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Why Have the Peninsular "Negritos" Remained Distinct?

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Abstract

The primary focus of this article is on the so-called negritos of Peninsular Malaysia and southern Thailand, but attention is also paid to other parts of Southeast Asia. I present a survey of current views on the "negrito" phenotype—is it single or many? If the phenotype is many (as now seems likely), it must have resulted from parallel evolution in the several different regions where it has been claimed to exist. This would suggest (contrary to certain views that have been expressed on the basis of very partial genetic data) that the phenotype originated recently and by biologically well-authenticated processes from within the neighboring populations. Whole-genome and physical-anthropological research currently support this view. Regardless of whether the negrito phenotype is ancient or recent - and to the extent that it retains any valid biological reality (which is worth questioning) - explanations are still needed for its continued distinctiveness. In the Malay Peninsula, a distinctive "Semang" societal pattern followed by most, but not all, so-called negritos may have been responsible for this by shaping familial, breeding, and demographic patterns to suit the two main modes of environmental appropriation that they have followed, probably for some millennia: nomadic foraging in the forest, and facultative dependence on exchange or labor relations with neighboring populations. The known distribution of "negritos" in the Malay Peninsula is limited to areas within relatively easy reach of archaeologically authenticated premodern transpeninsular trading and portage routes, as well as of other non-negrito, Aslian-speaking populations engaged in swidden farming. This suggests that their continued distinctiveness has resulted from a wish to maintain a complementary advantage vis-à-vis other, less specialized populations. Nevertheless, a significant degree of discordance exists between the associated linguistic, societal-tradition, and biological patterns which suggests that other factors have also been at play.

Keywords

Negrito, Semang, Orang Asli, Aslian, Malaysia, Hunter/Gatherers

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GEOFFREY BENJAMIN¹*

Abstract The primary focus of this article is on the so-called negritos of Peninsular Malaysia and southern Thailand, but attention is also paid to other parts of Southeast Asia. I present a survey of current views on the “negrito” phenotype—is it single or many? If the phenotype is many (as now seems likely), it must have resulted from parallel evolution in the several different regions where it has been claimed to exist. This would suggest (contrary to certain views that have been expressed on the basis of very partial genetic data) that the phenotype originated recently and by biologically well-authenticated processes from within the neighboring populations. Whole-genome and physical-anthropological research currently support this view. Regardless of whether the negrito phenotype is ancient or recent—and to the extent that it retains any valid biological reality (which is worth questioning)—explanations are still needed for its continued distinctiveness. In the Malay Peninsula, a distinctive “Semang” societal pattern followed by most, but not all, so-called negritos may have been responsible for this by shaping familial, breeding, and demographic patterns to suit the two main modes of environmental appropriation that they have followed, probably for some millennia: nomadic foraging in the forest, and facultative dependence on exchange or labor relations with neighboring populations. The known distribution of “negritos” in the Malay Peninsula is limited to areas within relatively easy reach of archaeologically authenticated premodern transpeninsular trading and portage routes, as well as of other non-negrito, Aslian-speaking populations engaged in swidden farming. This suggests that their continued distinctiveness has resulted from a wish to maintain a complementary advantage vis-à-vis other, less specialized populations. Nevertheless, a significant degree of discordance exists between the associated linguistic, societal-tradition, and biological patterns which suggests that other factors have also been at play.

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There are two main themes in this special issue. First, and mostly biological, is the study of the Southeast Asian “negritos” as purportedly distinctive populations whose genome might contain clues to the remoter history of the region’s settlement by *Homo sapiens sapiens*. Second, and mainly ethnological, are studies operating at a much shallower time depth, concerned primarily with the various “negrito” populations as contemporary or historically recent human beings. Mediating these two approaches are studies from archaeology, linguistics, and biology.

It has become almost impossible for any one researcher to keep up with publications in all of these different fields. Decades ago, anthropologists were expected to straddle the various subdisciplines, but we are now necessarily specialists and find it difficult to talk to each other even when discussing the same real-world issues. In particular, advances in human genomics appear so frequently and are so difficult to read that it is nearly impossible for nonspecialists to assess the main findings. A further divide exists within biological studies between laboratory-based and fieldwork-based research. There is more to biology than the cell genomics to which it is sometimes reduced. Biology also includes studies of physiology, ethology, anatomy, dentition, anthropometry, epidemiology, demography, endocrinology, nutrition, and ecology, all of which have some representation in this issue. But these approaches usually require fieldwork, as well as laboratory investigation.

This has turned out to make a significant difference, even to theoretical discussions. Given this choice of approaches, writers on “the negritos” have, to some extent, picked and chosen from these studies whatever seems to fit their favored theory—a practice referred to, at least in the genetic literature, as ascertainment bias. This collection of studies therefore provides a rare occasion to help bridge these divisions. Although my first degree was in biology, my empirical background is in the ethnographic and linguistic study of the Orang Asli and Malay populations of Peninsular Malaysia. My most detailed work has been on the Temiars, an Orang Asli (aboriginal) population conventionally regarded as non-negrito. However, the Temiars have long interacted and interbred with the “negrito” populations that border them on three sides and among whom I have also carried out briefer periods of field research. More broadly, I also work on the ethnology of the Malay World, and especially on the assimilatory and dissimilatory patterns of social organization that have emerged between its various long-term inhabitants (Benjamin 2011). This has required keeping an eye on the related biological and archaeological research.

The “Negrito” Phenotype—Single or Many?

Left unqualified, the label *negrito* would betoken the outdated typological approach that characterized much of mainstream physical anthropology until recently. Fortunately, due especially to developments in biology, we are now in a position to qualify the term by examining it from a processual rather than a typological standpoint, thereby bringing it closer to the way in which social scientists have been treating ethnicity and “societies” for several decades. Jonsson (2011), taking a critical-sociology stance, explicitly reviews research into the prehistory of Mainland

Southeast Asia in this light. Noting that several generations of field ethnographers have reported the fluid character of group identities and lifeways, he argues, among other points, that “any scientific account of human diversity in Southeast Asia that takes for granted contemporary ethnolinguistic classification serves, deliberately or not, to reinforce particular state regimes (colonial, national, etc.) of truth” (109).

I suggest, therefore, that we take *negrito* as no more than a heuristic entry point into discussing the reasons why certain indigenous minority populations in Southeast Asia—the Andamanese, the Peninsular negritos, and the Philippine negritos—happen to look rather different in certain ways from the larger populations who live next to them, without drawing any a priori conclusions as to the mechanisms and time depths of those differences. Clearly, the word *negrito* is meant to suggest that the people so labeled appear as if they were short-statured versions of black Africans. This has indeed led some commentators to assume that the Southeast Asian negritos (1) constitute a single, though discontinuous, population that (2) has some special connection to Africa and (3) was once much more widespread throughout Southeast Asia. I have witnessed even non-negrito Orang Asli in Malaysia, when shown photographs of black African or African American individuals, commenting that they were “our people.”

According to some authors, negritos have also lived in parts of New Guinea and Australia. Some recent writers still hold versions of these views, as in the following characterization by Leroi (2005), whose comments are actually based solely on Andamanese data (which in itself begs further questions):

Negrito is the name given by anthropologists to a people *who once lived throughout Southeast Asia*. They are very small, very dark, and have peppercorn hair. They look like African pygmies who have wandered away from the Congo’s jungles to take up life on a tropical isle. But they are not [i.e., they are not Congo pygmies].

The latest genetic data suggest that the Negritos are descended from the first modern humans to have invaded Asia, *some 100,000 years ago*. In time, *they were overrun or absorbed by waves of Neolithic agriculturalists*, and later nearly wiped out by British, Spanish, and Indian colonialists. Now they are confined to the Malay Peninsula, to a few islands in the Philippines, and to the Andamans; *everywhere they are dying out*. (5; emphasis added)

A theme that runs through much of the genetic literature is a reliance on migration-wave theories of the kind that prehistorians have come to regard with suspicion, *especially when dealing with data drawn from present-day populations* (Sims-Williams 1998). An example, as reported by (but not necessarily reflecting the views of) Jinam et al. (2012: 1), raises several unanswered questions: “That ancient wave of migration was believed to have brought the ancestors of several ‘Australoid’ populations found in Southeast Asia and Australia. These include the Papuans and Australian Aboriginals, as well as several groups in the Andaman, Philippines, and West Malaysia, which are collectively known as Negritos.” This

kind of approach not only assumes (rather than demonstrates) that all populations labeled “negrito” are related specifically to each other but also that they belong typologically within the even less well-defined category “Australoid.” (Bulbeck, this issue, expressly refutes the latter claim.) A closely related theme is that the negritos are in some sense an ancient people, unchanged since earliest times, as in the following BBC news item from Calcutta (2 February 2009): “Anthropologists and environmentalists blame the Andaman administration for the dwindling number of tribes such as the Onges, Jarawas, Sentinelese, Great Andamanese, and the Shompens. *They are believed to be among our earliest ancestors*” (emphasis added.)

