

Reports

Sex-Specific Genetic Data Support One of Two Alternative Versions of the Foundation of the Ruling Dynasty of the Nso' in Cameroon

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CA+ Online-Only Material: Supplements A–I

Sex-specific genetic data favor a specific variant of the oral history of the kingdom of Nso' (a Grassfields city-state in Cameroon) in which the royal family traces its descent from a founding ancestress who married into an autochthonous hunter-gatherer group. The distributions of Y chromosome and mitochondrial DNA variation in the Nso' in general and in the ruling dynasty in particular are consistent with specific Nso' marriage practices, suggesting strict conservation of the royal social class along agnatic lines. This study demonstrates the efficacy of using genetics to augment other sources of information (e.g., oral histories, archaeology, and linguistics) when seeking to recover the histories of African peoples.

The history of western Cameroon has been dominated for centuries by rival polities that by the eighteenth century had formed city-states (also called kingdoms or *fondoms*). Their rivalries were a feature of the precolonial history of the Grass-

fields, the highlands that form the West and North West Provinces of present-day Cameroon. In this paper we discuss the early history of one of the most celebrated *fondoms*, Nso', using novel genetic data that throw new light on a long-standing controversy among Nso' historians.

As has been much discussed in the literature (see Jeffreys 1964; Chilver and Kaberry 1971; Price 1979; Fowler and Zeitlyn 1996), the Nso' royal family and many other royal families in the region trace their origins to the royal family of the Tikar of the Tikar Plain, near present-day Bankim. By the nineteenth century the Nso' state had become, in effect, a small empire fighting wars with rival states, such as the Bamum state centered on Foumban, for control over surrounding ethnic groups (Kaberry 1962*a*; Tardits 1980). Oral history accounts of uncertain antiquity place the origin of the Nso' people in the period before the establishment of the larger state. The most common one tells of a Princess Ngonso' traveling with followers from the Tikar region, approximately 100 km to the east (see fig. 1), separating from her brothers (who founded neighboring settlements) on the journey, and encountering a small indigenous group of hunter-gatherers (the Visale), among whom she settled (Mzeka 1990, 6–7). Mzeka (1978, 7–9, 38) states that she was accompanied by a husband, but most members of the Nso' History Society¹ claim that she settled without an accompanying husband (Tatah Humphrey Mbuy, personal communication). However, both sides agree that her son became the first *fon* of the Nso', and it is from him that the current *fon* is directly descended in the paternal line.

Nso' is unusual among the Grassfields kingdoms in having a system of named, descent-based social classes with varying rules of affiliation and transmission, described first by Kaberry (1952; 1959, 370; 1962*b*) and Chilver and Kaberry (1960) and more recently by Goheen (1996, 27–8) and Chem-Langhëë and Fanso (1997). The groups are (1) the *won nto'*, descendants of a *fon* down to the third or fourth generation; (2) the *duy*, descendants of a *fon* who ruled more than three or four generations ago together with, according to Chem-Langhëë and Fanso (1997), some members of commoner lineages whose heads are descendants of princesses and members of associated patrilineal or clan segments, allegedly founded by immigrant royals, that provide state counselors; (3) the *nshiylav*, subjects born or recruited² into palace service (patrilineally inherited); and (4) the *mtaar*, commoners (patrilineally inherited). Although the majority of the Nso' are self-identifying Christians of the Roman Catholic denomination, the *fon* has, through the generations, maintained a polygynous

1. The Nso' History Society is open to all Nso' people and to non-Nso' individuals undertaking research on Nso' history and traditions. Nso' History Society, Tourist Home, P. O. Box 33, Kumbo Nso', North West Province, Cameroon; telephone: 00237 348 17 65.

2. Members of the *nshiylav* may also be recruited from the other categories (e.g., from the *mtaar*) by the *fon* and given a special (high) status, such as personal page.

