

THE CONTRIBUTION OF EXISTING SOURCES TO THE DATING OF EVENTS

A survey in Mali's Bwa country

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The problems posed by age estimation in most rural African populations are primarily blamed on vital registration deficiencies. From guesswork based on physical appearance to more complicated techniques involving chronological classification of events, a variety of methods are used to estimate the dates and ages which informants cannot give.

Existing sources have rarely been exploited in the framework of collection strategies adopted to date events⁽¹⁾. Yet they may facilitate and improve observation: even when coverage is limited, the institutions concerned (vital registration, Christian missions, maternities...) record a certain number of events which can be dated by simply consulting the registers. These documented events are also useful milestones for dating other elements in the biographies into which they fit. Finally, they can be used to constitute 'dating references' at the family level. These reasons led us to devise a method of dating events based on existing sources, in the framework of the demographic survey we were conducting in Mali's Bwa country.

I. – The socio-demographic survey in Bwa country

The study population The study⁽²⁾ concerns eight villages in the Tominian circle in Mali. They are homogeneous in geographical and socio-cultural terms and form an unbroken zone located along the western boundary of the Bwa territory. The study was restricted

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(1) Existing sources are used in specific situations where coverage is adequate to permit analysis. In those cases, the existing sources constitute the data base and the aim of the study goes far beyond simply dating events. Examples of this approach are the analysis of civil registration and health data in a number of capitals (Fargues and Nassour, 1988), and of parish registers in some highly Christianized regions (Lacombe, 1970).

(2) This study was conducted in the framework of research undertaken by the Department of Genetic Anthropology and Demography at INED.

Population: An English Selection, 5, 1993, 73-99

to the Bwa, by far the largest ethnic group in these villages; their population amounted to 3,100 residents in April 1988. It consists of three endogamous socio-occupational categories: farmers, 'blacksmiths' and 'griots' (two specific social castes). Everyone cultivates subsistence crops, mostly millet, which is the staple food. Bwa society is patrilineal and virilocal.

The Christian institutions (Catholic and Protestant) have been represented in the region since the 1920s and 1930s. Christianity and traditional religion account for roughly the same number of followers, while there are practically no Muslims.

The villages can be reached by dirt tracks and are about 30 km away from the nearest towns (Tominian and San). The vital registration offices are in the seat of *arrondissement*, which is Tominian for six of the villages and Mandiakuy for the other two (Wara and Lakuy). The nearest school and dispensary are 4 to 15 km away depending on the village, and the maternity is on average some 20 km away (Map 1). Delivery in the latter is rare and is only for complicated cases. The schooling rate⁽³⁾ is less than 10%.

The survey The principal aim of the socio-demographic survey in Bwa country was to measure the dynamics of this population, and more specifically, family changes. It was conducted at several levels – village, lineage, domestic group, individual – which were inter-related through the different stages of the inquiry. The data were collected by means of four distinct operations:

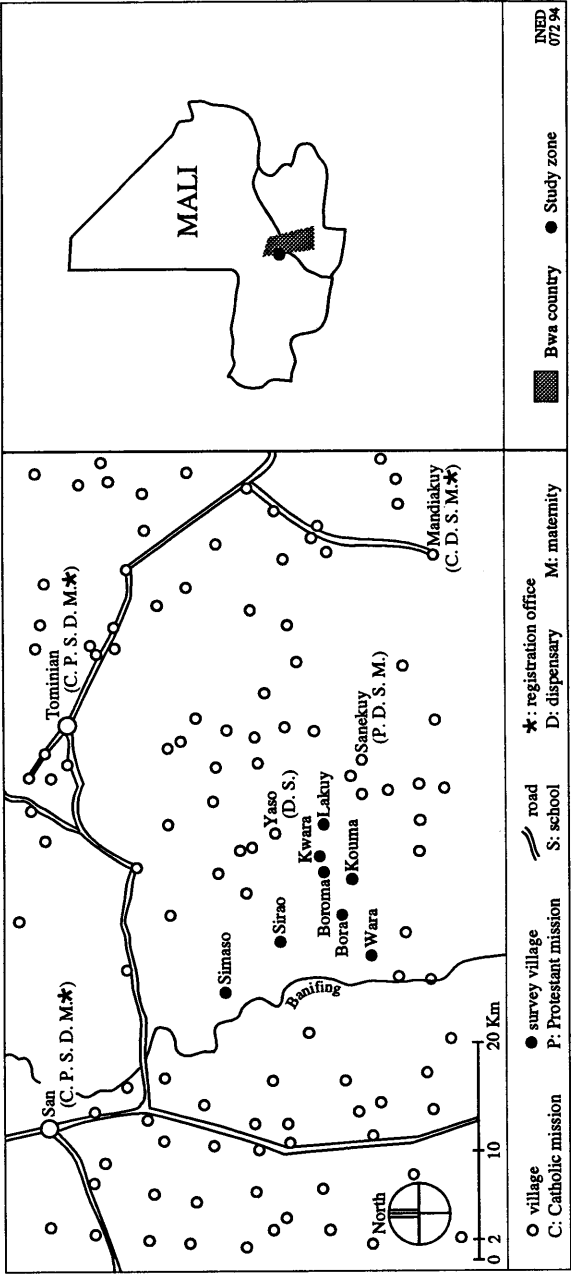
— A survey of the collective units: village (socio-economic characteristics and multi-lineage structure), lineage (social, historical, economic and religious characteristics), and domestic group (internal organization and means of production). The object was to characterize each of these units, to define their organization and how they combined.

— A follow-up survey based on the comparison of the nominal data from the national censuses of 1976 and 1987 and our own enumeration in 1988. The aim was to provide information on population dynamics and changes in domestic group structure.

— The collection of patrilineal genealogies, in order to locate emigrants belonging to the different lineages and to define kin ties between individuals.

— A biographical survey of residents and emigrants belonging to the different lineages, which comprised six series of questions, on marital, birth, migration and religious histories, as well as economic characteristics and fertility behaviour. The questionnaire was constructed in such a way that individual events could be observed in the light of the control exerted by the family, how and where this operated. The *pièce de résistance* of our collection system, the biographical survey provided the data required

(3) Proportion of children aged 7-14 attending school.



for the demographic analysis and for studying family control and its developments.

The collective unit survey and the follow-up survey were conducted throughout all eight villages, and the biographical survey and collection of genealogies in two of them (Sirao and Kwara, with a total population of 1,240 residents in April 1988).

The collection stage represented 14 months of field work, spread out over a period of three years (1987-89) to fit in with the population's activities. It was conducted entirely by the writer, accompanied by an interpreter (the inter-relatedness of the different operations made it difficult to divide the work).

The difficulty of dating events arose with the biographical survey, in which information was collected on a considerable number of events that needed to be located in time: individual's birth, marriage and dissolution of union, birth and death of children, moves, changes of religion. The problem was approached differently in the two villages concerned. In Sirao, which was surveyed first, a historical calendar was employed to help date these events. In Kwara, chronologies of family events (lineage calendars) established from existing sources were used.