Such statements are, of course, biologically meaningless. All humans constitute a single species. No extant human population, therefore, can be “older” than any other. At best, like some languages (Icelandic, for example), it is possible that some populations may have undergone fewer specifiable changes than others. But for such an approach to be valid, the specific inhibiting factors must be identified—a reliance on unaltered ancestry alone will not explain the retentions. And (to anticipate a point I return to later) the retention or emergence of a few single factors, like a particular haplotype, should not be examined in isolation from everything else that characterizes the population in question. The total genetic, demographic, social, and cultural situation must be looked at before any all-embracing conclusions are drawn.

Much of the recent literature commits the further transgression of too readily mapping population “types” onto linguistic macrophylogeny. For example, the Austronesian language family is frequently equated directly with “the Austronesians” thought of as a distinct migratory population. Migration is certainly a frequent factor in the spread of languages, but it is by no means the only one. In some instances, as when a population for whatever reason takes on a new language and ditches the old one, migration may be absent, or even take place in the opposite direction from the supposedly related language movement. This has happened many times in Southeast Asia.¹ Further slippage is introduced whenever current linguistic categories are employed to identify populations that existed tens of thousands of years ago. Several authors, for example, refer to “Austronesians” as having existed ≥ 30 kya. At best, this could surely mean no more than “some of the ancestors of present-day populations, some of whose members now speak Austronesian languages.” (To a linguist, it makes no sense to speak of “Austronesian” at a time depth greater than $\sim 5\text{--}6$ kya.). I am not saying that linguistic phylogeny and genetics should never be brought together. But whenever this is attempted, the linguistic assumptions need to avoid cavalier treatment of the relevant time depths while remaining aware of the highly variable sociolinguistic factors involved. A successful example is the study by Lansing et al. (2011) on the interplay of language replacement, gender, mode of livelihood, and genetics in eastern Indonesia.

This is not to deny that at least some of the recent genomic research has great relevance to broader anthropological problems, and in particular to disentangling the concept of “negrito.” It is quite probable that some or all of the negrito populations, either alone or in common with some of their neighbors, might have retained genetic traces deriving from a hypothesized early “out-of-Africa” human movement. But

any such movement will have taken place many tens of millennia ago, leaving an immense amount of time for biological and other changes to have taken place since. Reading backward directly from contemporary negrito populations to such ancient events is a procedure replete with alternative explanations. In any case, as the articles in this collection make clear, the recent genetic data have not unequivocally favored any single interpretation of negrito origins.

There are several reasons for this lack of convergence. Unlike such discrete features as blood groups or eye color, two of the four main features that identify the negrito phenotype—short stature and dark skin—vary continuously and are therefore polygenic. (The other two features are tightly curled “peppercorn” hair and long-established residence in Southeast Asia.) Currently, little is known about the genetics or general biology of hair form. There have been suggestions that it might be linked pleiotropically with other, as yet undetermined, characters. Bulbeck (this issue) suggests that the “frizzy” hair of the negritos might be their sole unchanged phenotypic remnant of an ancient out-of-Africa population movement, but that their short stature has emerged independently several times over, as with that of several many non-negrito populations in the region. Several other articles in this issue discuss the mechanisms that could have allowed stature to change over relatively short time spans.

Allen et al. (2010), for example, report that genome-wide association studies have identified nearly 200 gene loci as affecting variation in height. (There may be others not yet discovered.) This suggests a possibly rather low degree of linkage between these loci, although other approaches have suggested otherwise.²

Ang et al. (2012) found that several gene loci are involved in the variable skin color of at least two of the Peninsular negrito populations. Despite having darker skin *on average*, the “Negrito” range nevertheless overlapped considerably with the range exhibited by the other Orang Asli populations in the study, the “Senoi” and the “Proto-Malays” (Ang et al. 2012: 4, Figure 2). Authors have used the categories “Negrito,” “Semang,” “Senoi,” and “Proto-Malay” inconsistently. Consequently, the same on-the-ground ethnolinguistic population may appear differently classified in different publications. Ang et al. (2012) appear to have taken the “official” classification of the Malaysian Department of Orang Asli Development without further discussion. In at least some respects, this has a bearing on their conclusions. My own distinctions later in this article between Semang, Senoi, and Malayic relate solely to institutionalized patterns of social organization, and not to peoples.

The negrito phenotype is therefore ill-defined. Consequently, there is a reduced likelihood of discovering the specific genes that might supposedly be responsible for producing it. To my knowledge, such a function has yet to be claimed for most of the distinctive genetic features that are said to characterize one or more of the negrito populations. An exception is the recent finding by Migliano et al. (this issue) that certain specific genes are responsible for precipitating short stature in a variety of “pygmy” (including “negrito”) populations worldwide but that different genes are responsible in the different populations. They draw a distinction between the genes (some 142) that affect “normal height” variations and the other genes that

affect height indirectly by regulating the hormonal control of life-history growth patterns. However, most of the features that have been used in genomic studies of human populations belong to the noncoding portions of the genome, and are therefore unlikely to be relevant to the negrito phenotype as such. One estimate (Williamson et al. 2007: 912) places the proportion of single-nucleotide polymorphisms (SNPs) with no known function in the human genome as high as 99.2%.

So what *can* we learn from the recent genetic data concerning the Southeast Asian negritos? At the risk of overgeneralization, the published opinions appear to fall at various points between two polar views: that the negritos of Southeast Asia (A) constitute a single and essentially unchanging population left over from the earliest out-of-Africa movement of biologically modern humans into Asia by the southern, mostly coastal, route, or (B) do not constitute a single population, and the illusorily similar-looking phenotype has arisen several times independently and relatively recently by genetic change from within the populations that were already present.

On reading through the more data-rich publications that have appeared since the turn of the millennium, I believe—at the risk of engaging in selection bias—that opinion has been moving away from view A to view B. The nonspecialist, data-poor, and often “popular” literature, however, has tended to stick with opinions that fall closer to view A. Among the few examples of the recent specialist literature falling toward the view A end of the range is Kashyap et al. (2003) on the Andamanese. Examples that fall closer to view B are more numerous and well represented in this issue.

Bulbeck et al. (2006) argue that data from physical anthropology and archaeology fail to support claims of ancient negritos in the Asia-Pacific region. As Bulbeck (1981) showed some decades ago, and as Bellwood (1993) agrees, the most ancient skeletal material in Southeast Asia shows no negritoid features. Bulbeck (2011) has recently published an important detailed survey of Peninsular archaeology and human biology, with further discussion in this issue of parallel data from elsewhere. The HUGO Pan-Asian SNP Consortium (2009), on the basis of their comprehensive whole-genome study, suggests that all Asian populations, including the negritos, derive from a single out-of-Africa wave *followed by differentiation within the region*. And, as Liu (2010) stated, the data “showed no evidence for a Northern contribution to Asia’s genetics; the genetic source for all of Asia appears to be from Southeast Asia.” Cyranowski (2009) usefully summarizes the HUGO Pan-Asian SNP Consortium’s article in simpler language. Delfin et al. (2011) show that the Y-chromosome data reflect considerable genetic heterogeneity among the Philippine negritos. Thangaraj et al. (2003) claim that their data indicate “that the Andamanese have closer affinities to Asian than to African populations and suggest that they are the descendants of the early Paleolithic colonizers of Southeast Asia.” Scholes et al. (2011) show, on the basis of mitochondrial DNA and Y-chromosome diversity, that the Batak negritos of the Philippines are genetically distinct from the negritos of the Andaman Islands and the Malay Peninsula and instead, bear most resemblance both to other Philippine negritos and to non-negrito populations

from the Philippines and Island Southeast Asia. But what to make of Hochegger’s exclusionary statement (1963: 5) that “the Batak of Palawan . . . are not Negritos”? This does at least hint at the uncertainties surrounding the phenotype.

