bóàn líg-lígí/ [sheep/black/dark]

This intensely black sheep is the least welcome of all. It is bad for the flock, in which there will be very few births. It is bad for the owner's family, which will not expand. It is bad for the butcher, who if he slaughters it with his eyes open will be tormented for the rest of his life.

/pè kànkālí/ [sheep/speckled]

This sheep is speckled with black, and each black spot is the bearer of a particular calamity (illness, famine, disagreement in the home, etc.)

How could a school in the Gurmanche area make a success of sheep-farming without knowing all that (even though the teacher and pupils remain sceptical about the deep non-linguistic meaning of these expressions)?

In the same area the Gurmanche of Diapangou (near Pada N'Gourma) distinguish four varieties of 'big millet', three varieties of 'little millet', three varieties of groundnuts and three varieties of sorrel. All these varieties must be known, since they do not thrive in the same soil. Hence the children and teachers must know not only the names of the soils that suit the chosen variety but also the culinary qualities of each local variety if they aspire to sell some of their produce in the village market. Thus in the way of 'big millet' we have:

/ō kăntānjā/:	white big millet, hard, resistant to predators. It is prized for making *tô* with milk (a local dish).
/í cúād píéní/:	white big millet whose stalks do not stand up well to wind. The seeds fall as soon as they are ripe, often even before the harvest.
/cúād - múaní/:	white big millet with red seeds. This millet is used for *tô*, and when it sprouts, for *dolo* (a fermented drink).
/dì màngū̄/:	sweet white big millet, can be eaten on the stalk before it is dry.

In the way of groundnuts, we need to distinguish:

/tîn jāgā/:	groundnut whose foot does not spread out.
/tîinlárgū̄/:	groundnut whose foot spreads out.
/tîn dāgbānā/:	groundnut with three nuts, more red than pink.

The varieties of sorrel are:

/goānyānā/:	fruit and leaves are used.
/goānyānjāgā/:	male sorrel, produces no fruit.
/goānyānmūanlī/:	red-leaved sorrel. The leaves in an infusion are used against vomiting and eye ailments.

The following varieties of little millet are found:

/nāmé-dī̄/:	little millet with long cobs from the Niger.
/di-pī̄ēn-boāní/:	dark-coloured little millet, used for couscous and a special *tô*.
/di-pī̄én-múaní/:	pinkish-yellow little millet. It is highly prized by the Fulani.

It will be seen that traditional productive activities have absolutely no terminology problem (as they would if they had to be carried on in a language alien to the locality). The teacher and the pupils no doubt do not initially have the specialized vocabulary that the local stock-breeders and farmers have; but learning and perfecting this vocational vocabulary becomes an absolute necessity for them if they want to benefit from the technological transfers made possible by the experience and skill of the village producers. Here the use of the local language is a precondition for the success of the enterprise. The following example is particularly eloquent.

Yams are the main crop of the Nouni (Nuni speakers) in the Léo area (southern Burkina). French, like most of the national languages of Burkina, has only one term to designate the yam. In Dyula it is *ku*, in Moore it is *busa* and so on. It would be quite ridiculous (and pointless) to recommend schools in the Nuni-speaking area to grow yams without further details. To be understood necessitates using the local language itself, which has words for eight varieties of yam all capable of being grown in the region. First of all we must distinguish two main categories of yam, *fōlú* and *pɔnʋnɔ̂*. *Fōlú* is distinguished from all the other varieties by being absolutely black and by its size. In the *pɔnʋnɔ̂* group (plural of *pɔnʋnʋ*) there are seven kinds of yam, distinguished from each other by their shape, amount of fibres, etc. Peasants choose to grow this or that kind of yam depending on various criteria. *Tūla,* for example, is prized for its size and eating qualities (*tô* made from yams). It is also the variety that brings the peasant in the most money. *Gābīni* and *bāsārā* are big and long, but need to be grown on very rich arable land, which is not found everywhere. *Jàmī* and *sâkápī* stay thin whatever the soil is like: they are not really much prized. *Fōlú* is admittedly big and heavy, but yields only one crop a year as against two or three for the other varieties.