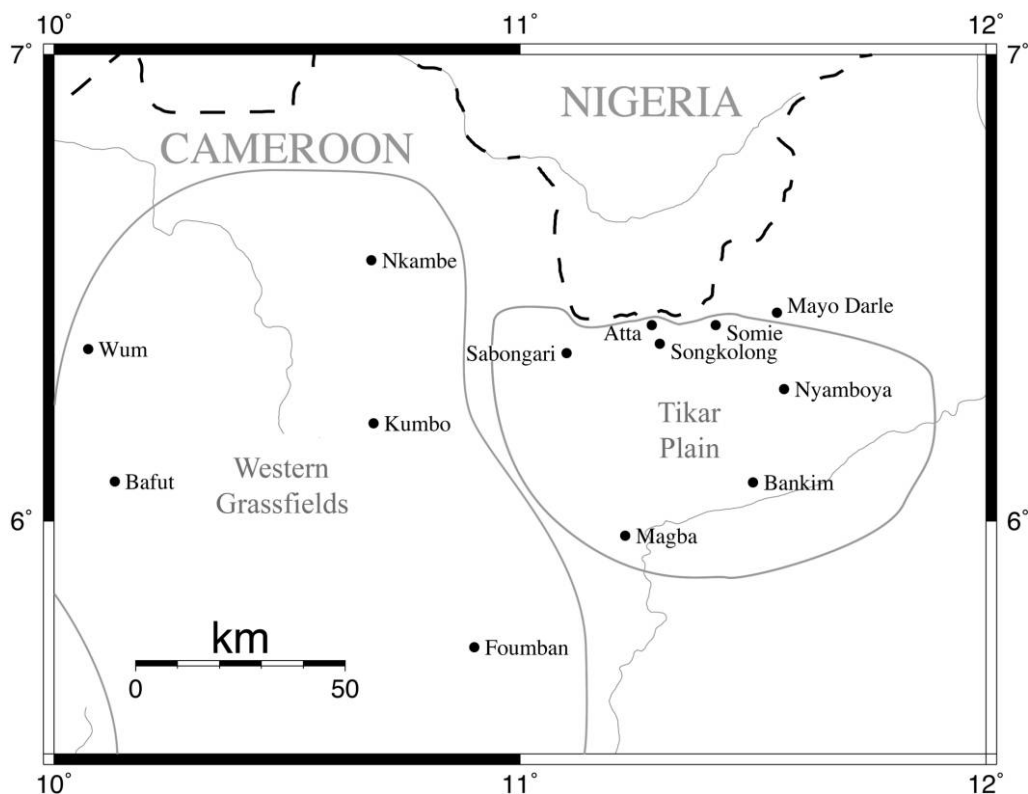


Figure 1. Towns in Cameroon where samples were collected.

household, which in 2005 numbered over 70 women.³ Access to the *fon*'s wives has traditionally been strictly controlled, with illicit unions subject to capital punishment (Chilver and Kaberry 1968, 98–99). While paternal descent from a *fon* is a necessary precondition for enthronement, the new *fon*'s mother must, by the same tradition, be a *mtaar* (Mzeka 1978, 7–9, 38).

The membership rules, as commonly stated in abbreviated form, do not cover all possible cases, particularly where the change in status from *won nto'* to *duy* is concerned. Because this has implications for the distribution of sex-specific genetic markers in the wider population, we have undertaken some further research to clarify the situation. The problem is that Chem-Langhë and Fanso's (1997) definition of the rule differs from Kaberry's (1959). In the former, individuals are *won nto'* if they are "descendants of any *fon* of Nso' to the fourth generation through agnatic lines [strictly patrilineal descent] and [read "or"] to the third generation through uterine connections [cognatic or strictly matrilineal descent]" (Chem-Langhë and Fanso 1997, 315). We call this royal social status rule A. Individuals descended from one or more *won nto'* are *duy* if they are either descendants of a *fon* more than four generations ago along agnatic lines or descendants of a