In this issue, Heyer et al. show that, even in northern Luzon alone, the Aeta and Agta negritos exhibit considerable genetic heterogeneity, due probably to long-term settlement and high effective population size, followed by reduced gene flow between them. This does not necessarily mean that they lack a common origin, but it does mean that a great deal would have happened to them since any such origin. On the basis of their whole-genome study of “pygmy” populations (including “negritos”), Migliano et al. (this issue) show them to be usually genetically closer to their neighbors of normal height, and that there is no evidence that these short-statured populations of different geographical regions share an identifiable ancestral component that would relate them specifically to each other.

Several other studies fall between these poles or discuss the biology of negrito populations without necessarily committing themselves on the question of origins. Li (2011) presents an explicitly hypothetical, “total-evidence” meta-approach that attempts to bring together all the SNP-based studies done by other researchers. She suggests a scenario “in which one or more populations from the same stock as the African Khoisan and Pygmies migrated to Southeast Asia, and that the Negritos from Malaysia and the Philippines and the populations of the Andaman and Lesser Sunda Islands—the latter not conventionally classed as Negritos—are *partially* descendants of these populations” (18). Jinam et al. (2012) conclude that the mitochondrial DNA evidence indicates a three-way interaction between a (single) out-of-Africa migration (producing the negritos), a later terminal-Pleistocene movement from the mainland into Sundaland and throughout Indonesia, and a much later purportedly “Austronesian” migration into the region out of Taiwan. They propose that gene flow between these three components has led to a degree of “reticulation” between them, even though three distinct population clusters are still genetically recognizable: “continental,” “island” west of the Wallace Line, and “island” east of the Wallace Line. This reticulation has affected the various negrito populations, whose genomes contain distinctively shared elements combined with other elements that have led to significant genetic differences between the Peninsular and Philippine populations, whom the authors nevertheless consider as constituting an “Australoid” component.

A number of studies concentrate on the Orang Asli of Malaysia, among whom the Peninsular negritos constitute a small but significant minority. Jinam et al. (in this issue) provide evidence of a genetic differentiation among the Kensiw and Jahai negritos. Perry and Dominy (2008), whose findings I return to below, take a biologically broad-based approach to the question of short (“pygmy”) stature, incorporating comparative and functional data along with their own fieldwork on contemporary Malaysian negritos; they are noncommittal with respect to out-of-Africa theories. Fix (2011), who has done extensive fieldwork on the topic, presents a sophisticated simulation of genetic differentiation among the Orang Asli without even invoking a negrito component or “demic diffusion” migrations. Instead, he

suggests that a constant “trickle” of genes between the foragers and the farmers over the last 3,000 years or so could just as easily have produced the present genetic profile. His article appears within the same important new volume (Enfield 2011) as two other studies that present detailed discussions of the long-term Peninsular context, including the special place of the Semang negritos within it: Bulbeck (2011) on the archaeology and human biology, and Burenhult et al. (2011) on the linguistics. (Sequels to both of these articles appear in the present issue.)

The Continued Distinctiveness of the Negrito Phenotype

The above sampling of the literature is admittedly selective. Further discussion would introduce greater subtlety, but it would not significantly affect the proposals I make now, which concern mainly the Peninsular negritos.

We can dispose of the connection with Africa. It possesses, at best, only a tenuous genetic basis, and it is not especially relevant to Southeast Asian studies. As Bulbeck et al. (2006: 126) put it, more strongly: “We suggest that this view [that negritos have a specific relation to Africa] is a retention of the hoary belief that human races can be classified by skin color, given that a dark skin (along with a different hair form) sets the so-called Negritos apart from other Southeast Asians.” Moreover, emphasis on such a connection leads to unwarranted overgeneralizations about the recent negritos, and to a downplaying of the significant differences between them—differences that are the object of most of the other studies in this issue.

The Andamanese. For present purposes, we can also dispose of the Andamanese data, since these are mostly irrelevant to discussions of the Philippine and Peninsular negritos. Even if the negritos—or at least the Andamanese negritos—do retain genetic evidence of ancient population movements (don’t we all?), it does not follow that this corresponds to the genes that made them into negritos. The reverse could also be true—that the relative isolation of the Andamanese allowed both for the retention of those diagnostic haplotypes and also for the emergence in the Andaman Islands of a negrito phenotype. Stock (this issue) argues that the latter possibility should be given serious consideration because of what is known of the plasticity of the relevant skeletal features.

Any discussion of phenotypic plasticity must relate to the time span thought available for it to operate in. Although most researchers (including Chaubey and Endicott, this issue) now accept a South and/or Southeast Asian origin for the Andaman Islanders, there is considerable variation in the dates that have been suggested for their original arrival on the islands—from 20 kya (Wang et al. 2011) to 6 kya or less (Stock this issue). Archaeological investigations (Cooper 2002) have so far provided no evidence of human settlement in the Andamans earlier than approximately 2,300 years ago. The linguistic evidence, on the other hand, suggests a somewhat earlier settlement. Burenhult (1996: 16), for example, shows that from a structural point of view (based on the criteria proposed by Nichols 1992), the Andamanese languages do not show the expected typological characteristics for

languages situated halfway between the Old World and Oceania. In other words, the Andamanese languages (which appear to fall into at least two distinct families) are likely to be true isolates, representing a separation from the mainland, or just possibly a backwash from farther east, at a time before the earliest currently known language stocks, Austroasiatic and Austronesian, arrived there. However, Blevins (2007) has presented a detailed study in support of her view that some of the Andamanese languages are “sisters” of Austronesian. If this can be sustained—and it has yet to be questioned in the technical literature—it will have a considerable bearing on future discussions of Andamanese origins and relationships. Current estimates place the emergence of Austroasiatic at 5 kya or earlier, and the arrival of Austronesian in the nearby parts of the region at around 3 kya.

These findings have a direct bearing on whether the Andaman Islanders might represent the direct remnants of the hypothesized initial out-of-Africa movement. Even if the Andaman Islands were first settled several thousands of years ago, that would still have been many tens of thousands of years *after* any hypothesized southerly out-of-Africa movement. Most researchers accept that Australia was first settled between 45 and 60 kya, as the terminal point of that movement, and the Andamanese could be neither so ancient nor so southern in origins.

In other words, isolation, rather than ancient ancestry, has been the major factor in generating and/or maintaining the phenotypic distinctiveness of the Andamanese.

The Philippine Negritos. The phenotypic distinctiveness of the Philippine and Peninsular negritos, on the other hand, cannot be simply because of geographical or social isolation. I write “Peninsular” rather than “Malaysian” so as to include the so-called Maniq negritos of southern Thailand, on whom important data are now being gathered after many years of relative obscurity. In both regions, the negritos have long been in communication with their immediate neighbors through complementary socioeconomic relations and exchange of genes, cultural traits, and languages. Even if no other data were available, the linguistic facts alone would prove the existence of such exchanges: The Peninsular negritos all speak Aslian languages of the Austroasiatic stock.³ The Philippine negritos all speak Austronesian languages of a typically Philippine character.⁴ It is this well-evidenced complementarity with neighboring populations that has played a major role (paradoxical though it may seem) in the maintenance of the negrito phenotype, regardless of its origins.

The Philippine negritos are separated from the Peninsular negritos by a considerable expanse of sea. The latest date at which there was any land or a very narrow strait connection between the two regions is unclear, with possibilities ranging between 15 and 7.5 kya (Soares et al. 2008: 1,215). Maritime skills, as is well known, came to be well developed in Island Southeast Asia before that time, but I know of no claims that any negrito population ever traveled by sea (except in the Andaman Islands); some such groups, however, did formerly live on the Malaysian coast. Moreover, it seems that there is little or no serious evidence of

ancient negrito human remains in the region. This adds further weight to the view that, even if the Philippine and Peninsular negritos had some originating elements in common, they have been separate for more millennia than would now be recoverable by normal methods of cultural and social analysis.