II. – The difficulty of dating events

We devised an *ad hoc* methodology based on existing sources of information, because dating events proved a particularly arduous task in the study population. Questions on dates and ages are meaningless in such societies, where the concept of time is not linear. This became immediately clear: people either told us they could not answer the question, or gave inaccurate and often most fanciful responses. The extent of the dating problem can also be illustrated by evaluating vital registration coverage and its variations through time, and by comparing the ages reported at two independent population censuses.

Vital registration coverage and trends

We consulted the birth registers held in Tominian and retranscribed all registrations relative to the six survey villages which were in this *arrondissement*. We then calculated the total number of births recorded each year for these villages.

According to these data, few births are officially registered: for the years 1983-87, there were only 37, less than one-tenth of all live births (about 7%)⁽⁴⁾. The biographical survey in Sirao or Kwara gave a similar proportion: birth records – procured in Tominian or supplied by the in-

⁽⁴⁾ The population of the six villages amounted to 2,193 in April 1987, with a birth rate exceeding 50 per 1,000.

formants – were available for 9% of respondents. Birth coverage for the whole of Mali is apparently greater; it has been estimated at 15% in 1984 and 26% in 1987 (Niang, 1990). An improvement in birth registration is generally expected over time. However, the low coverage observed in our study population seems to result, on the contrary, from a deterioration of the situation.

Two indicators⁽⁵⁾ suggest that coverage has decreased over the past forty years:

— the annual number of birth records⁽⁶⁾ for the six villages which come under the central registration office in Tominian (Figure 1);

— the proportion of males⁽⁷⁾ having a birth record, calculated from the biographical survey data for two villages, by five-year birth cohorts (Table 1).

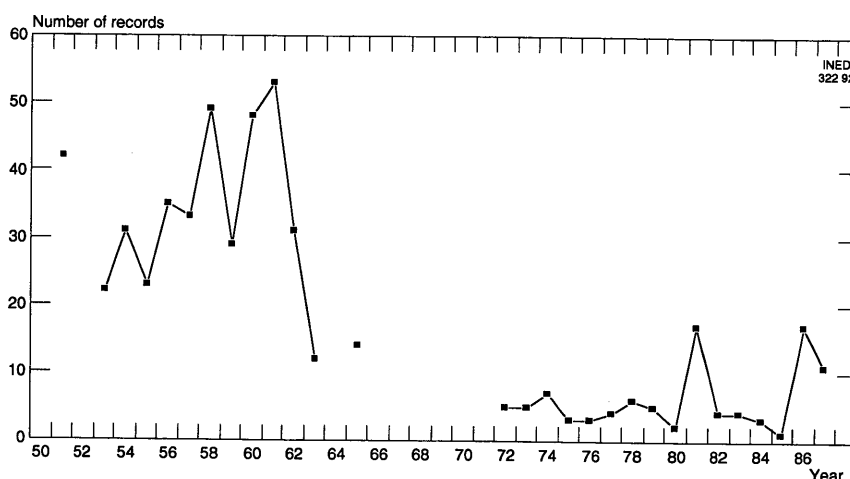


Figure 1. – Annual number of birth records for six of the survey villages (estimates)

The data reveal two distinct periods, with a break occurring in the early 1960s. The first period (1950s) shows an increase in registration coverage, with a much higher level than in the 1970s-1980s: the mean

(5) Used because registration rates could not be calculated owing to the lack of data on population trends between 1950 and 1976.

(6) The numbers of birth records actually found were corrected to take into account the frequency of missing records (registers which had disappeared, were partly destroyed...). Numbers were not estimated when less than 50% of birth records for a given year were available.

(7) This was not calculated for females because, virilocal residence being the rule, the women had often been born elsewhere, and the risk of not obtaining their birth record was consequently much higher (only birth records relative to the survey villages were retranscribed).

TABLE 1. — PROPORTION OF MALES HAVING A BIRTH RECORD*,
FROM BIOGRAPHICAL SURVEY DATA,
RESIDENTS OF SIRAO AND KWARA

(* Record procured in Tominian or from the respondent)

Birth cohorts	Percentage having a birth record	
1983-87	12	(18/150)
1978-82	10	(12/119)
1973-77	9	(8/91)
1968-72	4	(3/70)
1963-67	19	(7/37)
1958-62	26	(9/34)
1953-57	42	(11/26)
1948-52	10	(3/29)

annual number of birth records was six times as high during the period 1951-62 as in 1972-87.

The 1950s was when the vital registration system was being set up in Mali. In August 1950⁽⁸⁾, it became compulsory for all persons living within ten km. of a registration office to notify births and deaths (previously, this applied to certain categories only). New registration offices were opened (rural centres in particular)⁽⁹⁾ in order to cover a substantial part of the population.

The data reflect the expansion of registration during this decade. The number of births notified doubled between 1953-54 and 1960-61, and a birth record was available for one-third of the survey respondents born in 1953-62. A turnaround is then observed: by 1963, the figures have plunged to a very low level which is rarely exceeded in later years⁽¹⁰⁾.

This turnaround occurred after Mali gained Independence (in September 1960). It can no doubt be explained by the disorganization⁽¹¹⁾ resulting from the political upheaval, and also by the lack of interest the new officials apparently displayed for vital registration⁽¹²⁾.

A law was passed in 1968⁽¹³⁾ to counter this situation by making registration compulsory for all citizens, and by creating additional centres in the villages. The coup which took place the same year, the lack of materials and manpower, the disinterest of the authorities and the population alike,

(8) Decree 4602/AP of 16 August 1950. Previously, registration was compulsory only for French citizens and (under Decree 1243/SJ of 9 May 1933) for certain categories of "French subjects" (military, government employees...).

(9) The study villages came under the rural registration centre in Tara until 1959, when it was transferred to Yaso (see Map 1).

(10) A similar pattern for 1950-63 was observed in the *arrondissement* of Niakhar, Senegal (Cantrelle, 1969).

(11) The rarity of documents for the years 1964-71 no doubt reflects this disorganization.

(12) S. Diarra and A. Niang, personal communication.

(13) Law no. 68-14/AN-RM of 17 February 1968.

all jeopardized the implementation of this law (Niang, 1989, 1990). Paradoxically, the rural registration offices were centralized in the seats of *arrondissement* and the distance to the nearest office consequently grew, creating yet another obstacle⁽¹⁴⁾. These structures did not change for the next 20 years. The registration level remained more or less stable in the study villages until 1987, the last observation year. The situation has apparently improved since then, at least at the national level, owing to a reform introduced in 1987⁽¹⁵⁾.

The above analysis illustrates the amplitude of the dating problem in the study population. Few vital events are officially recorded. These exact data can only contribute in a minor way to the *direct* dating of events. We shall see, however, that they can also serve a broader purpose: when integrated into a community chronology, they can serve as milestones for dating non-recorded events.