fon more than three generations ago through uterine connections (and in both cases not a descendant of a more recent *fon*). Kaberry (1959, 370) simply says, "Descendants of a *Fon* down to the third or fourth generation are described as *wonto*." There is consequently uncertainty about the status of members of the fourth generation from a *fon*. To explore this, a fictional family tree, designed to fit on one side of a sheet of paper, was used as the basis for interviews with some knowledgeable Nso' (five males) in April 2007. Informants varied as to whether the son of either a second- or a third-generation female descendant of a *fon* is a *won nto'* or a *duy*; there really is uncertainty when there are female links in any particular descent line. In practice, as part of Nso' politics, this can be exploited tactically. The Kaberry formulation of the rule can be clarified in a variety of ways; for example, "a person is a *won nto'* (down to the fourth generation [if a man] or third generation [if a woman]) if he or she is both a child of a *won nto'* and a descendant of a *fon*." We call this royal social status rule B. Our interviews ruled out the possibility that *won nto'* status is inherited solely along paternal lines. There are few circumstances in which an individual has to declare class membership, and our informants agreed that it might be possible for someone to be accepted as a *won nto'* in some circumstances but as a *duy* in others. At the boundary, however, the question of membership does not appear to be

3. This information came from the late Emmanuel Nkem Mbinglo, a paternal-line brother of the *fon*.

controversial. The discrepancy between rules A and B sets limits for population genetic modeling and historical reconstruction.

Expectations of Sex-Specific Genetic Variation

Analysis of sex-specific genetic systems (the non-recombining portion of the paternally inherited Y chromosome [NRY] and the maternally inherited mitochondrial DNA [mtDNA]) has proved useful in elucidating the history of diverse ethnic groups when well-defined alternative scenarios can be identified (see, e.g., Thomas et al. 2000; Tambets et al. 2004). Genetic data would be consistent with one of the two variants of the oral history regarding the father of the first *fon* of Nso—that Princess Ngonnso' was already married to a man of Tikar origin when she encountered the Visale or that she took a Visale husband—if two conditions were satisfied: (a) the distribution of NRY and mtDNA variation in the Nso' was consistent with expectations arising from the group's declared social practices and (b) the NRY profile in the Visale was distinct from that of migrants from the Tikar Plain.

We first examine whether it is possible to conclude that either rule A or rule B has been followed. Assuming that (a) the Y chromosome of the *fon* can be distinguished from those of nonpatrilineal descendants of a *fon*, (b) numbers of males and females in each generation are approximately equal, (c) *won nto'* females do not marry patrilineal descendants of a *fon*, and (d) rule A has been followed, we would expect 33.4%–46.7% of *won nto'* males that we sample to have the same NRY type, while this type would be expected to asymptotically approach a frequency of 12.5% in *won nto'*-descended *duy*, depending on the number of generations since the original *fon* ("Royal Social Status Rule A" in CA+ online supplement A). However, if rule B has been followed, we would expect that only 1.0%–24.1% of sampled *won nto'* males would have the same NRY type. We would expect this type at a frequency of 12.5% in the *won nto'*-descended *duy*, irrespective of the number of generations of descent from a *fon* ("Royal Social Status Rule B" in supplement A). These expectations make it possible to establish whether rule A, rule B, or neither has been followed.

An overall pattern of a shared NRY type in the *won nto'* and *duy* should be most evident with respect to a battery of rapidly evolving microsatellites on a unique event polymorphism (UEP)-defined haplogroup background and could demonstrate that male-line continuity of *fons* has been maintained for at least the past four generations. The NRY of the *won nto'* would be expected to be significantly less diverse than those of the other social classes. If the rules governing selection of a *fon* have been strictly adhered to and there has been no false paternity in the line of *fons* since the foundation of the Nso', then this homogeneous NRY type will be that of the first *fon* of Nso' and his father. In addition, given (a) the requirement that the mother of a *fon* be a commoner, (b) that women move more freely among social categories in the

patrilineal Nso' society, and (c) that extreme polygyny is practiced by *fons*, it would be expected that distributions of mtDNA types would be similar in all four social classes.