As if to counter this view, however, it has sometimes been claimed that the “thunder complex” of taboo beliefs and behaviors found among both sets of negritos is a key piece of evidence for a possibly ancient negrito continuum stretching between the two regions, and possibly to the Andamans, through non-negrito Borneo (Cooper 1940; Needham 1964). But, as Blust (1981: 301–308) showed, elements of this cultural complex are widespread throughout the Austronesian-speaking region and, indeed, probably began there. In the Malay Peninsula, for example, versions of this complex are found among non-negrito Orang Asli as well as some Malays. (For a review of the literature on this topic, see Macdonald 1988: 59–62.) There may therefore be little reason to ascribe all but a very small number of puzzling elements to a specifically “negrito” input. Perhaps the negritos—not *because* they are “negritos,” but because of their similar way of life—found it desirable to retain and even elaborate certain components of this particular cultural complex, for reasons that remain obscure. In this issue, however, Blust argues that the Austronesian speakers carried elements of this complex southward, after having first picked it up from the negritos they met with in the Philippines, and that those negritos may well have shared the complex with an originally more widespread negrito population throughout Island Southeast Asia.⁵

Before moving on to a discussion of the Peninsular negritos, I make two further points about the Philippine situation. First, being spread discontinuously throughout the archipelago, the Philippine negritos are, not surprisingly, genetically variable among themselves, especially in their patrilineally transmitted Y-chromosomes (Delfin et al. 2011). They are also sometimes genetically close in this respect to their non-negrito neighbors (Scholes et al. 2011: 70; Heyer et al. this issue), but this appears to result largely from “hypogamic” male inflow into the community.

Second, and more pertinent to my concerns, the Philippine negritos have long been adapted to exchange relations with neighboring farming populations. Peterson (1978: 337–344) presents a detailed survey of the earlier and comparative literature as well as an account of her own findings among the Agta (“Dumagat,” “Aeta”) negritos of northeastern Luzon, who maintain a close interdependence with the neighboring non-negrito Palanan peasants: “Clearly, these two populations, Agta and Palanans, present optimum opportunity for economic interdependence. The Agta are a people who produce limited carbohydrate or other vegetable foods, and the Palanans produce limited protein foods. Through trade, each supplies the other with needed foods” (p. 339). This is not the only component of the relationship. The Palanans also depend, to some extent, on access to land that was first cleared and then left unoccupied by the Agtas, as well as relying on the latter as a source of labor. The reverse also holds: In another report based on her field study, Peterson (1977: 72) shows that the opening up of ecotones between the foraging Agta and their farming neighbors meant that “the expansion of cultivation actually increases

Table 1. Semang, Senoi, and Malayic Traditions (Benjamin 2011: 176)

SOCIETAL TRADITION	SEMANG	SENOI	MALAYIC
Dominant subsistence strategy	Foraging	Swiddening	Collecting-for-trade + swiddening
Kinship reckoning	Inclusive	Inclusive	Exclusive
Productive unit	Conjugal family	Descent-group	Conjugal family
Cousin marriage	Forbidden	Forbidden	Permitted
Social organization	Egalitarian	Egalitarian	Ranked
Filiative bias	Patrifocal	Cognatic	Matrifocal
Postpartum taboo	Long	Shorter	Short

the amount of optimal hunting area.” This further reinforced the complementarity between two populations who might otherwise have threatened each other’s livelihood. Complementarities of this kind—which often later become more asymmetrical and exploitative—have also been a key feature of the Peninsular negritos, to which I now turn. (This relates to foraging and small-scale subsistence farming, and not to the commercial estate-based farming that now threatens both ways of life throughout Southeast Asia.)

The Peninsular Negritos

In a series of publications (see especially Benjamin 1985, 2002, 2011), I have attempted to analyze the processes that generated the Malay World’s historic array of locked-in (institutionalized) societal traditions: the “Semang,” “Senoi,” and “Malayic,” alongside some “mixed,” not locked-in, traditions (Tables 1 and 2, Figure 1).⁶ There is no need to rehearse most of the argument here, because I am concerned primarily with the Semang tradition and touch on the other traditions only in passing. All of the ethnolinguistic populations whose social organization has followed the Semang pattern fall phenotypically into the negrito category. Some of the (non-negrito) Semaq Beri might constitute an exception to this generalization, as they have been reported (Burenhult et al. 2011: 264) to follow the Semang-type patterns of cross-sex avoidances (see Table 3 and discussion below). However, there are also Peninsular negritos (the Lanohs) who follow the Senoi pattern, whereas yet others (some of the Bateks) have followed a “mixed” variant with a leaning toward the Malayic pattern (Table 2). However, as I show later, these are relatively localized patterns that do not greatly affect the main argument. It is important to reiterate that, as used here, “Semang” does not *mean* “negrito”; the term refers not to biology but strictly to a social organizational pattern, as characterized in Tables 1 and 2.⁷

I am not suggesting that these societal traditions (or “regimes”) are very ancient, or even that they date back to the Neolithic advent of farming in the Peninsula, which is now thought to have begun sometime between 4,500 and 3,500 kya. Those dates agree well with the view (which I accept) that the initial

Table 2. A Partial Listing of Peninsular Societal Traditions (updated from Benjamin 2011: 174–175)

PEOPLE	POPULATION ^a (1999/2004)	LANGUAGE	MODE OF SOCIAL INTEGRATION	DOMINANT SUBSISTENCE STRATEGY	KINSHIP RECKONING	UNIT OF PRODUCTIVE ENTERPRISE	COUSIN MARRIAGE	RANKING	FILIATIVE BIAS	SOCIETAL TRADITION
Kensiw ^b	240	Northern Aslian	Band	Foraging	Inclusive	Conjugal family	Forbidden	Egalitarian	Patri	Semang
Kentaq ^b	132	Northern Aslian	Band	Foraging	Inclusive	Conjugal family	Forbidden	Egalitarian	Patri	Semang
Jahai ^b	2,073	Northern Aslian	Band	Foraging	Inclusive	Conjugal family	Forbidden	Egalitarian	Patri	Semang
Menriq	215	Northern Aslian	Band	Foraging	Inclusive	Conjugal family	forbidden	Egalitarian	Patri	Semang
Lanoh	349	Central Aslian	Band	None dominant	Inclusive	Conjugal family	Forbidden	Egalitarian	Cognatic	Senoi
Temiar	25,233	Central Aslian	Tribal	Farming	Inclusive	Descent group	Forbidden	Egalitarian	Cognatic	Senoi
East Semai	43,505	Central Aslian	Tribal	Farming	Inclusive	Descent group	Forbidden	Egalitarian	Cognatic	Senoi
West Semai		Central Aslian	Peasant	Farming	Exclusive	Conjugal family	Permitted ^e	Egalitarian	Cognatic	Malayic
Melayu	15 million ^d	Austronesian	Peasant	Farming	Exclusive	Conjugal family	Permitted	Ranked	Matri	Malayic
Temuan	18,560	Austronesian	Tribal	Collecting	Exclusive	Variable	Permitted	Ranked	Variable	Malayic
Batek	1,842	Northern Aslian	Band	Foraging	Becoming exclusive	Conjugal family	Permitted	Egalitarian	Becoming matri	Mixed
Che' Wong	665	Northern Aslian	Tribal	None dominant	Exclusive?	Conjugal family	Forbidden ^e	Egalitarian	Matri	Mixed
Semaq Beri	3,629	Southern Aslian	Band	None dominant	Inclusive	Conjugal family	Forbidden ^f	Egalitarian	Patri?	Mixed

Shading indicates “negrito” populations.

^aEstimated figures based on Malaysian Census counts in 1999 and on unpublished materials supplied by Juli Edo.

^bIn Thailand there are additionally some 300–400 speakers of these and other Northern Aslian languages.

^cFirst-cousin marriage is prohibited; second-cousin marriage and beyond is permitted.

^dThis approximate figure does not include the Orang Melayu of Thailand, Sumatra, and Borneo, who together number about the same again as those of Peninsular Malaysia and Singapore.

^eReports vary: patrilineal-parallel cousin marriage appears to be forbidden, while other varieties of cousin marriage occur but receive varying evaluations.

^fFirst cousins almost always follow this rule, but marriage between second cousins does sometimes occur.