Comparison of ages recorded at two censuses

When ages recorded on two different occasions are compared, the frequency and size of the discrepancies ob-

served can provide an indication of the difficulty encountered in that population with regard to age. Using the follow-up survey data, we compared the ages recorded at the 1976 and 1987 censuses, for individuals enumerated both times. The deviation between the two ages can serve as a measure of consistency. Since the two censuses were 10.3 years apart, the deviation was calculated as follows:

$$\text{deviation} = \text{age in 1987} - (\text{age in 1976} + 10)$$

The data were considered to be consistent when this deviation was between - 1 year and + 1 year. We must remember that the ages recorded cannot be taken as real ages: consistency does not guarantee the quality of the census data, nor does a discrepancy mean that both ages are wrong (or that one is right). Also, the comparison of the two sets of data is not a comparison of two independent statements: the same document mentioning his/her age may have been shown by an individual at both censuses. This document may have been a reliable one (birth or maternity record, Christian mission family card) or more dubious (testification, identity card,

⁽¹⁴⁾ Tominian, the seat of the *arrondissement* where the six study villages are located, is more than 25 km away. The preceding registration centres, Tara and then Yaso, were between 4 and 15 km away.

⁽¹⁵⁾ The reform of the registration system was instituted by the Law of 19 January 1987 and applied as of March 1987. Its aim was twofold: "the implementation of a system of registration of vital events covering the whole of the territory", and the continuous publication of vital statistics offering a satisfactory level of coverage. The reform was based on a policy of decentralization: creation of rural centres, introduction of village registers held by the headman and using the local language(s), 'marabout books'... It was supported by a campaign to make the population and the authorities sensitive to the problem (Niang, 1989, 1990). The implementation of this reform has apparently resulted in a remarkable rise in the national coverage rate: according to the latest estimates, birth registration attained a level of 40% in 1989 (A. Niang, personal communication).

tax return). The ages recorded at the two censuses will therefore tally more frequently than would two independent statements of age.

Yet they do in fact tally in less than one case out of two (44%) (Table 2). The number of large divergences is by no means negligible: the difference was 5 years or more in one-quarter of cases, and 10 years or more in 10%. Consistency was higher for men than for women: 48% versus 39% in the ± 1 year range, and 22% versus 31% at 5 years difference or more. It also decreased as age increased. Up to age 10, it was of the order of

TABLE 2. — PERCENTAGE DISTRIBUTION OF AGE DEVIATIONS, FROM FOLLOW-UP SURVEY OF EIGHT VILLAGES (PERSONS ENUMERATED IN 1976 AND 1987, BY AGE GROUP IN 1976)
Deviation = age in 1987 – (age in 1976 + 10)

Age in 1976	Both sexes					Population
	± 1 yr	– 2 yrs or more	+ 2 yrs or more	5 years or more	10 years or more	
0-4	55	34	11	6	0	287
5-9	56	14	30	13	2	253
10-14	36	8	56	21	4	113
15-19	47	23	30	23	4	133
20-24	49	20	32	19	5	107
25-29	41	37	22	32	7	95
30-34	37	22	42	50	20	101
35-39	21	30	49	53	28	57
40-44	28	23	48	48	28	60
45-49	31	27	43	37	12	49
50-59	33	34	33	45	26	118
60 +	24	49	27	57	41	74
Total	44	25	31	26	10	1 447

Age in 1976	Males					Population
	± 1 yr	– 2 yrs or more	+ 2 yrs or more	5 years or more	10 years or more	
0-4	55	35	10	6	0	156
5-9	53	13	34	14	3	161
10-14	38	8	55	21	5	80
15-19	60	14	26	17	1	70
20-24	55	14	31	16	3	58
25-29	47	34	19	28	9	47
30-34	47	21	32	40	15	53
35-39	31	35	35	46	23	26
40-44	34	28	38	41	24	29
45-49	40	30	30	35	5	20
50-59	36	31	33	34	12	58
60 +	23	54	23	59	44	39
Total	48	24	29	22	8	797

Age in 1976	Females					Population
	± 1 yr	- 2 yrs or more	+ 2 yrs or more	5 years or more	10 years or more	
0-4	55	32	13	7	0	131
5-9	61	15	24	13	0	92
10-14	33	9	58	21	3	33
15-19	33	32	35	29	6	63
20-24	41	27	33	22	6	49
25-29	35	40	25	35	6	48
30-34	25	23	52	60	25	48
35-39	13	26	61	58	32	31
40-44	23	19	58	54	32	31
45-49	24	24	52	38	17	29
50-59	30	37	33	55	40	60
60 +	26	43	31	54	37	35
Total	39	28	33	31	13	650

55% for both sexes, while over age 35 for men and as early as age 10 for women it fell below the 35% level in most age groups. This trend is not linear: age groups 10-14 and 35-39 (in 1976) show particularly high rates of divergence (64% and 79% respectively exceeding 1 year) and age was understated in 1976 compared to 1987 (in 87% and 62% of cases respectively). Not only the number of inconsistencies, but also the size of the gap, increases with age. Deviations of 10 years or more concern one-fifth of individuals from age 30 on, and 40% of those aged 60 and over. Differences of five years or more concern almost half of all individuals who had reached their 30th birthday by 1976.

This comparison of data collected for the same individuals by two distinct operations illustrates once again the difficulty of determining ages in the study population: discrepancies were observed in more than half of cases, and they were often substantial.

III. – A method of dating events based on existing sources

The chronological principle Even when they cannot date them, people can generally arrange in order of time the events which have marked their family and community life. Individuals who belong to a same family or come from a same village can also situate their time of birth in relation to others. This is hardly surprising, since personal privileges and duties, as well as access to positions of responsibility within the lineage, are based on seniority. Thus, two people who are incapable of giving their own age do know they were born a

(16) For a same genealogical rank.

day apart, because this one day gives the elder⁽¹⁶⁾ priority for becoming lineage chief.

These observations logically suggest that the collection procedure should be oriented towards helping the respondent to locate an event in relation to dating 'landmarks' with which he or she is familiar. This is the principle underlying most of the methods which have been devised to improve the dating of events.

The most common of these methods is the 'historical calendar', which consists of making a chronological list of events which have marked the region under study, and asking people to place the events to be dated (births, marriages, moves...) in relation to these focal events. The results have often been disappointing. The administrative documents used to construct the historical calendar mention events which, although they are meaningful in terms of regional history, have often had little impact at the village level. Sometimes not anchored in people's memories, with no direct relationship to their everyday life, the events noted on the calendar are often not real 'landmarks' for the local population. Certain authors have recommended that this method should be abandoned, particularly for large-scale surveys and censuses (Ewbank, 1981). It is useful, however, for reducing inaccuracies when a *local* historical calendar can be constructed; we shall discuss this point later.

The method can be improved by using events which concern the individual or his close circle personally. Pison (1980) and Gubry (1975) showed that the classification of a village's inhabitants by birth order significantly improved age estimation for natives of the study zone. In our Bwa survey, we focused on those events which directly affected the respondents' families: in relation to births and deaths of relatives, people unhesitatingly positioned events in their own lives. By knowing the exact dates of a few of these, one can weave the threads of a family chronology which will make the dating of biographical events easier and more accurate for all family members. We exploited the existing sources in this perspective: to procure dates for events concerning individuals in the survey villages, so as to constitute sets of ascertained 'dating references' at the lineage level. These sets of dating references resemble, and are used like, the historical calendar, the difference being in the nature of the events listed; by analogy, we have called them 'lineage calendars'.