It is also necessary to know that though *tūlā, gābini* and *bāsārā* are much prized by peasants they are likewise appreciated by termites, which can attack them during the growing period.

Harvesting takes place in August and September, the time when it rains the most; but it is not done at random. The peasants can tell from the leaves of the yam whether the tuber is big, long or small. *Tūla,* for example, can have a lot of leaves but a small tuber, whereas *bāsārā* can have very few leaves but yield a big tuber.

Given the technical skill needed for this crop and verbalized exclusively through the specialized lexicon of the local producers, it is hard to see how yams could be grown in this region in any language except Nuni.

Similarly to tell a Nuni child in English to go and cut 'grass' for the needs of the school would be to give him a completely imprecise (and in the last resort an impossible) instruction. The point is that while in Nuni grass in general is *gāwō* or *gɔ̄ɔ̄*, no less than six different kinds of grass are distinguished, each with its specific use.

Mâcāni is used for making sun hats.

Gābyā and *sāákāpo* are used for roofing lofts, but animals are fond of *sāákāpo*. It is this grass that children must cut when the livestock need to be fed.

Gûmɔ̄ɔ̄ is a tough grass used for making baskets called *tyɔ́* and for transporting heavy items (millet cobs at harvest-time, seeds, etc.).

Sâgā is a less tough grass. Baskets called *fiyá,* used e.g. for collecting leaves, are made out of it. This grass is not easy to find: some villages have it on their land, others do not. It grows in very special places.

Gānyɔɔ grows in the shade of big trees and is used for dressing wounds. Applied to a cut (such as a *daba* cut), it staunches the blood flow and promotes healing of the wound.

Chicken-farming also requires knowledge of a full and exact vocational language. On the Mossi plateau (Moore-speaking), poultry-farming for purposes of sacrifice is still of considerable importance. For this purpose chickens are distinguished by their plumage, their combs, the shape of their feet, etc. Where a foreigner speaks of chickens Mossi peasants unambiguously distinguish:

no-bengre	: chicken with little black and white patches
no-pusyaoogo	: chicken yielding down
no-saaga	: chicken with sparse plumage
no-yâne	: chicken with five claws on each foot
no-konkobre	: chicken without plumage
no-rɩgre	: dwarf chicken
no-koanga	: giant chicken
no-sadga	: young chicken
no-meoogo	: reddish chicken
no-sablga	: black chicken
no-ribla	: young cock
no-peaalga	: white chicken
no-salsanga	: grey chicken speckled with black
no-mende	: chicken with a big behind
no-raoogo	: cock
no-kar-keko	: chicken with a lame leg
no-bila	: chick
no-zʋ-wilga	: chicken with a drooping tail

This or that variety of chicken will be chosen according to the type of sacrifice envisaged. The price of each variety is of course directly related to the law of supply and demand in the market. A school with a chicken coop can try various genetic crosses so as to get the breeds desired.

In the Dyula-speaking area also there is a great variety of chickens, and the criteria for naming them are not necessarily the same as in the Moore-speaking area:

dususumasɪsɛ [heart/refresh/chicken]: this is a chicken with a white frill and front part

sagasɪsɛ [sheep/chicken]: this is a chicken that is high on its legs

fɛrɛtɛsɪsɛ [clothing/without/chicken]: this is a chicken without plumage

kolosɪsɛ [cowrie/chicken]: this is a chicken with plumage speckled with white

dugasɪsɛ [vulture/chicken]: the neck is bare of feathers

bugurigwesɪsɛ [ash/chicken]: this is a chicken with ash-grey plumage

sakabasɪsɛ [cloud/chicken]: the plumage is the colour of clouds

kunatosɪsɛ [leprous/chicken]: this chicken has its spurs eaten away.

Chickens treated with hormones in modern farming have given rise to *tubabusɪsɛ:* 'chicken of the whites', and alongside this word there has grown up *farafinsɪsɛ:* 'chicken of the blacks'.

In Dyula-speaking society poultry is raised for family consumption, for trade and for sacrifice. If the school farm has as a financial aim to fill the establishment's coffers, then the school will need to select breeds in order to obtain for example, *sakaba sɪsɛ̃,* which every farmer sacrifices at the beginning of the rainy season to make the rain come. This breed is in great demand at that time. Teacher and pupils must be able spontaneously to use all these names and know just what characteristics they go with, if they aspire to make their mark on the local market.