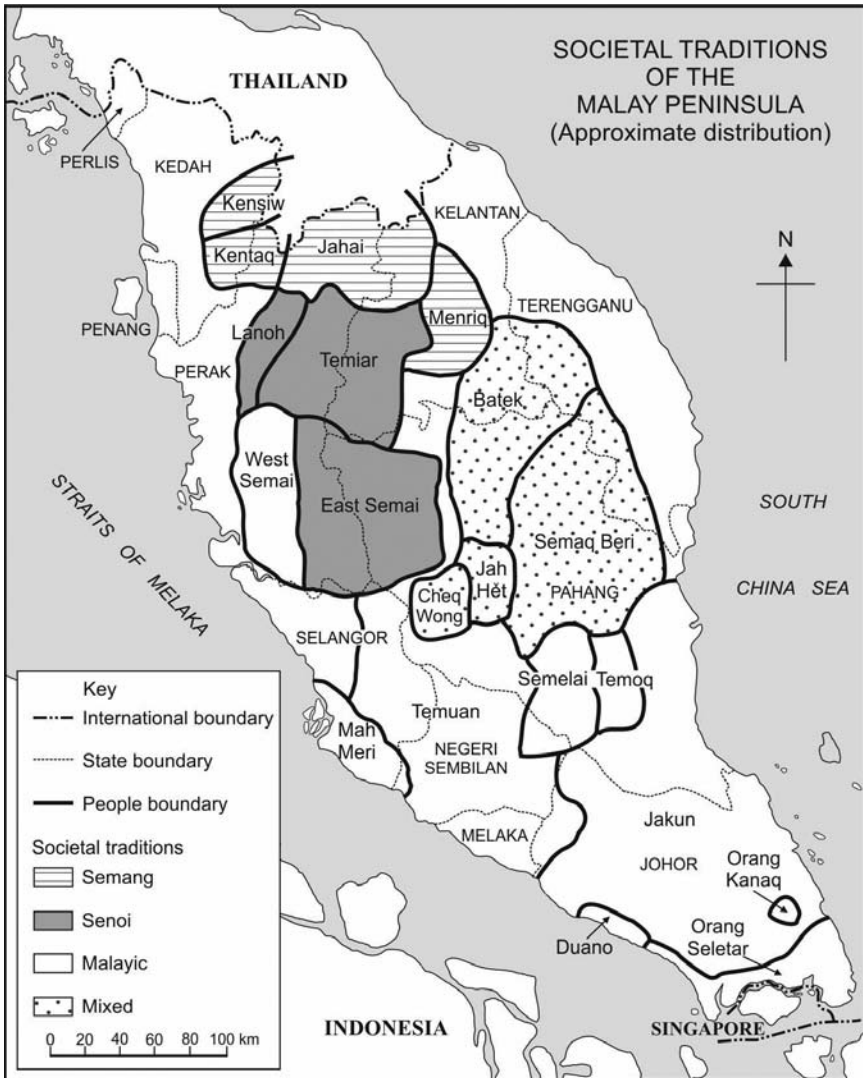


Figure 1. Historically known maximal distributions of societal traditions on the Malay Peninsula. As of 2011, most Orang Asli populations occupy smaller and more discontinuous territories, and Malays (Orang Melayu) live almost everywhere in the Peninsula; the latter are therefore not indicated on the map. The separated Aslian-speaking populations of southern Thailand are also not shown (from Benjamin 2011: 173; drawn by Lee Li Kheng).

emergence of the Aslian languages is linked with the extension down the western side of the Peninsula of the Ban Kao ceramic tradition from central Thailand at around 3.7 kya (Bellwood 1993: 46–48). On the basis of glottochronological calculations, I formerly proposed a much earlier range of absolute dates for the emergence of the Aslian language-stock and its subdivisions (Benjamin 1976: 81–89). Those dates are still sometimes cited as representing my views, but I discarded them many years ago. Even disregarding the invalid status of that particular approach to glottochronology, the rejected dates have turned out to be far too early for any reasonable correlation with the Peninsula’s archaeology or with recent research into the history of the Austroasiatic languages. (For a different and updated approach to Aslian glottochronology, see Dunn et al. in this issue.) Instead, I suggest that the precipitating appropriative modes—foraging, farming, and trading-plus-farming—came to be institutionalized as distinctive kinship-based patterns of social communication at some later time, producing the Semang, Senoi, and Malayic traditions, respectively. Each of these societal traditions was thereby “locked in” as the dominant mode in its particular area through the mutually dissimilatory processes encapsulated in the features listed in the contrasting columns of Table 1.

Whether or not the Peninsular negrito phenotype had emerged much earlier (in Paleolithic times) is a matter of dispute. Bellwood (1993: 43–46) summarizes the different opinions current at the time of his article, which was written before the deployment of modern genomic research. These ranged from seeing the phenotype as resulting from an ancient inflow of “Australo-Melanesians” from the north to, at the other extreme, a rapid *in situ* differentiation from within an already present “Mongoloid” population during the last 10,000 years or less. It is worth quoting Bellwood (1993: 45–46) directly:

The question of Semang origins thus seems as mysterious as ever. . . . First, there are no Negrito populations in equatorial Sumatra or Borneo, and no evidence that any have ever existed there. . . . The Semang are thus at the southern extremity of the Negrito range, and it is clear that the focal areas of Negrito evolution in Southeast Asia occurred not along the equator, at least not in interior regions, but in areas considerably to the north. . . . The Negritos of the Malay Peninsula—and, I suspect, some in the Philippines too—represent a population that has adapted to a closed rainforest environment during the Holocene and that may well have acquired relatively short stature within this 10,000-year period. . . . Second, the phenotypic differences between Semang and Senoi . . . relate in part to a period of gene flow . . . focused on the Senoi from Southern Mongoloid agricultural populations located around the head of the Gulf of Siam after about 4,500 years BP. The Semang may therefore be the most direct (that is, the most externally uninfluenced) descendants of the Hoabinhians in the Malay Peninsula, despite the apparent difficulties involved in recognizing them in the available, but extremely small, skeletal sample.

As already noted, my concern is less with remote origins than with the reasons for the continued existence of the negrito phenotype(s). Nevertheless, as suggested earlier, I am not persuaded that the so-called negritos of Southeast Asia are a unity or that their phenotype(s) developed many tens of millennia ago. In the following comments, I proceed on the basis that the Peninsular negrito phenotype might have emerged locally, relatively independently, and more recently.

Regardless of the "origin" question, the continued distinctiveness of the negrito phenotype in the Malay Peninsula is linked mainly with the Semang societal pattern, although this is not the sole factor. As in the Philippine examples just discussed, the social and phenotypic distinctiveness of the Peninsular negritos has much to do with the maintenance of a complementary advantage vis-à-vis other populations who follow different cultural regimes—primarily the swiddening Senoi, but also the trading-plus-farming Malayics; certain intrusive populations were also important. By predisposing the people to follow a particular set of familial, breeding, consociational, and demographic patterns, the Semang regime made it easier for them to continue hunting and gathering while availing themselves of opportunities for complementary relations with neighboring populations. For this to succeed, they needed to maintain a minimalist social framework, widely spread, demographically small, with few children, but ready at a moment's notice to fall back on detachable conjugal families as the unit of enterprise. To avoid the attractions of their neighbors' more sedentary life, they had to erect a set of kinship-based regulations that led them to regard the latter as somehow less than admirable. As we shall see, this is likely to have had genetic consequences.

With regard to the distinctive phenotype of Peninsular negritos, there are at least four questions to consider. First, what adaptive relation, if any, does their phenotype have to the various exigencies of their way of life? Second, to what extent has their distinctive societal regime served to maintain that phenotype while also raising a barrier against its dilution by gene flow from other populations? Third, what is the reason for their arc-like geographical distribution? Fourth, how are the somewhat puzzling linguistic alignments to be explained? I discuss the first and second questions together, before concluding with a discussion of the third and fourth questions.

The Negrito Phenotype and the Semang Societal Tradition In an early study, based mainly on a detailed reanalysis of cranial material from all over East and Southeast Asia, Bulbeck (1981) suggested that evolution had followed the same general path and in step throughout the whole of the so-called Mongoloid domain of Asia. The fair degree of local variation that had occurred was explicable in terms of such relatively nonmysterious selective forces as temperature, humidity, insolation, subsistence mode, diet, and endemic disease pattern. In his view, the same applied to most of the so-called Paleomelanesian human remains excavated from sites in Malaysia and elsewhere in Southeast Asia, which he claimed had been misinterpreted. This allowed him to demonstrate that the earlier "Paleomelanesian," and hence "negrito," identification of certain crucial

Southeast Asian human remains was, in effect, a way of saying that those “negritos” were a Mongoloid subpopulation.