If the above expectations were met, then we would be able to use current knowledge of NRY variation in sub-Saharan Africa to explore the oral history of the Nso'. Underhill et al. (2001) suggested that previously common NRY lineages may have been replaced throughout sub-Saharan Africa by a lineage associated with the expansion of the Bantu-speaking peoples (EBSP).⁴ Scozzari et al. (1999) and Underhill et al. (2001) have identified E3a as the modal NRY of the EBSP, using the nomenclature of the Y Chromosome Consortium (2002; see fig. B1 in CA+ online supplement B for the genealogical relationships of the NRY UEP markers used to define haplogroups in this study). We would expect the putative replaced NRY lineages to be observed at low frequencies and with a patchy distribution across sub-Saharan Africa. These NRY types would be remnants of indigenous populations that were overwhelmed by populations carrying the E3a NRY type and have been isolated from each other for a significant time period. This would be reflected by high genetic distances at the microsatellite haplotype level among geographically separated groups possessing the same single nucleotide polymorphism (SNP)-defined low-frequency NRY lineages (Underhill et al. 2001). However, these replaced NRY lineages may be found at high local frequencies in existing populations that predate the EBSP.

It would therefore be reasonable to assume that the hunter-gatherer Visale may have possessed one of these putative replaced NRY lineages at a frequency higher than that for the Tikar (who speak a Bantoid language and so are connected to the EBSP). A finding that the signature NRY type in the *won nto'* is one of the pre-EBSP lineages and is also not found in neighboring Tikar populations (as well as other nearby ethnic groups that may have experienced contact with Tikar) would favor the scenario in which the immigrant princess married an indigenous Visale. Conversely, the presence of a homogeneous E3a lineage would favor Tikar paternity, or patrilineal descent from some other Bantu/Bantoid group, of the first Nso' *fon*.

Analysis of the Genetic Structure of the Nso' People

To examine the above hypotheses, we collected DNA samples from males from each of the four Nso' social classes (in a fashion blinded to social class; "Sample Collection Procedure" in supplement B), typed them for 11 UEPs (SNPs and indels) and six microsatellites on the NRY (Thomas, Bradman, and Flinn 1999), and sequenced hypervariable segment 1 (HVS-

4. We note the considerable simplification implicit in this statement. Gene flow is not necessarily associated with language dispersion, and NRY lineages are not necessarily associated exclusively with specific demographic events, but for our purposes there are enough hard data to suggest a close correlation. Some of the complexity has been discussed by Vansina (1995), MacEachern (2000), and Zeitlyn and Connell (2003).

1) of their mtDNA (Thomas et al. 2002). Individual NRYs were then assigned to haplogroups based on the UEPs according to the nomenclature of the Y Chromosome Consortium (2002) and further defined by their six-microsatellite haplotypes (Kayser et al. 1997). The mtDNA types were defined by their variable-site-only (VSO) haplotypes (“mtDNA Typing” in supplement B for a full explanation).

The most common NRY haplogroup in the *won nto'* was Y*(xBR,A3b2), with a frequency of 55.6% ($n = 18$; table 1). This haplogroup was also found at a frequency of 17.6% in the *duy*. Furthermore, all Y*(xBR,A3b2) chromosomes had the same microsatellite haplotype (14-12-20-11-14-14; CA+ online supplement C for all relevant NRY data). For convenience only we refer to Y*(xBR,A3b2) and the associated microsatellite haplotype as the *won nto'* modal haplotype (WMH); it had ten representatives, while the next most frequent haplotype in the *won nto'* had only two. The modal NRY haplogroup in the non-*won nto'* social classes was E3a, with a diverse range of NRY types at the microsatellite haplotype level ($h = 0.94 \pm 0.01$). Y*(xBR,A3b2) NRYs were found in the nonroyal social classes, but these included microsatellite haplotypes that were one to three mutation steps different from the WMH, suggesting that they had originated in the *won nto'* or paternal ancestors of a founder of the *won nto'* and had diverged from the WMH. This accords with Nso' rules of class inheritance. At the UEP haplogroup level, Fisher's pairwise exact tests showed the *won nto'* to be significantly different from all non-*won nto'* social classes ($P < 0.01$), which in turn showed no significant differences from each other ($P > 0.877$). Genetic distances at the UEP + microsatellite haplotype level between the *won nto'* and the other three social classes were also all statistically significant ($P < 0.01$), with the greatest distance between the *won nto'* and the *mtaar* ($F_{ST} = 0.101$).