In Semɛjɛ, spoken in the Orodara area (extreme southwestern Burkina), the names for chickens take account not only of plumage but also of age, shape, etc.

sɔ̃kâr: a young chicken that has not yet laid

hlɔ̃nɔ̃ [chicken/mother]: an adult chicken with chicks

bɛ́bɛ́hlɔ̃ [sheep/chicken]: a chicken's plumage like sheep's wool

gbɛ̃hlɔ̃: chicken without many feathers on its body

kpálhlɔ̃: plumage speckled with many colours.

yálhlɔ̃: white chicken with some black feathers.

Schools in this region will need to know that the *gbɛ̃lhlɔ̃ and bɛ̃bɛ̃hlɔ̃* varieties are not usually much prized and are difficult to sell again.

Although among the Fulani chicken-farming is not regarded as a very important activity, the language also distinguishes various varieties on the basis of colour and shape.

cofal ʃalal	: black chicken
cofal danal	: white chicken
cofal bunal	: grey chicken
cofal badal	: reddish chicken
cofal colal ʃalal	: chicken speckled with black and white
cofal colal badal	: chicken speckled with white and red.

It will be noted in passing that Fulani has a very rich vocabulary to denote colour. The names used for cattle and poultry are different even though the colours themselves are identical.

Proper running of livestock-farming calls for mastery of an appropriate language. The language of the village producers is the most efficient for accurately describing things in the surroundings of the school. Admittedly the Moore expression *bʊ-zaanga* could be rendered by 'grey she-goat', *bʊ-zeega* by 'reddish she-goat', *bʊ-peaalga* by 'white she-goat', *bʊ-sablega* by 'black she-goat', *bʊ-mi gu by* 'red she-goat', and so on; but what should one put in English (without using an uneconomical periphrasis) for *bʊ-kalga,* which is a she-goat with a coat verging on the maroon, or for *bʊ-lɛlma* (meaning that the she-goat has folds under its chin), and so on?

Market gardening also calls for precise designation of the tools, the techniques and the characteristics of the environment. Thus a teacher teaching in a Dyula-speaking area will have to teach his pupils to recognize five different types of soil, to which the peasant farmers give the following names:

kuru	: rocky soils
fuga	: soils which are a mixture of clay and sand, with sand predominating
bɔgɔfasa	: a soil made of a mixture of sand and clay, with clay predominating
bɔgɔgwɛ	: a very clayey soil
cɛncɛn	: a soil consisting entirely of sand

A striking example of the positive contribution of national languages to productive work was given us by a student at the University of Ouagadougou. According to this evidence a student at the rural school who had studied in French the cultivation techniques to be used in cases of inadequate rainfall had recommended to his parents a palliative for the lack of rain during the great drought of 1973-1974. To retain any little water that might fall on the fields, furrows should be made obliquely across the very steep slope of his father's field. In this way the water would not be stopped from running down but simply slowed, and the sown earth would be well soaked with water. Unfortunately, lacking a sufficient command of the language of the area, the pupil did not manage to convey the idea of obliquity in that language, and reduced it by mistake to the idea of perpendicularity. When the first rain fell, most of the furrows of loose earth that formed too abrupt a barrier to the flow of water were carried away to the bottom of the slope, leaving behind bare laterite soil. This direct evidence clearly shows that the language of the area is an instrument and a weapon in the service of productive activity.

How is productive activity and opportunity to develop and enrich the language used?

While the use of the indigenous language is quite obviously an extra asset for the profitability of productive work, whose quality it helps to improve, the converse is no less true, namely that productive work in the national language gives the latter a situational framework in which it can in turn be continually refined and enriched.

We already know that in African societies technical terminology is accessible to every Tom, Dick and Harry. Its real repositories are the specialists in the field in question. Teachers and children are not *a priori* experts in livestock farming, agriculture or handicrafts. The initial lexicon of schools is somewhat poor when it comes to conveying concepts and factual items relating to this or that productive activity. Hence it is engaging in these activities that will help to enrich and then stabilize basic technical terminologies in registers in which ordinary school vocabulary is deficient. At the same time the need to give oral or written explanations would help to develop more and more powerful syntactic structures.