Cranio-metric study of a goodly sample of authentic Negrito skulls demonstrated that the people were typically Southeast Asian in anatomy and that “no ‘Negrito’ population shows the facial prognathism characteristic of all Austromelanesian populations . . . nor their robusticity. . . . Thus the distinctiveness of the ‘Negritos’ (as a group) from other southeast Asians relies on their short stature, darker skin and frizzy hair” (Bulbeck 1981: 419). Evidence that at least one of these features could have evolved both locally and rapidly comes from Bulbeck’s (1985) analysis of the Hoabinhian human remains from Gua Cha (including several new skeletons excavated by Adi Bin Haji Taha in 1979; see Adi 1985), which sit at the historical boundary between the (Senoi) Temiars and the Menriqs, a negrito Semang population. The measurements showed that the stature of the present-day forest-dwelling Orang Asli, both negrito and non-negrito (150–155 cm), is shorter than that of their Hoabinhian forebears (150–170 cm for an average male adult). Bulbeck (2011: 216–224) has since provided comprehensive evidence that this reduction of stature occurred very generally throughout the Peninsula. The typological confusions exhibited in the earlier reports on Malayan remains could therefore also be taken as evidence of in-process local evolution. Such examples as Duckworth’s (1934: 12) description of the Lenggong (Perak) skeletons as “Pre-Dravidian with marked correspondences to Nicobarese and to some extent the Sakai,” or Harrower’s (1933) finding (cited in Sieveking 1956: 124) that the Kuala Selinsing (Perak) remains included “Dyaks, Negritos and cross-breeds” should no longer cause any loss of sleep.

Rambo (1988) proposed a closely similar hypothesis regarding the origins of the Peninsular negritos, apparently independently and on ethnological rather than biological evidence. He suggested that 10,000 years is long enough for the negritos to have evolved from out of the already existing Peninsular hill populations. Rambo differed from Bulbeck, however, in suggesting that the negrito somatotype evolved as a response to heat, which he saw as the consequence of the lower altitudes that the negritos had chosen to exploit as compared with the Senoi.

Is such a rapid rate of local evolution possible? As already noted, several of the contributors to this issue accept that it is. Unfortunately, with few exceptions, the more recent genomics-based research is of restricted application because it deals mostly with noncoding genetic material. (Indeed, that is sometimes the *rationale* for such studies, on the grounds that selection can then be discounted as a factor, leaving unalloyed descent—“origins”—as the explanation of the differences.). Moreover, most of the earlier genetic research, dealing with known functional genes, was insufficiently tied in with the relevant ethnological and demographic information for a comprehensive statement to be made. Similar to much of the more recent whole-genome research, it was largely concerned with tracing tell-tale “origin” signs rather than with relating the genetic findings to the current or recent lifeways of the people. Baer (1999, 2000) has presented focused critiques of much of this genetic argumentation as applied to the Orang Asli.

One piece of earlier research, however, did successfully bring together the anthropology, demography, and genetics of a single Orang Asli ethnic group in a sophisticated manner: Fix's study (1977, 1982) of genetic microdifferentiation among the (non-negrito) Semais. Fix identified Semai marital sociology and demographic pattern as the sources of the considerable degree of gene-frequency variation they exhibited from one village to the next. He argued that their demographic pattern of "fission-fusion" had resulted effectively in a high degree of genetic drift, even in characters known to be under environmental selection pressure. Consequently, local population-genetic processes had a rich substrate to work on among the Semais, who lacked the buffering properties of a large population size. They could therefore be expected to undergo a faster rate of genetic change than other, denser, populations. Adela Baer (personal communication) has pointed out to me that this fission-fusion effect does not act strongly on genes already present in high frequencies; it is the low-frequency genes that undergo drift over relatively short time spans. But could the same have applied to the Peninsular negritos, whose mostly Semang-type societal and marital regime I have already characterized as differing from the Senoi-type pattern followed by the hill-Semais?

From a population-genetic point of view, the social organization of the nomadic populations who adhere to the Semang regime appears to have brought about much the same qualitative demographic consequences as the social organization of the sedentary Semais, even if the pathways were different. One thing that both populations have had in common, despite their differing densities, is that their pattern of population reproduction has borne a more or less constant proportional relation to the effective carrying capacity of their respective subsistence modes. This pattern represents what some animal ecologists formerly characterized as *K*-selection (a low reproductive rate coupled with a late entry into reproductive life), as contrasted with the *r*-selection exhibited by societies with a higher reproductive rate and earlier entry into reproductive life.⁸ Groves (1978) argued that in humans these differences correspond to differences in environmental security. Where the environment is predictable, reproduction will tend toward the more economical *K*-selection mode, but where circumstances are unpredictable, people will tend to reproduce at the more wearing *r*-selection end of the scale, as a buffer against disaster. The *r/K* theory is now regarded by zoologists as not fully valid, but it will serve here as a heuristic device (see Jeschke et al. 2008 for a recent review of the issues). However, according to the "life-history hypothesis," the negrito phenotype, mediated through short adult female stature, "should" be associated with *early* entry into childbearing rather than the late entry typical of *r*-selection. But the same hypothesis would also associate such short stature with higher childhood and adult mortality. In other words, any *K*-selection that occurred in the Peninsular case would have been generated more by the mortality rates (as well as by the social arrangements discussed below) than by any early entry into childbirth.

In undisturbed wet-zone tropical environments, both foraging and swiddening are much more "secure" than intensive peasant farming or life in the shadow of some burgeoning metropolis. Nowadays, a major demographic fact about

the Peninsular populations is the great preponderance of Malay speakers over Austroasiatic speakers: in 2012 the figures were approximately 16,000,000 and 100,000, respectively! Some 70,000 other Orang Asli are Malay speakers. There has been no absolute decrease in the Orang-Asli population, and the proportion between Orang Asli and Malays must have been rather closer to equality only a few centuries ago. Is it too far-fetched therefore to suggest that, for some reason, the Malay community switched into *r*-selection during the last few centuries, as intensive agriculture spread throughout the Peninsula, or throughout those parts of Indonesia from where many of them migrated? As Guillot et al. (this issue) point out, for example, the population of Java increased 20-fold within the last two centuries. (In humans, *r*-selection would mean that a fertile woman produces a child every year—a rate that has certainly occurred widely among premodern peasants.) If so, the overall reproductive pattern during the pre- and proto-historic period would have been much closer to the *K*-selection pole in all populations. Because of the considerable interest that population growth or its absence holds for prehistorians, it might be of some use if I indicate just how the social-organizational history discussed earlier might relate to biological and demographic issues and, in particular, to the mechanisms by which *K*-selection could have been achieved as the result of a conscious reproductive strategy.

If we bring Fix's (1977, 1982) ideas on Semai-Senoi demography and population genetics to bear on the findings of Gomes (1982, 1983) on the demography of the Jahai Negritos and the Temuan Aboriginal Malays, a pattern emerges. Among the Jahais (at least in still or recently nomadic groups), the mean birth interval per childbearing woman is between three and four years. This figure almost certainly results largely from the hormonal suppression of ovulation through the continued secretion of prolactin in women who are still lactating and breast-feeding a child (Bongaarts 1980). But this mechanism works securely only when the breast-feeding is "on demand" and thus frequent (Martin 2007: 76). The frequency is likely to be greater when the mother's impaired nutrition and/or small body size leads to a relatively small milk supply. This linkage is further reinforced when there is little else to wean the infant onto, as among the nonsedentized foraging Peninsular negritos.

†The nomadic Jahais imposed a two-year postpartum period of abstention from coitus, and they also preferred to delay weaning for two years after the birth. These two factors have militated against any significant growth in the Jahai population—which would in any case, Gomes (1982: 24–26) argues, be maladaptive to nomadism:

First, the Semang woman's time has a comparatively high value for such uses as gathering food, fishing, and collecting forest products, all activities in which the need to care for small children lowers her efficiency. Second, the economic value of Semang children is low because they make little or no contribution to their household's income and production. Third, as people on the move, having nursing infants is a major problem because the mother will be burdened by her infants on her gathering trips and during camp shifts.