Expectations inferred from declared Nso' social practices are confirmed by the frequency and extreme homogeneity of the WMH in the *won nto'* and by the fact that a high-status man generally considered to be a paternal descendant of a recent *fon* possessed the WMH. A Pearson's χ^2 goodness-of-fit test for continuity was performed to test the deviation of the observed WMH frequency in the *won nto'* from our expectations under both rule A and rule B. That rule A had been followed could not be rejected at the 1% level (and could

be rejected only barely at the 5% level; χ^2 test against the upper limit of expected frequency, 46.7%: $P = 0.45$, $X^2 = 0.567$, $df = 1$; against the lower limit, 33.4%: $P = 0.046$, $X^2 = 3.97$, $df = 1$), in contrast to rule B, for which noncompliance is statistically significant (χ^2 test against the upper limit of expected frequency, 24.1%: $P = 0.001$, $X^2 = 9.73$, $df = 1$; against the lower limit, 1.0%: $P < 0.0001$, $X^2 = 541.15$, $df = 1$). While these tests are dependent on twin assumptions of random sampling and equal reproductive success of non-*won nto'* males, the size of the difference in P values is strongly indicative of a real effect. This support for rule A is notable: given that the WMH appears in non-*won nto'* males at a low frequency and that *fon* NRY types could therefore enter the *won nto'* through non-*won nto'* males, our expectation may have been an underestimate. Our data support male-line continuity of Nso' *fons* up to at least the fourth generation, and the WMH can thus be considered a likely candidate for the NRY type passed down from the first *fon* of Nso'. There was insufficient statistical support to reject the hypothesis that the frequency of Y*(xBR,A3b2) in the *duy* is in accordance with expectations based on declared social practices (χ^2 test against the expected frequency of 12.5%: $P = 0.26$, $X^2 = 1.23$, $df = 1$). There was no statistically significant difference in the frequency of mtDNA types (CA+ online supplement D) in combined or pairwise comparisons among the four Nso' classes (global exact test: $P = 0.82 \pm 0.05$; Fisher's pairwise exact test: $P > 0.25$). Therefore, the pattern of both NRY and mtDNA variation in the Nso' was in concordance with expectations based on rule A.

Association of the Y*(xBR,A3b2) Lineage with the Indigenous Hunter-Gatherer Visale

To examine the merits of the two versions of the oral history, we were required to investigate the likely origins of Y*(xBR,A3b2). For the reasons set out in CA+ online supplement E, Y*(xBR,A3b2) is a likely candidate to be one of the NRY lineages replaced by the E BSP, as proposed by Underhill et al. (2001).

To establish that the WMH is not common in other groups inhabiting the Grassfields or the land to the east, including the Tikar Plain, we analyzed the NRYs of males from ten neighboring ethnic groups ($n = 780$; table 2). Only one self-

Table 1. Distribution of NRY Haplogroups in the Four Nso' Social Classes

| NRY Haplogroup | <i>Won nto'</i> ($n = 18$) | <i>Duy</i> ($n = 51$) | <i>Mtaar</i> ($n = 21$) | <i>Nshiyilav</i> ($n = 42$) | Total ($n = 132$) |
|----------------|------------------------------|-------------------------|---------------------------|-------------------------------|---------------------|
| P*(xR1a) | 0 (0.000) | 1 (0.020) | 0 (0.000) | 0 (0.000) | 1 (0.008) |
| BR*(xDE, JR) | 2 (0.111) | 0 (0.000) | 0 (0.000) | 1 (0.024) | 3 (0.023) |
| E*(xE3a) | 0 (0.000) | 2 (0.039) | 0 (0.000) | 1 (0.024) | 3 (0.023) |
| Y*(xBR,A3b2) | 10 (0.556) | 9 (0.176) | 3 (0.143) | 8 (0.190) | 30 (0.227) |
| E3a | 6 (0.333) | 39 (0.765) | 18 (0.857) | 32 (0.762) | 95 (0.720) |

Note: Haplogroups are defined at the unique event polymorphism level. Number of NRYs characterized, with relative frequencies in parentheses. Haplogroup nomenclature is that proposed by the Y Chromosome Consortium (2002).

declared non-Nso' had a $Y^*(xBR,A3b2)$ chromosome, and this individual was born in Kumbo, the Nso' capital.