Reverting to the examples above, the classifications used in breeding cattle, sheep, goats, etc. can, thanks to their fullness and methodical figour, actually be used by teachers to motivate and provide the material for a series of lessons in mathematics or the exact sciences. Exercises in seriation, commutation, permutation, the determination of criteria and research on relationships will find concrete material in the analysis of the situations encountered within a herd; and all arithmetical operations can find an immediate field of application in it. *But it is the language and the lexicon that will be the main beneficiaries of a sustained link with productive work.* Thanks to this link, children effortlessly and in context familiarize themselves with the registers of the language that convey colours, shapes and the various possible combinations. They acquire in depth the vocabulary of fine shades of meaning, together with the capacity for transference. The safest and most economical way to achieve this result is to get the school out to the grazing-grounds, the rice-fields, the millet fields, the allotments, the smithies and the weavers' workshops. Teachers must not hesitate to go to the sources of skill and knowledge. That is where, abiding by local customs, they will learn from specialized workers (or perfect their knowledge of) a sophisticated technical language that will give them a grasp of the realities of the trade. In short, that is where they will find appropriate verbalizations for the working processes, the tools and even the things worked on.

Teachers would also be well advised to go back to keeping a vocabulary notebook, which has been rather given up (because it has been perceived too formalisti-

cally). Working on concrete, functional topics, they will gradually cover in context, the whole semantic field proper to the productive work the school has undertaken. This lexical corpus, after being checked and processed, may be considered by a specialized institute for inclusion in a basic lexicon of productive work. Made available again on the ground it will be useful to new teachers, who will be able in their turn to compare it with the facts, bring it up to date again and expand it. Thus the national language will gradually, in a living, dynamic way, acquire a full educational co-efficient and attain, in its school use, the technical precision needed to verbalize efficiently the most specialized productive activities.

Teachers will also, out of the same concern for practical application, record, to use them and get them used, the new words the language produces from its own resources or acquires by borrowing. Some objects and technical procedures which have no direct equivalent in African cultures are usually verbalized by recourse to borrowings. But the latter may be well or less well stabilized and consolidated by usage. To be thoroughly assimilated by the host language they must pass through the circuit of phonological constraints proper to that language: and in general teachers would be well advised to reflect these changes faithfully in the spelling.

By identifying gaps in the lexicon, productive work challenges the language and makes it behave productively. It compels the language to satisfy its needs by bringing into play all the resources proper to its genius (borrowings, derivations, composition etc.) and to use to the full its dynamic potential for renewal and development.[1]

There are many convincing examples of this beneficial effect. Thus under the influence of the introduction of ploughing with animals, Moore was enriched with some new expressions:

boãnkuuri	:	donkey-drawn plough
[donkey/hoe]		(literally 'hoe of the donkey')
nagkuuri	:	ox-drawn plough
[ox/hoe]		(literally 'hoe of the ox')
soko	:	ploughshare
koliye	:	collar
loor daoogo	:	yoke ('neck wood')
[neck/wood]		
ki-poodo	:	fertilizer for millet
[millet/manure]		('millet manure')
nagur-põodo	:	fertilizer for groundnuts
[groundnut]		('groundnut manure')
manure]		
pomteere	:	potato
rosoaare	:	watering-can

The introduction of productive activities using new techniques has obliged languages to produce new words to fill an unexpected gap. The same thing can be

seen with Marka, spoken by an essentially peasant population. Impelled by necessity Marka has created:

túbaábú-sɔ̀sɔ̀	:	runner beans
[white man/bean]		(white man's beans)
túbaábú-kàani	:	pepper (white man's pimento)
[white man/pimento]		
nyɔ́-bisi	:	insecticide (remedy for millet)
[millet/remedy]		
-dábá-nyii	:	ploughshare
[hoe/tooth]		
másà-kù	:	sweet potato (yam of kings)
[king/yam]		
and so on.		