In contrast, Gomes (1982: 26) found that those Jahais who had settled down in government-administered villages showed a marked and sudden increase in the rate of population growth from 1.25% to 2.39% per annum in just two years, almost entirely because of an increase in birth rate rather than other factors (Gomes 1983: 430). The reasons for this must relate to the induced dietary changes. The babies were now provided with sources of nutrition other than their mother's milk, allowing the mothers to cease breast-feeding earlier or to reduce its intensity, which in turn would have had the effect of allowing ovulation to restart earlier. And because, as Gomes also stated (1982: 29), the settled Jahais allowed the postpartum coital taboos to lapse somewhat, it would appear that the former constraints on the mean birth interval disappeared and that births became more frequent. This implies that (forced) sedentization was sensed by the Jahais as a less secure circumstance than being nomadic, whatever the governmental agencies might have thought to the contrary. In a parallel example farther south, Endicott (1997: 31–34) describes the unwelcoming responses of the Batek Negritos to sedentization programs. An August 2012 news story in the *New Straits Times* reported Malaysian officialdom's uncomprehending puzzlement at a similar response among the Kensiw Negritos of Kedah, who remain resistant to their enforced sedentism after two generations of living in a government-built village.

What, then, are we to make of Fix's finding (1977: 53) that among those Semais who were still leading Senoi-style lives, based mostly on swiddening, the mean birth interval remained around three years? The relevant issues here were the duration and intensity of breast-feeding and the postpartum coital taboo. Among the Semais (as among the Temiars), breast-feeding is often prolonged for several years, although it is combined with other foods after the first year or so, and perhaps sooner. In this respect, Senoi and Semang practices do not differ very much, and it should not surprise us that the mean birth interval in the two populations is the same despite their rather different life circumstances.

Nevertheless, the Semang and Senoi populations display a quantitatively different demographic profile. The Senoi populations are both larger and more densely settled than those of the Semang, and they are currently increasing. Dietary changes from foraged food to agriculturally produced grains and tubers would, of course, have had some effect on such demographic components as infant mortality. But it seems likely that the major factors responsible for these differences in population density are the various cultural arrangements that either constrain or encourage coitus. As we have seen, the Semang pattern appears to restrict the overall frequency of coitus, but the Senoi pattern, on the contrary, seems to encourage coitus. The Semang pattern enjoins a long postpartum coital taboo (Table 2) and kinship-based restrictions on access to sexual partners (Table 3), whereas the Senoi pattern allows a short postpartum coital taboo (a few weeks or months) associated with permitted sexual access (pre- or extramarital) to various true or classificatory affines categorized as "sister-in-law." Among the Senoi, even if a man is forbidden sexual access to his wife after the recent birth of their child, he may still sleep with her sister or cousin. And if the marriage should, for any reason, break down,

the chances of soon finding a new spouse are much greater for the Senoi than for the Semang. The latter forbid marriage with all traceable kin, whereas the former forbid only traceable consanguines while allowing marriage with affines. In other words, while there is decreased fecundity consequent on childbirth in both populations, alternative procreative opportunities are much more available to the Senoi than to the Semang.

Farming populations hold a higher “value of children” than do foraging populations: farmers positively need the help obtainable from junior family members. Yet the Senoi are not intensive farmers: they cultivate swiddens rather than permanent plots, and they still spend a lot of time in other activities such as hunting, fishing, and collecting for trade. Moreover, while swidden farming can support a larger population than can foraging, it is sensitive to too great an increase in population density, which threatens to lead to a shortening of the fallowing period and a consequent destruction of soil fertility. The demography of the Senoi, then, exhibits the vector-like consequences of at least two countervailing factors: the positive effects of what may be called their “social relations of procreation” (e.g., their marital patterns, joking relations), and the negative anovulatory effects of their rather long period of breast-feeding. The demography of the still-foraging Semang populations, on the other hand, appears to be deeply affected by the negative character of their “social relations of procreation”; thus, a small population with virtually zero population growth results. A question posed by this discussion is the extent to which the people themselves have been conscious of the demographic effects of their actions and institutions. As already noted, the Jahais of Kelantan (a Semang group) did let some of their restrictions lapse very soon after they became sedentary, which must have been partly responsible for the rapid rise in their birth rate. This certainly sounds like conscious action (though it need not, of course, have been aimed at the particular demographic outcome that it in fact produced). Is it the case, then, that the Semang and Senoi—especially the latter, who as farmers have more alternative sources of infant food—deliberately seek to use the anovulatory effect of extended breast-feeding as a means of population control? In this regard, Burenhult et al. (2011: 264) have recently uncovered some differences between current practice among the Jahais and Lanohs of Perak and what is reported in Table 3, which is based on fieldwork several decades ago. Clearly, further investigation is required, but I suspect that these changes, too, are deliberate responses to sedentization, as previously reported by Gomes (1982).

Jinam et al. (2012: 8) suggest that the genomic pattern displayed by the various Southeast Asian populations might have resulted from early changes in the region’s demographic patterns:

The observed pattern is that of an increase in population size from approximately 60,000 to 40,000 YBP. What appears to be a stable population size from 30,000 to 10,000 YBP was then followed by a decline which lasted until several hundred YBP. . . . A consistent pattern that appeared was that of a population size decrease from 10,000 YBP, and similar patterns were

Table 3. Semang and Senoi Patterns of Cross-Sex Relations (modified from Benjamin 2011: 179)

PEOPLE	PARENT-IN-LAW	SIBLING-IN-LAW		SIBLING	INTERACTIONAL PATTERN	SOCIETAL TRADITION
	WiMo / ♀ DaHu HuFa / ♂ SoWi	Wi _i Si / ♀ _i SiHu Hu _j Br / ♂ _j BrWi	Wi _i Si / ♀ _i SiHu Hu _j Br / ♂ _j BrWi	Adult Br/Si		
Kensiw	Avoidance	Avoidance	Neutral	Avoidance		
Kintaq	Avoidance	Avoidance	Neutral	Avoidance	+Avoidance, -Joking	Semang
Jahai	Avoidance	Avoidance	Avoidance	Avoidance		
Menriq	Avoidance	Avoidance	Avoidance	Avoidance		
Lanoh	Avoidance	Restraint	Joking	Neutral		
Temiar	Avoidance	Joking	Joking	Neutral	+Avoidance, +Joking	Senoi
East Semai	Avoidance	Avoidance	Joking	Neutral		

Shading indicates “negrito” populations. Abbreviations: Br, brother; Fa, father; Hu, husband; Mo, mother; Si, sister; Wi, wife. Subscript e, elder; subscript y, younger. ♀, female’s; ♂, male’s.

also observed in some Philippine populations. . . . The BSP [binder of sperm protein] plots also showed a trend of increasing population size in all four groups ~1000 YBP. The underlying cause for the observed patterns can only be speculated and as such would warrant further investigation.

Although the authors were appropriately tentative in drawing these conclusions, such long-term changes in demographic patterns could well relate to the kinds of social mechanisms I have just proposed.

Sociocultural Boundaries The Semang rules of cross-sex avoidance, especially the prohibition between cousins and between siblings- and cousins-in-law, serve to generate a mental image of anti-sedentism. This is achieved by picturing the most desirable form of society as one constituted of easily detachable conjugal-family groups, linked together by marriages contractible only between those who are not traceably related by consanguinity or affinity. This is coupled with the low population density and egalitarianism associated with their patrifiially biased pattern of incorporation. In societies with a patrifiial bias, coresidential males are more closely related, and thus unranked, but they are more likely to squabble with the less closely related males of neighboring groups and will keep their distance from them. This argument derives from Murphy (1957).⁹ This pattern generates a readiness to wander far and wide in search not only of food but also of social (including marital) relations. It has also led to a degree of boundary maintenance between the Semang foragers and their more sedentary neighbors (Benjamin 1985: 258–259).

In most of the areas where Semang populations abut on the (Senoi) Temiars, there is a definite cultural boundary, despite the fact that in many cultural domains (religion especially) there has been much cultural exchange between them. Although the Semang foragers generally admire the Temiars' material superiority (especially their solid houses), their own success depends on their ability to hold to an ecological niche unoccupied by the Temiars. This ambivalent state of affairs is made easier to bear through the immorality that the Semang are enabled to ascribe to the Temiars, whom they see as only too ready to enter into "sister-in-law" sexual dalliances wherever they go. Both Schebesta (1973: 197–198) and I have recorded Semang statements of moral reprobation at the way their Temiar neighbors carry on. The Semang rule of "sister-in-law" avoidance therefore encodes a morality of ecological restraint just as much as it encodes a sexual one. It serves to put a distance between one's own group and other ways of life—the Senoi pattern especially—that may seem attractive in some respects but which would be destructive to the way of life that they have invested so much effort in maintaining. (This has not precluded some intermarriage between the two populations, however, especially in Perak.)