A principal coordinates analysis plot (fig. 2) based on a pairwise F_{ST} distance matrix calculated using NRY haplogroup frequencies (see CA+ online supplement F for genetic distances and associated P values) clearly distanced the *won nto'* from both the other Nso' social classes and other ethnic groups, demonstrating that high frequencies of $Y^*(xBR,A3b2)$ are not typical of Grassfields and Tikar Plain NRY profiles. Accordingly, because $Y^*(xBR,A3b2)$ is typical of a hunter-gatherer population and the WMH is the most likely candidate to be the NRY type of the father of the first Nso' *fon*, the NRY data favor the oral tradition that the princess married an indigenous Visale, from whom all subsequent *fons* descend.

Dating of the $Y^*(xBR,A3b2)$ Lineage in the Nso'

Given the close match between the distribution of NRY types and one of the two main versions of the foundation story of the ruling dynasty and given the potentially large number of offspring likely to be descended from the founder of the line, we estimated the time to the most recent common ancestor (TMRCA) of the randomly collected $Y^*(xBR,A3b2)$ NRYs observed in different social classes to investigate specific aspects of Nso' history. Because microsatellite mutation rates are variable among loci and alleles, confidence intervals (CIs) of this time can be wide. Calculating a time to a very recent common ancestor increases the level of uncertainty, and consequently such calculations should be treated with caution. Oral history suggests a time since the first *fon* of 250–700 years (Mzeka 1990).

Given the rules of social class inheritance and our previous assertion that the first *fon* of Nso' carried the WMH, it was reasonable to postulate that all sampled *duy* with a $Y^*(xBR,A3b2)$ chromosome were male-line descendants of the first *fon*. Consequently, to compare an estimate of the TMRCA for all *duy* with a $Y^*(xBR,A3b2)$ chromosome with the period suggested by oral history, we applied the method of Behar et al. (2003), using both a simple stepwise mutation model (SSM) and a linear length-dependent stepwise mutation model (L-SSM) as well as a variety of demographic models to compute associated CIs (CA+ online supplement G for a full explanation). Because all analyzed individuals had the same microsatellite haplotype (the WMH), the actual point estimate of the TMRCA was noninformative, but the upper limit of the 95% one-tailed CI under realistic demographic models was 1,035 years (assuming an intergeneration time of 20 years) or 1,112 years if microsatellite DYS388 was not used. Therefore, our data are consistent with the oral history that suggests that the founding of the Nso' royal family occurred within the past 1,000 years. Even under a more conservative demographic model of constant population size, which is known not to be the case for the general population in recent centuries and is unlikely for a paternally inherited genetic system possessed by an agnatically defined elite social group

practicing male polygamy, the upper limit was 1,497 years (1,771 years without DYS388). This analysis was repeated with the addition of using the $Y^*(xBR,A3b2)$ NRYs found in the *won nto'*, who also all descend from the first *fon*. The results are not reported here (although they can be found in "YTIME Results" in supplement G) because the *won nto'* may enjoy a reproductive advantage due to their elevated social position (as least so far as a reigning *fon* is concerned), which is likely to inflate the contribution made by their recent shared ancestry to the TMRCA calculation and thus adversely affect the CIs for the TMRCA estimates on these samples (in this case by reducing them).

Dating of the $Y^*(xBR,A3b2)$ NRYs in the *nshiyilav* and the *mtaar* gave a TMRCA point estimate of 1,299 years (1,173 years without DYS388) under the SSM and 1,672 years (1,351 years without DYS388) under the L-SSM (combined two-tailed 95% CI for both estimates is 176–7,119 years [116–6,293 years without DYS388]). The upper limit of the CI for the *nshiyilav* and *mtaar* TMRCA estimate is much higher than that for the *duy*. However, because the two CIs overlap we could not, from this analysis alone, distinguish between the depths of the two genealogies.