The introduction of ploughing with animals into Cameroon likewise made the language produce new expressions. Thus from són meaning a hoe Tupuri has created *són daỳ* (ox hoe) to denote a plough and *sāŋ són daỳ* (tooth, ox hoe) to denote a ploughshare. From *cù* meaning salt we have *cù mbaāraw* (salt cotton), i.e. the chemical fertilizers that often come in the form of a white powder or fine white crystals.

The expression 'DDT powder', after being filtered by the circuits of phonological constraints, has become *fúudùr*.

Sheep-farming (like agriculture) in a modern context implies the introduction of new techniques, which themselves give rise to neologisms or grounds for widening the meaning. Thus in Gulimancema we find:

nà dàbiāgū [ox/canoe]: cattle-trough (canoe from which oxen drink)
júagīn ŋūlī [dirt/washing]: to disinfect (washing of dirt)
yàn-sòb-kpālī [animals/parasites]: parasite controle (slaughter of animal parasites)
lī kpiagnú cāp [weight/exact]: net weight
lī bōnfúōrtī kpī ágnú [living thing/weight]: weight on the hoof
bònpién blī gé [white man/manure]: chemical fertilizer (white man's manure)

Fertiliers are used in quantities that depend on the area cultivated. New words come into being out of the need for a measuring system. Thus among the Bwa (Bobo Dioulasso region) we find:

táárē	:	a hectare
dī mī	:	half a hectare
kááre	:	a quarter of a hectare
palans	:	a strip (cultivated plot)
sary	:	a plough

In Orodara Sub-Prefecture, 'the Orchard of Burkina Faso', schools can go into intensive fruit-farming. The pupils lay out nurseries of mango and lemon trees. Three years later these little trees are grafted. The grafting technique is the result of a transfer of external technology. The pupils learn the techniques of grafting with their underlying terminology. Dyula, used in the region, has been enriched with a new terminology that is gradually coming into use.

mâdarini	:	mandarine tree
tenaye	:	pliers
nɛgɛre	:	fertilizer
gɛrɛf	:	graft
busi	:	sparking-plug

Hence productive work is an excellent medium for enriching the national language used by teachers and pupils. This enrichment does not consist only of creating new words: it also means resuscitating into the language words and expressions that had fallen into disuse bcause they were used very little or only in certain areas. Some compilers of books, long-standing city-dwellers, must be on their guard against an undue tendency to use borrowings and neologisms, while 'those who stayed in the village' have a precise word to denote the thing or action to be verbalized.

Schools have a part to play in the survival of this specialized functional vocabulary. Unlike traditional schools, which 'acculturated' children, the new schools will through productive work help to brinig them closer to their cultural sources and to defend their linguistic heritage. In Moore, for instance, some ten terms are recorded for agricultural implements of different shapes and for different uses; but following the almost complete mechanization of agriculture, French seemingly reduces them all to the word 'hoe'.

The first word (*kuuri*) may be regarded as a generic term. To cut grass when it is long a *wâka*, technologically dsigned for that, will rather be used: it is light, with a straight, rigid handle. For loosening the earth it is best to use a *roanga*: this tool is designed to make little hillocks of earth, and has a very broad blade which allows it to take a lot of earth at a time. The curved handle facilitates the movement of tipping the contents out on to the ground. The term *lānfo* denotes a kind of hoe designed to dig soil that has remained dry even after rain: this tool is very heavy and has a relatively pointed end. The *ka-kɛɛga is* for cutting millet: it is often a makeshift tool made up by the peasant himself for his own needs. It is usually made out of an old worn blade and any old bit of wood for a handle. The *ku-toaaga* is only used for sowing.

Farming work itself cannot be summed up in a single word. *Koobo* is the generic term, but at the beginning of the season *warga* is carried out: this is mainly weeding, at the same time earthing up the still fragile millet seedlings. *Bâkā* comes at a later stage, when the millet seedlings are already fairly tall and there are a lot of weeds in the fields. Little hillocks are then made so that the plants will be well fed.

Teachers and pupils have already lost part of this

specialized terminology from their active lexicon. The introduction of agricultural work makes it possible to bring this vocabulary up to date in schools.