The sources exploited

The data were extracted from several sources: vital registration records, those of the Catholic and Protestant missions and of the nearest maternity, and the village registers. The registration records and those of the Catholic missions were the richest sources and provided most of our information⁽¹⁷⁾. In Sirao

(17) Since very few women give birth in a maternity, the yield from such registers was very small. The Protestant mission registers contain mostly dates of sacraments; they were useful for dating the religious histories, but not for the lineage calendars.

and Kwara, where the biographical survey was conducted, the village registers, opened in 1984 and 1987 respectively⁽¹⁸⁾ to record births, deaths and marriages, were extremely precious for recent years.

Vital events are recorded by date of registration in three separate registers, for births, deaths and marriages. A new register is opened for the first entry each year; the earliest available date back to 1951. Entries relating to the survey villages were systematically copied from the registers in Tominian.

The Catholic missions fill in a family card for each couple, stating first name and family name of each spouse, year (usually estimated) and place of birth, parents' names, dates of religious events (baptism, communion, confirmation, marriage), and first name and date of birth of children borne by the couple. Other pieces of information are also sometimes mentioned: polygamy, lack of religious ceremony, marital problems, date of child's death, moves... Births are recorded only when the parents come to notify them, so coverage is not complete. The family cards are classified by village and by husband's name. The oldest exactly dated events go back to the 1940s. The family cards⁽¹⁹⁾ centralized in Tominian were retranscribed for all the survey villages.

To what extent can births, deaths and marriages be considered to be correctly dated in these documents? To evaluate this, the information was compared to the survey data collected, to look for inconsistencies.

The quality of the dates of birth is apparently good. They fit in well with the biographical data recorded⁽²⁰⁾. They are not as precise as the mention "day/month/year" would suggest: parents probably wait sometimes to be reassured about their child's survival before going to register the birth. But the difference no doubt rarely exceeds six months, which is next to nothing in the African context⁽²¹⁾. The dates of death are no doubt of a similar quality. On the other hand, dates of civil or religious marriage should not be confused with dates of entry into union: these ceremonies are rare and frequently take place several years afterwards.

The events which we could date from the existing sources were essentially births; there were fewer dates of death and marriage. Marriage dates were noted for the biographies of the individuals concerned, but could not serve as landmarks for other biographies.

(18) In Sirao, the register was opened in the framework of anthropo-genetic studies on the goitre conducted by the Department of Genetic Anthropology and Demography at INED. In Kwara, it was set up by the health services on the occasion of the training of a hygienist.

(19) Individual cards are also filled in on the occasion of communions. They were copied for dating religious histories.

(20) One inconsistency was found, concerning two successive births for a same mother reported a few months apart.

(21) We found 42 births entered in both the registration and Catholic mission records. In half, the month reported was the same both times, in 7 cases out of 10, the dates tallied to give or take a month, and in 9 out of 10, to within six months.

The lineage calendars The information extracted from the existing sources was copied into a number of registers. To use these data correctly, it was essential to identify the individuals concerned without any ambiguity. This was no easy task, owing to the number of homonyms and the fact that most people had several first names. Filiation had been noted on all the documents, which facilitated the operation. The lineage chiefs were consulted to establish the identity of each individual mentioned. The patrilineal genealogies, which had been collected previously, served as guidelines to locate the individuals in their family network on the basis of these indications.

This stage carried a first selection among the documents available. Those relative to lineages which were no longer represented in the villages (all members having died or emigrated) or to unidentified individuals were eliminated. A second selection was made on the basis of the pertinence of the events listed. Those fitting into the survey biographies were automatically kept. For the others, it depended on their significance as landmarks. The death of an adult in the lineage group would be kept, for instance, but not that of an infant whose parents had also died, since there would be fewer memories of this event.

We thus obtained, for individual lineages, a set of dated events pertaining to their members which, arranged in chronological order, formed the 'lineage calendar'. This works in the same way as the historical calendar: respondents are asked to position undated events in relation to those which are. It has the decisive advantage of referring to events experienced by their family, which can easily be related to events in their own life. Asking whether someone is younger or older than his or her cousin, asking a mother whether her child was born before or after her sister-in-law's, are the standard types of question with this method. They generally require no brain-racking, the answers seem evident.

With the historical calendar, the operation is often a long and laborious one. It is very tiring for the respondent, who is asked to accomplish a feat of memory in associating his recollections of public and personal events, and this effort may take up most of the interview time. These constraints practically disappear when the lineage calendar is used. By referring to family events, the interviewer 'speaks the respondent's language', and the date-oriented questions no longer interrupt the smooth running of the interview. This facilitates the work of both parties. Having previously used a historical calendar, we were able to appreciate the advantages of the lineage calendar in terms of 'collection comfort'.

The use of existing sources allowed us to weave together lineage calendars of appreciable density. For the larger lineage groups, we had a dated event for at least every other year since the late 1940s. Naturally, this density depended on the lineage, its size, religion (predominantly traditional or Christian), and duration of settlement. For some small families, no documents were available at all; but even in this case, the lineage frame-

work was useful, since they could situate the birth of their children in relation to those of their neighbours. Two examples of lineage calendars, one particularly complete and the other more succinct, are shown in Appendix I.

Since the lineage calendars contain mostly births, they are particularly suited to estimating the dates of other births. It might be thought that this restriction would limit their use for biographical surveys of the kind conducted here in Bwa country, where other events also have to be dated. But in fact, the different events in an individual's life (marriage, dissolution of union, births, moves...) are readily positioned in relation to one another, and when one part of the biography is dated (here, the birth history), this facilitates the dating of the other parts. The principle of classification applied first to births at the lineage level, then to all biographical events, at the individual level, extends the scope of the lineage calendar to dating the different types of events covered by the survey.

The lineage calendar has two other restrictions which reduce its scope more seriously. The first concerns the length of the period covered. In this case, the existing sources only went back as far as the late 1940s, and so the lineage chronologies contained few landmarks for dating events which had occurred during the first half of the century. The second is geographical: only events recorded for the survey villages were retranscribed. The method does, however, help to situate biographical events having occurred outside this time-and-space zone indirectly, by comparison with the personal markers established. These two restrictions apply essentially to estimating the ages of respondents born before 1945 and of wives born outside the survey villages. A historical calendar was used to help position those events which were outside the scope of the lineage calendars⁽²²⁾.

***Frequency of birth dating
by existing sources***

The existing sources were exploited primarily to construct the lineage calendars: we needed landmarks to facilitate the dating of events which were not mentioned in any document. The operation held another, more immediate, advantage, that of providing exact dates for a number of births recorded by the survey.