Given that the ancestral haplotype predicted for (a) the *duy* $Y^*(xBR,A3b2)$ NRYs is identical to that for (b) the *nshiyilav* and *mtaar* $Y^*(xBR,A3b2)$ NRYs (the WMH), if the genealogies of groups *a* and *b* were of the same depth, then it is likely that they would have the same MRCA at the root of a common genealogy. The expectation would therefore be that the average square distances (ASDs) of the group *a* and group *b* $Y^*(xBR,A3b2)$ NRYs would be similar. If, however, group *b* had an older genealogy than group *a*, then the expectation would be that the ASD of the former would be greater than that of the latter. As explained in CA+ online supplement H, it is reasonable to reject the hypothesis that the two groups have the same MRCA and therefore conclude that the *nshiyilav* and the *mtaar* have a genealogy significantly older than that of the *duy*.

This finding suggests that the $Y^*(xBR,A3b2)$ NRYs in the *nshiyilav* and the *mtaar* descend not only from individuals of the royal social class but also from Visale individuals who were not made part of the royal family when the princess arrived, because the hunter-gatherer Visale would be expected to have a much older TMRCA than the *duy*. This is consistent with the belief that the indigenous Visale accepted the rule of the princess and her heir and became a *mtaar* lineage (there are believed to be approximately 20 existing *mtaar* lineages [Chilver and Kaberry 1968, 98–99]), on the condition that all future *fons* have a mother of the *mtaar* social class (Mzeka 1978, 7–9, 38).

The Possible Evolution of a Relaxed Patrilineal System of Descent for the *Won Nto'*

Although we were unable to reject rule A, the observed frequency of the WMH at 55.6% was somewhat above our ex-

Table 2. Distribution of NRY Haplogroups in the Peoples of the Western Grassfields and the Tikar Plain

| NRY Haplogroup | A (n = 99) | B (n = 66) | BT (n = 30) | Bl (n = 20) | Bm (n = 152) | K (n = 75) | M (n = 154) | T (n = 81) | W (n = 56) | Y (n = 47) | Total (n = 780) |
|----------------|------------|------------|-------------|-------------|--------------|------------|-------------|------------|------------|------------|-----------------|
| P*(xR1a) | 0 (0.000) | 0 (0.000) | 0 (0.000) | 0 (0.000) | 0 (0.000) | 1 (0.013) | 3 (0.019) | 1 (0.012) | 0 (0.000) | 0 (0.000) | 5 (0.006) |
| BR*(xDE,IR) | 5 (0.051) | 0 (0.000) | 0 (0.000) | 0 (0.000) | 10 (0.066) | 1 (0.013) | 2 (0.013) | 8 (0.099) | 2 (0.036) | 1 (0.021) | 29 (0.037) |
| E*(xE3a) | 0 (0.000) | 0 (0.000) | 0 (0.000) | 0 (0.000) | 6 (0.039) | 1 (0.013) | 7 (0.045) | 2 (0.025) | 0 (0.000) | 1 (0.021) | 17 (0.022) |
| A3b2 | 0 (0.000) | 0 (0.000) | 0 (0.000) | 0 (0.000) | 0 (0.000) | 0 (0.000) | 8 (0.052) | 0 (0.000) | 0 (0.000) | 0 (0.000) | 8 (0.010) |
| Y*(xBR,A3b2) | 0 (0.000) | 0 (0.000) | 0 (0.000) | 0 (0.000) | 0 (0.000) | 0 (0.000) | 0 (0.000) | 0 (0.000) | 1 (0.018) | 0 (0.000) | 1 (0.001) |
| E3a | 94 (0.949) | 66 (1.000) | 30 (1.000) | 20 (1.000) | 136 (0.895) | 72 (0.960) | 134 (0.870) | 70 (0.864) | 53 (0.946) | 45 (0.957) | 720 (0.923) |