In Dyula society the problem is the same. There are several varieties of *daba,* and each variety has a well-defined use. But some adults and children, and even teachers (often strangers to the region) do not know the specific names. Here again productive work and actually using agricultural implements provide an opportunity to rescue specialized terminologies from oblivion. We also find:

gwédaba or dababa : a big hoe for earthing up the tubers
sɔɔmen : having a long narrow blade. This hoe is used for digging.
syɛnikɛ : used for hoeing and weeding (literally 'to scrape/to do/hoe').
dannikɛ daba : used only for sowing seeds (literally 'to sow/to do/hoe').

The same goes for axes, which in Dyula society are sexed: jede cɛ, 'man-axe', and *jede musoma,* 'woman-axe'. They consist of several parts—the nose (1), arm (2), head (3), neck (4) and mouth (5):
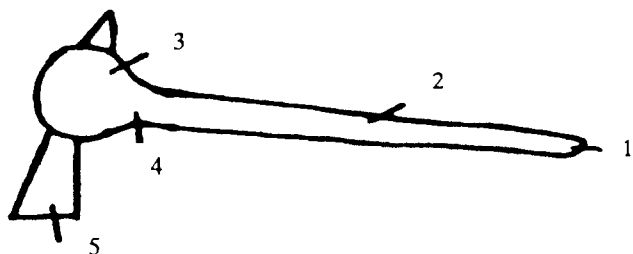
All these terms are precise and denote precise objects intended for precise purposes. But they are falling into disuse, and productive work in schools can ensure their survival and even their wider use.

In Mgambay country (southern Chad) the generic term kɔs (hoe) is known to all, but productive activity will enrich the specialized vocabulary once practical work starts in the school garden. To make 'pockets' (holes in which several seeds are placed), the following will be used:

kɔs dwa : this tool has a very long handle (as tall as a man or more), and makes it possible to work while walking upright.
kɔs koŋ : used to clear land and remove the stumps of bushes. It has a shorter handle, and makes it possible to work almost without bending one's back.
kɔs pàŋga : has a short handle much slanted to the blade. Peasants use it, completely bent over, to draw furrows.
kɔs ginâ : used with one hand for hoeing in a squatting position.

Ngambay has also produced new words to cope with new phenomena:

kɔs màŋ [hoe/ox]   : plough
ndɔ kɔs [tongue/hoe] : ploughshare
dzúg   : yoke
sén   : chain

Niger languages also have a very rich specialized vocabulary for agricultural activities. The National Museum at Niamey, for instance, has some agricultural implements whose names have a good chance of surviving in common use outside the museum if schools regularly use them when they start working on the land.

Hausa peasants have, first, a big hoe called a *sungumi.*[2] This tool, with a detachable handle, can be used as a dibble, or (with the blade of the next hoe) for clearing the ground. It is used standing up. The next hoe is an ordinary hoe with a straight blade. Its Hausa name is *kamuda.* It is used for clearing the ground, the user staying bent over. There is also the *kalmi* (in Zarma *kalma),* an ordinary hoe with a curved blade. This hoe is generally used on hard or clayey soils: the worker is bent over. There is also a hoe for rice-fields, with a long handle. This tool, called *kalme,* is used standing up. The short-handled hoe *galma* (in Zarma *galma)* is used either for kneading *banco* or for making furrows in rice-fields. *Baagoda* is a little hoe mainly reserved for women and children. The list is far from finished.

By coming face to face with productive work the national language continually renews its lexical resources. Like a muscle on which demands are made, it gets stronger and ready to overcome new challenges. It is by and through activity that verbalization becomes more refined, purer and richer. Admittedly verbalization is not everything. We well know that it will not suffice to get children to learn the relevant concepts, since the latter's structures originate from action and from sensorimotor mechanisms deeper than language; but verbalization is a necessary precondition for any abstract, logical or operational construction. Thus the perception, conceptualization and verbalization of space are based on active experience. Children's hands must draw, describe, explore and vary the perspective. Walking is in turn connected with manual activity. In what context would this experience find a better field of application than in productive activity?

What are the implications for teacher-training syllabuses of the interaction between national languages and productive work?