This contribution can be measured in three stages. First, by considering the births of respondents themselves, to see how these sources improved our knowledge of their ages. Second, through the births of their children, to evaluate the coverage of the data used to calculate basic demographic indicators (in particular, fertility and child mortality rates). Third, the advantage for biographies can be measured by studying the proportions of birth histories they allowed us to date. The analysis concerns the two villages covered by the biographical survey, Sirao and Kwara.

⁽²²⁾ In some cases, year of birth mentioned on tax returns provided a first indication of age.

Contribution of existing sources to knowledge of respondents' ages

The proportions of respondents (resident in the two villages) for whom exact dates of birth were available were calculated by sex and group of birth cohorts (Table 3).

TABLE 3. — PERCENTAGE OF RESPONDENTS WITH AN EXACT DATE OF BIRTH, BY SEX AND BIRTH COHORT (RESIDENTS, SIRAO AND KWARA)

Birth cohorts	Male	Female	Total
1985-89	47	53	50
1980-84	33	22	28
1975-79	23	19	21
1970-74	29	20	25
1965-69	33	18	25
1960-64	43	9	23
1955-59	47	7	25
1950-54	37	16	25
1945-49	10	12	11
≤ 1944	0	1	1
Total	30	20	25
(Numbers)	(713)	(685)	(1398)

Overall, one out of four had an ascertained date of birth⁽²³⁾. This level was unexpectedly high. In Sirao, before the registers were exploited, only 3.5% of the population aged 15 and over had provided some form of documentary evidence. The existing sources increased this rate fourfold, to a level of 16%.

Because of the time restriction mentioned above, almost all the known dates of birth were for people born during the last forty years. The records exploited concerned all cohorts born since 1950, and coverage exceeded 20% in most cases. It was exceptionally high (45%) for men born in 1955-64. The contribution of the existing sources was less important for women (20%) than for men (30%), and the gap was particularly marked for adults: in cohorts 1950 to 1969, coverage was three times as high for men (39% compared to 12%). This is related to the fact that, virilocal residence being the rule, many of the women surveyed⁽²⁴⁾ were born in other villages, outside the scope of the records studied.

Contribution of existing sources to the dating of their children's births

Among the live births reported in the maternity histories, the proportions which were dated thanks to the existing sources are shown in Table 4.

⁽²³⁾ Provided by the registers, or a document shown by the individual.

⁽²⁴⁾ Among residents aged 20 and over, 61% of women were born elsewhere, compared to only 12% of men.

TABLE 4. — PROPORTION (%) OF LIVE BIRTHS DATED BY EXISTING SOURCES AND PERCENTAGE DISTRIBUTION BY SOURCE, FIVE-YEAR BIRTH COHORTS (CHILDREN OF RESIDENTS, S'RAO AND K'WARA)

Children born in:												
	1985-89*	1980-84	1975-79	1970-74	1965-69	1960-64	1955-59	1950-54	1945-49	≤ 1944	Total	Numbers
Proportion of births dated (%)												
All births	46	23	20	17	25	37	27	24	12	2	25	1 969
Male	44	26	23	21	26	43	30	25	12	0	27	1 029
Female	48	19	18	12	24	31	23	24	13	3	23	939
Percentage distribution of births dated by the different sources (in brackets, by at least this source)												
Vital record only	7 (20)	17 (22)	19 (28)	23 (30)	24 (30)	49 (71)	46 (63)	32 (46)	0 (8)	0	22 (34)	110
Mission only	11 (22)	49 (56)	63 (74)	65 (72)	70 (76)	29 (51)	37 (54)	54 (68)	92 (100)	100 (100)	42 (53)	208
Other doc. only**	62 (79)	26 (31)	7 (9)	5 (5)	0	0	0	0	0	0	22 (27)	109
Several documents	20	9	11	7	6	22	17	14	8	0	14	70
Total	100	100	100	100	100	100	100	100	100	100	100	
Numbers	133	78	54	40	50	59	41	28	12	2	497	497

* Since the survey was conducted in 1987-89, the data for 1985-89 include only those births which had occurred prior to interviewing. Some took place after the existing sources had been exploited (1988), and could not be checked against the registration and Christian mission records. The potential contribution of these two sources is consequently underestimated for these cohorts.

** Village register, maternity record...

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*** Village register, maternity record...

A document giving the date of birth was available for one quarter of these children, the same proportion as for the respondents themselves. The frequency was again higher for recent births and for those which had occurred at the end of the 1950s (cohorts 1985-89: 46%, 1955-64: 32%). There was this time little difference between males (27%) and females (23%).

The contribution of each of the sources is shown individually in Table 4. It was greatest by far for the Christian missions, which accounted for 42% of dated births. Vital records and other documents (village registers, maternity records) each scored 22%, while in 14% of cases, several documents were available. The contribution of the different sources varies from year to year. Registration records come first for births in 1955-64, the Christian missions for 1965-84, and the other sources become significant for the 1980s.

Contribution of existing sources to the dating of biographies

To what extent did exploiting the existing sources provide landmarks which contributed to the dating of the biographical data? Did this concern a minority of respondents who had scrupulously registered all their births? Or were the dates distributed evenly among all those surveyed, setting individual markers for a majority? These questions can be examined by calculating the distribution of

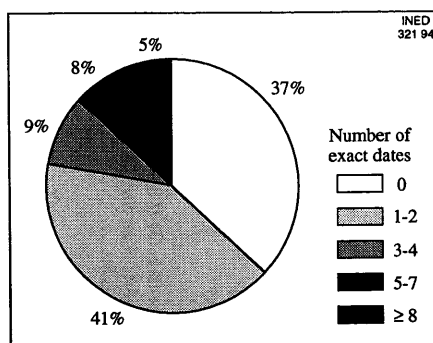


Figure 2. – Distribution of respondents by number of live births dated by existing sources (parous residents, Sirao and Kwara)

the distribution of parous respondents by number and proportion of births dated by the existing sources.

This shows that almost two thirds of the biographical survey respondents (63%) had gained from these sources. One or two exact birth dates had been provided in 41% of cases, and in 13%, five or more (Figure 2).

For 44% of respondents, one quarter or more of their live births were dated by the existing sources, for 29%, one half, and for 16%, three quarters (Table 5). These frequencies are slightly higher for men than for women: 34% of men had no ascertained date in their reported birth histories, compared to 40% of women.