Note: Number of NRYs characterized, with relative frequencies in parentheses. Haplogroup nomenclature is that proposed by the Y Chromosome Consortium (2002). A = Aghem-speakers in Wum. B = Bafut-speakers in Bafut who did not declare a Tikar ethnic identity. BT = Bafut-speakers in Bafut who declared a Tikar ethnic identity. Bl = Bamileke-speakers located throughout the western Grassfields and Tikar plain; it is claimed that they were displaced from their homeland of Mbam on the Tikar plain. Bm = Bamun-speakers in Fouban. K = Kwandja-speakers in towns in the northeastern region of the Tikar plain, such as Nyamboya. M = Mambila-speakers in towns near the Nigerian border on the Tikar plain, such as Atta, Somie, and Songkolong, and in Mayo Darle. T = Tikar-speakers in towns on the Tikar plain, such as Magba, Sabongari, and Bankim. W = Wimbum-speakers in Nkambe. Y = Yamba-speakers in towns throughout the Tikar plain, such as Sabongari, Magba, Bankim, Somie, Songkolong, and Atta, and in Mayo Darle.

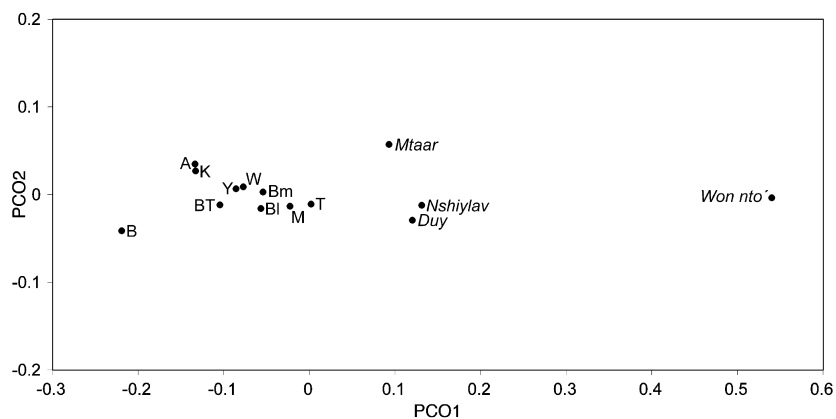


Figure 2. Principal coordinates analysis plot of UEP-based population pairwise F_{ST} values. The plot is constructed using pairwise genetic distances F_{ST} (Reynolds, Weir, and Cockerham 1983) between the four Nso' classes (labeled by name) and other populations of the western Grassfields and Tikar Plain (labeled with abbreviations from table 2). PCO1 and PCO2 explain 97.91% and 1.92% of the variation, respectively.

pected range. A higher than expected frequency is not a problem in our analysis because male-line continuity of *fons* has been clearly demonstrated, permitting us to define a putative NRY type for the first *fon* of Nso'. One possible explanation for this (CA+ online supplement I) is that the *won nto'* may have evolved or may be evolving into a more patrilineally defined group.

Conclusion

It is frequently difficult to establish how, where, and when events that are the subject of oral history occurred, even in accounts in which categorical assertions are made. Nevertheless, such narratives can prove valuable sources of information. Confidence in conclusions reached from the analysis of oral tradition is increased when they are supported by data from other sources, for example, linguistics and archaeological excavation. We have shown that the distribution of NRYs and mtDNA is consistent with an oral history that describes fusion of an indigenous hunter-gatherer group with later migrants and paternal descent of the ruling dynasty from the indigenous inhabitants of the land over the period covered by that history.

The frequency of the WMH in the *won nto'* social class accords very well with what one would predict from population genetic theory and our sampling strategy and illustrates the power of genetic anthropology to confirm the genetic consequences of social practices and labels. We have been able to provide support to a description of the social system put forward by one group of researchers as opposed to that of another. We have also shown that, in the investigation of the histories of groups living in sub-Saharan Africa, genetic analysis may prove a valuable tool in the armory of scholars

seeking to elucidate, on a fine scale, the prehistories of sub-Saharan African populations.

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