The connection between national languages and productive work is in every case a means of enrichment and reciprocal development for each of the terms involved. This is why the teaching of national languages and the starting of productive activity must not be thought of as separate disciplines in training syllabuses for teachers and educational supervisory staff, but must be integrated in the same interdisciplinary approach. The conventional approach, under which the teaching of languages is based on a progression fairly clearly dependent on the system of internal working of the language studied, is no doubt justified at the academic level; but it does not seem suitable to the specific context of training. We must try a more functional approach, in which the learning and advanced study of the national languages fits in with specific schemes that really foster the productive activities carried on in the country's schools. It is these expanded productive activities that must provide most of the situational factors that influence the language. Any other features of language learning to which the study of practical activities has not opened the way can later be grafted onto this eminently functional stock.

If the learning and advanced study of languages in schools is to be really effective, it must avoid the abstract nature of the traditional approach, which is usually isolated and detached from the concrete environment. Teachers and children are reluctant to enter the abstract linguistic world they are offered and which serves as a medium for the study of language. It is better to locate this teaching in familiar space and time, and in the framework of everyday occupations. Thus functionality is the great principle that must dominate the orientation of language teaching methodologies. Productive work in the widest sense, that is covering not only work itself but also the individuality of the worker and his needs, tastes and dislikes can serve as a starting-point for the compilation of a 'made to measure'—functional, educational and linguistic—syllabus. For this all that is needed is to shift the emphasis from the internal logic of language to the logic of language situations representative of the sociological, psychological and cultural position on the ground.

The point is that productive work is not merely a synonym for material and economic wealth; it is also a source of cultural gains (folklore, songs, tales, narrative, dance, etc.). In addition, it develops aptitudes in children (manual skill and dexterity) and community-oriented attitudes and behaviour (respect for work and workers). Looked at from this angle, productive work has a wealth of varied subject-matter to offer to syllabuses for the learning and advanced study of languages.

Such an approach no doubt deserves to be tried: but ordinary common sense already shows that a language is not learnt or perfected in the same way in all settings and at all levels. The character and interests of the audience to which we address ourselves are not immaterial factors. The concept of functionality must therefore be regarded as decisive in the choice of subject-matter and the compilation of syllabuses for language training.

Now this problem of training, reduced to its purely linguistic dimensions, is twofold. Future teachers and educational supervisory staff must first acquire a professional language, characterized in particular by a specialized vocabulary which exists in the national language in question but on the face of it is not used by laymen. If teachers play an effective part in applied research on the language and associate with the producers who are the repositories of this lexicon (for instance craftsmen, livestock farmers, market-gardeners and technicians), they should be able to acquire this language, mastery of which is essential in order to benefit from transfers of internal technology from the village to the school.

But productive activity does not invariably repeat the technological practices developed locally; it must also look outside for new features capable of continually improving the profitability of the work undertaken. These technological transfers bring with them a new lexicon produced by the language (through its evolutionary dynamism) by creating, for example from borrowings, a precise vocabulary which obeys the phonological constraints. This lexicon, essential to foster transfers of external technology from the school to the village and the village to the school, will be identified by investigating, the linguistic creations of the specialized workers. In any event the setting up of an official institution to conduct applied research on the lexicon is a necessity.

The connection between education and production is not a revolution. Clear-headed educators have always advised linking schooling with the realities of the local environment. The new phenomenon is that modern educational reforms are systematically putting the quest for this connection on the list of their objectives. The danger perhaps is that the compartmentalization of subjects characteristic of traditional specialisms may once again take precedence over bold solutions. Bold solutions are what is needed if true integration of education and production is to be introduced in training institutes and schools.

Notes

1. The same phenomenon also occurs in other spheres of school work. Before the use of national languages in schools, nobody felt the need, for example, to find equivalents in those languages for 'dictation', 'written exercise' or 'arithmetical exercise'. Nowadays languages of instruction must face up to these new requirements in the teaching field and coin suitable terms. Here are some examples in Moore:

Dictation	togs	tɪ	m	gʊls
	speak	that	I	to write
	(speak and I will write)			
Written	gʊls	tɪ	m	ges
exercise	write	that	I	to see
	(write and I will see)			
Arithmetical	geel	tɪ	m	ges
exercise	calculate	that	I	to see
	(calculate and I will see)			

    Thus under the pressure of relevant practical activity languages are continually enriched with new words.
2. The spelling is that given in the display card at the Niamey Museum.

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