The contribution of the existing sources is all the more appreciable as it does not concern only the younger respondents and those with few children. On the contrary, the proportion of birth histories containing at least one exact date increases with number of births (10 children or more:

TABLE 5. — PERCENTAGE DISTRIBUTION OF RESPONDENTS ACCORDING TO PROPORTION OF LIVE BIRTHS DATED BY EXISTING SOURCES, BY SEX, COHORT AND NUMBER OF BIRTHS (PAROUS RESIDENTS, SIRAO AND KWARA)

	Percentage distribution of respondents by proportion of births dated					Mean proportion	No. of respondents
	0]0,1/4[[1/4,1/2[[1/2,3/4[≥ 3/4		
Total	37	19	15	13	16	30	495
By sex of respondent							
Male	34	20	15	13	18	32	205
Female	40	18	14	13	15	28	290
By birth cohort of respondent							
≥ 1962	42	0	14	22	22	38	95
1952-61	38	13	18	19	13	31	141
1942-51	34	25	17	6	18	29	103
1932-41	38	23	13	13	12	26	60
≤ 1931	34	40	9	3	14	23	96
By number of live births							
1-3	46	0	8	26	20	37	138
4-6	47	15	15	11	12	23	128
7-9	30	27	22	3	18	30	125
≥ 10	22	41	14	11	12	28	104

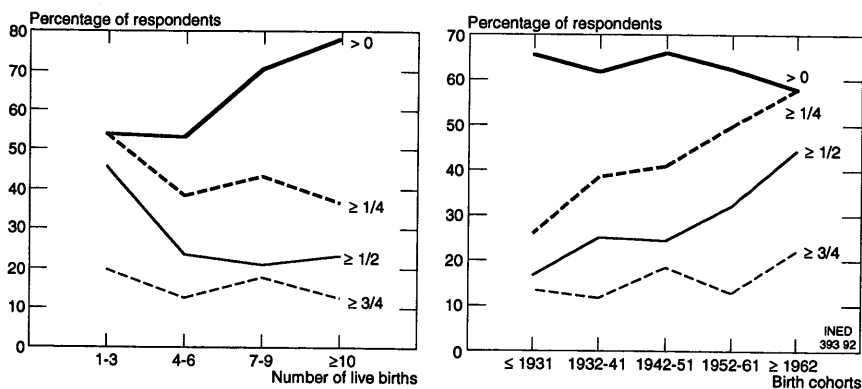


Figure 3. — Distribution of respondents according to proportion of live births dated by existing sources, by birth cohort and number of live births (parous residents, Sirao and Kwara)

78%, 1-3 children: 54%) and with age (66% in cohorts born before 1932, 58% after 1961). The cohortwise decrease in the mean proportion of dated births is due to the greater frequency of 'slightly dated' histories (more than zero but less than 25% of births dated). The maternity histories with at least 75% coverage are stable cohortwise, as well as with number of births (Figure 3).

The potential direct contribution of existing sources to the dating of events was by no means our primary reason for exploiting them. We expected to obtain only a few records which, grouped together by collective unit, might serve as 'landmarks', but which, in terms of numbers of births, would have only a very limited 'direct' impact. But this was, in fact, far from negligible. A sizeable number of births (one quarter each for respondents and for their children) could thus be dated, and two thirds of the maternity histories contained at least one ascertained date of birth.

IV. – The validity of estimates based on the historical calendar

The lineage calendars were used in Kwara, one of the two villages where the biographical survey was conducted. In the other, Sirao, this survey had already been taken (in 1987) when the existing sources were exploited; dating had been based on the historical calendar and the order of biographical events, when individuals had no document bearing an exact date.

The historical calendar was constructed using the regional chronology drawn up by Father B. de Rasilly (1972). This chronology was presented to the village elders and we kept the facts they had remembered and which seemed of importance to them. Other events relative to the village were identified, dated and entered. On the whole, the resulting calendar – which is shown in Appendix II – seemed well adapted to our population, although some events did not prove so pertinent because of their recurring nature (famine, locusts).

Once the existing sources had been exploited, the dates previously estimated using the historical calendar were adjusted. These corrected data were the ones used for the analysis, but we also entered the original estimates. We were therefore able to judge the quality of the latter. We considered the births for which there had been no exact date at the time of the biographical survey and for which this subsequently became available.

We calculated their distribution by difference between documented and estimated years of birth. All the births for which the two dates were available have been considered: those of respondents and of their children, whether surviving or deceased, resident in the village or not. The findings are set out in Table 6.

TABLE 6. — DISTRIBUTION OF BIRTHS BY DEVIATION BETWEEN ESTIMATED AND DOCUMENTED YEARS OF BIRTH

Exact year of birth	Deviation = exact year - estimated year										
	≤ -5	-4	-3	-2	-1	0	+1	+2	+3	+4	≥ +5
1942-51	0	1	4	1	4	1	1	2	1	0	0
1952-61	0	1	2	6	6	15	9	4	2	3	4
1962-71	0	0	3	5	11	14	7	2	0	1	0
1972-81	2	2	3	8	5	14	12	5	0	0	0
1982-86	0	0	0	0	1	11	4	2	0	0	0
Total	2	4	12	20	27	55	33	15	3	4	4
											15
											52
											43
											51
											18
											179

TABLE 7. — DISTRIBUTION OF PERSONS SURVIVING AT TIME OF SURVEY BY DEVIATION BETWEEN ESTIMATED AND DOCUMENTED YEARS OF BIRTH

Exact year of birth	Deviation = exact year – estimated year							
	≤ -5	-4, -3	-2	-1	0	+1	+2	Total
1942-51	0	3	1	3	1	1	2	11
1952-61	0	2	2	5	12	6	3	30
1962-71	0	2	4	8	11	5	0	30
1972-81	1	1	6	5	11	7	4	35
1982-86	0	0	0	1	10	3	1	15
Total	1	8	13	22	45	22	10	121

The difference between the estimated and exact dates is ± 1 year in almost two cases out of three (64%), and ± 2 years in 8 cases out of 10 (84%). As expected, the quality of the estimates was higher for more recent years: they were accurate to within a year for 89% of births occurring in 1982-86 versus 54% in 1942-61.

It improved further when we considered only survivors at time of survey (Table 7). The accuracy of the estimates rose to ± 1 year in three cases out of four, and to ± 2 years in almost all cases (94%). The distribution was dissymmetric in terms of the sign of the difference:

— it was more frequently negative than positive for all birth cohorts up to 1982. A tendency for the historical calendar method to overestimate age has been mentioned in several studies (Caldwell, 1971; Ewbank, 1981). Our results indicate the opposite for all ages over 5;

— the data relative to cohorts 1982-86 do, on the other hand, suggest that the ages of young children were overestimated by the survey. This phenomenon has been observed in other studies comparing stated and real ages on much larger numbers of cases (Pison, 1979; Caldwell, 1966; Ewbank, 1981).

Since the historical calendar method had proved a lengthy procedure, which asked a lot of the respondent's memory, we were afraid that the results would be rather mediocre. These *a posteriori* checks showed that our impressions were unduly negative. The accuracy of the estimates was quite acceptable given the context: the margin of error rarely exceeded 2 years for the events which could be checked⁽²⁵⁾. This tones down the criticism which has sometimes been levelled at the historical calendar: it is true that it is a somewhat unwieldy method, but when it is adapted to local history, the results can prove quite satisfactory.

The validity of the results obtained with the local historical calendar give an indication of the quality ensured by the lineage chronologies. They go further than the historical calendar and must necessarily improve observation. In view of the accuracy obtained using the former, one can suppose that the lineage calendar estimates are accurate to within a year for most of the events occurring in the village during the last 40 years.

Conclusion

We exploited the sources of information already existing in Mali's Bwa country in order to facilitate the dating of biographical events. Their contribution was multiple: they gave an exact date for a substantial number of births (25%), they provided dating landmarks within the biographies (in two thirds of birth histories, at least one birth could thus be pinpointed),

⁽²⁵⁾ That is, births occurring in the study village since the 1940s. The estimates were certainly less precise for those occurring earlier or outside the village.

and they made it possible to construct sets of dating references at the family level (lineage calendars).

Based on the same principle of chronological classification as the historical calendar, the lineage calendar improves the method by replacing public events by family events with which the respondents are more familiar (births and deaths of kin). This brings considerable ease of collection. People have no difficulty placing occurrences in their own lives in relation to such events. Consequently, the interviews, which may be long and laborious with the historical calendar, become effortless for the respondents, who no longer need to waver and rack their brains. The gain in terms of quality is difficult to evaluate. The accuracy is probably of the order of ± 1 year for events which occurred in the village during the past 40 years. With the historical calendar, it was ± 2 years for most of the events which could be checked.

Since the local historical calendar proved *a posteriori* to yield quite satisfactory results, does the contribution of the existing sources justify modifying the collection procedure?

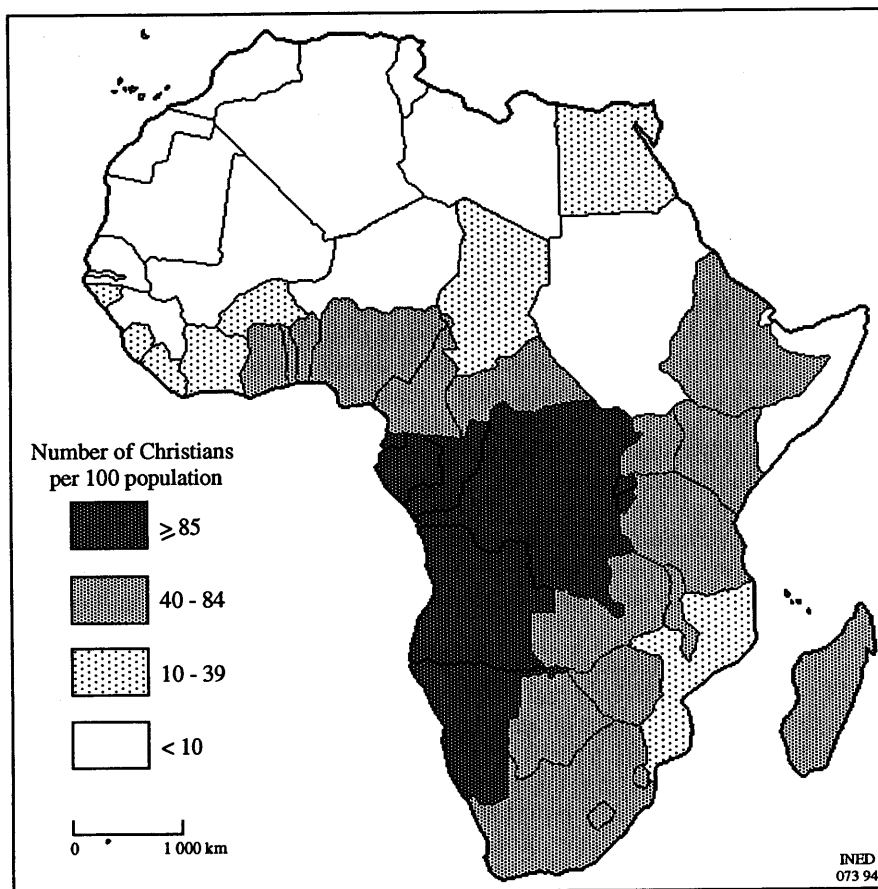
In the framework of the present survey, the cost of the operation was low. The extraction of data from the existing sources was easy to organize. It was fully supported by the persons-in-charge, who appreciated our interest in their records, and took two months by a conscientious worker⁽²⁶⁾. A further two weeks were necessary for contacting the representatives of the different institutions, organizing and verifying the retranscription, identifying the individuals mentioned on the documents and constituting the lineage calendars for the village of Kwara. The investment required for the operation seems even smaller when one considers that it cut costs by simplifying and shortening the collection procedure. Overall, consulting the existing sources no doubt reduced the cost of dating events in the Bwa survey.

However, the application of the method calls for considerable rigour. Before documented events can be used as landmarks, the individuals they refer to must first be clearly identified, and situated unambiguously in relation to the respondents. This is where genealogies are precious, or even essential. A good personal knowledge of the population is also a *sine qua non*. These requirements cannot be fulfilled in large-scale surveys. But they frequently are in small-scale surveys focusing on in-depth investigation of social and demographic behaviours.

The quantity of written documents available, which depends on the presence of institutions, the regularity of registration and the keeping of records, can be very variable from one place to another. In Mali's Bwa country, the Christian mission records were a valuable source of information. This may well be the case elsewhere, in the predominantly Christian regions of Africa, which are found mostly in the centre, east and south,

(26) At a cost of FF 500 on the local salary scale.

and to a lesser extent on the western coast (see Map 2). In the Muslim strongholds of the Sahel, on the other hand, Christian communities are rare; however, they do exist, actively, in some areas, as our survey shows. Vital registration, which was not particularly widespread in our population, may prove more prolific elsewhere, providing the records have been kept. Similarly, the contribution of maternity records or other sources may well be greater elsewhere.



Map 2. – Christianity in Africa. Number of Christians per 100 population, 1985 (estimates)

Source: Clevenot, 1987

The information available may prove (as it did here) more abundant than was expected. In this case, in addition to the direct dating of a certain number of events, it can serve to construct sets of dating references at the

family level. If few documents are found, then it will take less time to exploit them and they can still help to reinforce a local chronology. Given the low cost of such an operation and its *potential* contribution to the dating process, there seems to be little reason to neglect existing sources in small-scale detailed surveys.

Véronique HERTRICH

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APPENDIX I

Examples of lineage calendars

Lineage Alexandre Nawa Kamaté

- 12/08/46 birth of Simon Dombwe Kamaté (resident Kwara), son of Marcel (mission)
- 11/04/47 birth of Félicité Kamaté (resident Kwara), daughter of Alexandre, wife of Jean-Baptiste Kamaté (mission)
- 15/01/49 birth of Hélène-Sissi Kamaté (resident Tara), daughter of Marcel (mission)
- 19/07/51 birth of Martin Kamaté (resident Kwara), son of Marcel (mission)
- 07/08/52 birth of Maria and Grégoire Kamaté (resident Kwara), twin son and daughter of Alexandre (mission)
- 01/09/53 death of Tamou Kamaté, son of Dabe and father of Tyante who lives in Konilo Kura (death record)
- 05/10/53 birth of Césaire Kamaté (resident Kwara), son of Marcel (mission)
- 14/07/54 birth of Kalifa Kamaté (resident Kwara), son of Debere (birth record)
- 19/09/54 birth of Behira Kamaté (resident Anhulo), daughter of Tandin (birth record)
- 13/02/56 death of Yibouré Kamaté, father of Christian (resident Kwara) (death record)
- 18/03/56 birth of Philomène Kamaté (resident Konekuy), daughter of Marcel (mission)
- 08/06/57 legal marriage of Bathyo Kamaté and Démutiry Dembele (resident Kwara)
- 10/08/58 birth of Bazani Kamaté (resident Côte d'Ivoire), son of Bathyo (birth record)
- 15/08/58 birth of Rosine Kamaté (resident Konekuy), daughter of Marcel (mission)
- 25/12/60 birth of Noël Kamaté (resident Kwara), son of Marcel (mission)
- 11/03/61 birth of Salomé Kamaté (died as child), daughter of Justin (birth record)
- 11/05/61 birth of Sambe Kamaté (resident Kwara), son of Owa (birth record)
- 12/09/62 birth of Mugnusi Tefoe Kamaté (resident Somo), daughter of Dana and sister of Pobanou (birth record)

- 14/09/62 birth of Joseph Kamaté (deceased), son of Justin (mission)
- 01/05/63 birth of Alice Kamaté (deceased), daughter of Marcel (mission)
- 20/07/65 birth of Angele Kamaté (resident Sanekuy), daughter of Justin (mission)
- 29/08/65 birth of Clément Kamaté (resident Kwara), son of Marcel (mission)
- 24/10/67 birth of Nyamana-Faustin Kamaté (resident Kwara), son of Justin (mission)
- 5/68 birth of Jeanne d'Arc Kamaté (resident Kwara), daughter of Marcel and wife of Nestor Dembele (mission)
- 12/09/68 birth of Amadou Kamaté (resident Kwara), son of Bathyo (birth record)
- 09/04/75 birth of Tiukani-Weroube Kamaté (resident Kwara), son of Debere (birth record)
- 29/07/78 birth of Sianwa-Madu Kamaté (resident Kwara), daughter of Debere (birth record)
- 28/10/78 birth of Josiace Kamaté (resident Kwara), son of Boba Seface (mission)
- 18/12/80 birth of Nessene Kamaté (resident Kwara), daughter of Debere (birth record)
- 01/03/81 birth of Fissina Kamaté (resident Kwara), daughter of Seko (birth record)
- 05/03/81 birth of Patouma Kamaté (resident Kwara), daughter of Seko (birth record)
- 31/03/81 birth of Kalifa Kamaté (resident Kwara), son of Pobanou (birth record)
- 12/12/81 birth of Messaque Kamaté (resident Kwara), son of Boba Seface (mission)
- 20/02/83 birth of Juvenal-Régina Kamaté (resident Kwara), son of Césaire (mission)
- 24/01/84 birth of Emmanuel Kamaté (resident Kwara), son of Christian (mission)
- 11/01/85 birth of Amos Kamaté (resident Kwara), son of Boba (mission)
- 17/02/85 birth of Alisa-Elisabeth Kamaté (resident Kwara), daughter of Césaire (mission)
- 06/03/86 legal marriage of Césaire Kamaté and Sémite Dembele
- 11/04/86 legal marriage of Christian Kamaté and Nyamouhan Dembele
- 23/10/87 birth of Yacouba Kamaté (resident Kwara), son of Seko (birth record)

Lineage Béku Lewa Kamaté (blacksmith)

- 05/10/51 birth of Sissi Kamaté (resident Lakuy), daughter of Béku (resident Kwara) and Béhan Dembele (resident Kwara) (birth record)
- 22/03/53 death of Douba Kamaté, son of Déku and brother of father of Boitun (resident Kwara) (death record)
- 02/11/57 death of Nasi Kamaté, son of Tenhele and husband of Dophi Coulibaly (resident Kwara) (death record)
- 18/11/59 birth of Manahan Kamaté (died as child), daughter of Wamia (resident Kwara) and Hanwe Kamaté (resident Kwara) (birth record)
- 21/11/60 death of Tere Dembele, wife of Bazuru (resident Magna) (death record)
- 15/01/61 birth of Bathyo Kamaté (resident Côte d'Ivoire), son of Pebe and Vinanu Dembele (birth record)
- 10/03/61 birth of Bayowa Kamaté (resident Côte d'Ivoire), son of Behian (deceased) and Sémite Dembele (resident Kwara) (birth record)
- 29/08/62 birth of Hawa Kamaté (resident Sokurani), son of Wamia (resident Kwara) and Hanfuni Dembele (resident Kwara) (birth record)
- 04/09/62 birth of Pazo known as Mimi (resident Kwara), son of Wamia (resident Kwara) and Hanwe Kamaté (resident Kwara) (birth record)
- 19/03/65 legal marriage of Arefo Kamaté (deceased) and Gabrielle Dabou (resident Kwara)
- 06/02/66 birth of Salomé (resident Konilo), daughter of Arefo (deceased) and of Gabrielle Dabou (resident Kwara) (mission)
- 28/03/66 legal marriage of Dabe Kamaté (resident Kwara) and Sémite Dabou (resident Kwara)
- 02/03/68 birth of Alexis Kamaté (died as child), son of Arefo and Gabrielle Dabou (resident Kwara) (mission)
- 05/09/77 death of Winanbe Kamaté, father of Dabe (resident Kwara), husband of Niniko Dabou (resident Kwara) (death record)

APPENDIX II**The historical calendar: Sirao village**

- 1916 Bobo revolt.
- 1918 *Baa*, distribution of castor oil plant seeds to produce lubricating oils.
- 1919 The first doctor arrives in San.

- 1921 *Houn wa hinu*, invasion of locusts.
Census.
- 1925-26 Construction of the San-Koula track.
- 1927 *Loualouana*, cloud of locusts and particularly wet rainy season.
- 1929 Demonstration of plows in Sienso and Kwara.
- 1932 The chief of the canton of Kwara, Yibaro Kamaté, is relieved of his position.
- 1933 *Hinu zeremi*, invasion of locusts and famine.
- 1935 Distribution of cassava cuttings and groundnut seeds.
- 1938 *Heremu zeremi*, little rainfall.
- 1946 Abolition of compulsory labour.
- 1949 Ere Dabou (blacksmith in Sirao) returns from the army.
- 1952 Protestants settle in Sirao (Nicodème Diarra is catechist).
- 1957 Tominian becomes a Subdivision. Construction of the commander's house in Tominian.
- 1960 Independence of Mali.
(Sept.)
- 1961 Construction of a school in Yaso.
- 1962 Kinka Kamaté, Bouré Sanou and Tandin Tera leave for school in Yaso.
- 1967 Death of Séri Tera, Bathyo becomes chief of the Tera lineage.
- 1968 Coup d'état in Mali.
(Nov.)
- 1972 Wathyo Kamaté is named administrative chief of Sirao, he takes over from Sabere Kamaté.
- 1973-74 *Doumoua zeremi*, famine and drought.
- 1978 Death of Yaya Kamaté, Nyumuni Kamaté becomes traditional chief.
(Feb.)
- 1980 First study assignment by A. Chaventré.
- 1982 Boring and construction of the village pump.
- 1984 *Nyuvunu zeremi*, water shortage, the wells dry up.