A further boundary has existed between the negrito foragers and the Malays. Rural Malays formerly regarded the nomadic negritos as not wholly human (Endicott 1972: 47ff). They employed and traded with the negritos, and sometimes enslaved them, but they were resistant to allowing them into their houses, as I myself

witnessed in the 1970s. (Even today, some Malays, including especially those in governmental positions, express a horror of nomadism.) Moreover, the Malayic pattern (of which the Malay pattern is a variant) allows and even favors marriage with both consanguines and affines, in clear contrast to the Semang prohibitions on such relations. The resistance of the negritos to assimilating to either the Senoi or Malayic pattern also relates to their known preference for dwelling within the cool of the forest rather than in the heat and openness of the cleared land favored by the sedentary Senoi and Malayics. As discussed shortly, this might well have a direct connection with the negrito phenotype—assuming that it is, at least in part, an adaptation to forest dwelling.

Explaining the Peninsular Negrito Phenotype I turn now to some recent biological studies—not necessarily genetic—that investigate the reasons, adaptive or otherwise, for the emergence and persistence of the negrito phenotype. Earlier suggestions include Bulbeck’s view (1981: 420) that “their darker skin, for inconspicuousness in a dim environment and not protection against ultraviolet radiation, and shorter stature for ease of movement, may well be rain forest adaptations.” He also suggested that tightly curled negrito hair, when examined in a comparative framework, is a means of keeping the head dry (not cool), with a possible thermal advantage of keeping the head warm in the face of constant humidity and frequent downpours. Nevertheless, Bulbeck was careful to point out that even these phenotypic characters are not “totally unambiguous,” since they vary considerably and overlap with those of the non-negrito populations.

Recently, there has been an intensified attention to the biology of short stature as found in the widely distributed so-called pygmy populations of the world, which most writers on the topic see as including the Southeast Asian negritos. As noted earlier, human stature is a continuously varying and highly polygenic character, open (like most polygenic characters) to environmental and epigenetic input into the resulting phenotype. Those who take “pygmy” as a type are therefore confronted with the problem of where to set the cutoff height, because different measures greatly affect the number of such populations. Becker et al. (2010: 19), for example, state that if the (male) cutoff height is set at 160 cm, there would be more than 200 “pygmy” populations scattered around the world (and they would therefore not constitute a single “type” by any measure). But if the cutoff is set lower, at 150 cm, there would then be only one such population, the Efé people of the Congo.

The Peninsular negritos, along with those of the Andamans and the Philippines, have regularly been included in discussions of so-called pygmies. Indeed, this was the initial rationale for Paul Schebesta’s expeditions to central Africa, Malaya, and the Philippines, starting in the 1920s, to study the world’s *Pygmäen-völker*, whom he regarded at the time as a unitary and relatively undifferentiated (“pre-racial”) population comprising the African Pygmies and the Asian negritos (Schebesta 1936). In his subsequent monograph on negrito physical anthropology, Schebesta (1952: 320–329) presented a mixed body of data on the Peninsular populations, gathered at various times from different subpopulations and by different

workers, including himself. As he admitted (p. 321), the sample sizes were all too small, though far from negligible, for the averages to be entirely reliable, especially as the numbers for each subgroup were too small for secure comparisons to be made. Nevertheless, his three tables (III,2, III,3, and III,4) aggregated the height measurements of a total of 443 Peninsular negrito (“Semang”) males and 245 females. The average height for the men was 153.3 cm, with a range of 138.0–175.0 cm; for the females, the average was 142.4 cm, with a range of 131.0–156.8 cm.

Obviously, the question should not be whether the Peninsular negritos are “pygmies.” Rather, the task should be to understand why they are very short by world standards, while acknowledging that they overlap in height with neighboring populations who, in the Peninsula, are also rather short. Three publications in particular (Migliano et al. 2007, 2010; Perry and Dominy 2008) have proposed explanations for this feature, largely derived from Migliano’s view that “pygmy” short stature was not selected as such but, rather, is a side effect of selection for the early onset of reproduction. It would thus result from “a life history tradeoff between the fertility benefits of larger body size against the costs of late growth cessation, under circumstances of significant young and adult mortality” (Migliano et al. 2007: 20,216). On this view, “pygmy” stature is due, not to nutritional deficit, but to an early cessation of fast prepubertal growth, associated in turn with a very short life expectancy even compared with nutritionally compromised populations. This is compensated for by an earlier peak of fertility, as, for example, among the Philippine Aetas, whose peak of fitness and age at first reproduction are both at 15 years of age (for further discussion of the genetic mechanisms that might be involved, see Migliano et al. this issue).

Perry and Dominy (2008), who have done fieldwork among the Peninsular negritos, also pay attention to life cycle issues. They state explicitly that short stature has evolved in parallel in several distinct regions of the globe, that it may hold a variety of adaptive advantages for forest-dwelling populations, and that this view is not necessarily incompatible with Migliano’s life cycle hypotheses. They accept that short stature probably has a genetic basis. In particular, they point to the extremely rapid growth of “pygmy” children in contrast to the very slow growth experienced after puberty. However, they acknowledge that the various pygmy populations of the world show closer genetic relationships with neighboring nonpygmy populations than they do with each other, and that the mutations responsible for their distinctive growth pattern must have arisen several times in recent human evolution. Bernstein and Dominy (this issue) have now suggested a possible epigenetic mechanism for these features, involving the transmission of stress hormones as “immunological clues” through the mother’s breast milk, mediating early menarche and small body size. This would handle the problem of rapid intergenerational changes. They also suggest that short stature may serve as an adaptation to the food scarcity that probably occurred when the phenotype(s) first evolved by reducing the body’s caloric needs. (In more recent times, many of these populations have attained an improved degree of food security.) As already noted, the earlier skeletal remains, at least in the Peninsula, represent a population

that was taller on average than either present-day negritos or their swiddening neighbors. This could point to a very recent evolution of shorter stature among the Peninsular negritos, or it could mean that the excavated skeletal material happened not to include any people with an earlier-established negrito phenotype, perhaps because they did not use caves for their burials.

Several other adaptive advantages for short stature were examined by Perry and Dominy (2008). Thermoregulation in humid forest conditions is favored by smaller body size; they tested this in the field by the thermographic photographing of Batek Negritos of different heights. Mobility through the undergrowth and climbing trees for honey are almost certainly aided by short stature and low weight. Falls from trees are still a cause of death among the Orang Asli (two of them died in this way during my own fieldwork), but the rate is probably much lower than if larger-bodied people were doing the climbing. Perry and Dominy (2008: 221) regard Migliano's life-history approach as an "elegant" hypothesis, according to which the high adult mortality rate of nomadic foragers is compensated for by the increased reproductive "window" generated by early puberty. But they suggest that different mechanisms may be involved in different "pygmy" populations, and also that it may not, *pace* Migliano, be the primary evolutionary factor in the evolution of the phenotype. In fact, they see *all* of the aforementioned factors as having been likely to accord adaptive advantage to populations living nomadically within the depths of humid tropical forests. This will have served to maintain the Peninsular negrito phenotype, along with the barriers to any diluent gene flow from neighboring populations mentioned earlier as a feature of the Semang societal regime.

The Distribution of the Peninsular Negritos. Although humid forest once covered the whole of the Malay Peninsula, the negritos did not. As Bellwood (1993: 45) has noted, the Southeast Asian negritos have had a markedly northerly distribution, and this has been the case within the Peninsula too. Is there any significance in Blagden's (1906: 392) remarks that all the Semang (Northern Aslian) dialects were found in territory "politically subject to the Siamese suzerainty"—and that (with the exception of the Kelantan Temiars, then also under Thai suzerainty) the "Sakai rude agriculturalists" were almost all "comprised within the limits of the Federated Malay States under British protection; that is to say, Perak, Pahang, Selangor, and the Negri Sembilan"? Clearly, this distribution cannot have been simply a consequence of the then recent colonial history. Rather, it may be that the British/Siamese divide was itself reflective of older differences of orientation that may in turn have had a bearing on the way in which the tribal populations responded to external political relations. How, then, is the somewhat restricted distribution of the Peninsular negritos (Figure 2) to be explained? A related issue, as already mentioned, is the fact that although all the followers of the Semang societal tradition are phenotypically negritos, there are other populations of the same phenotype who do not follow that tradition. I suggest that the answers to both of these problems are linked.

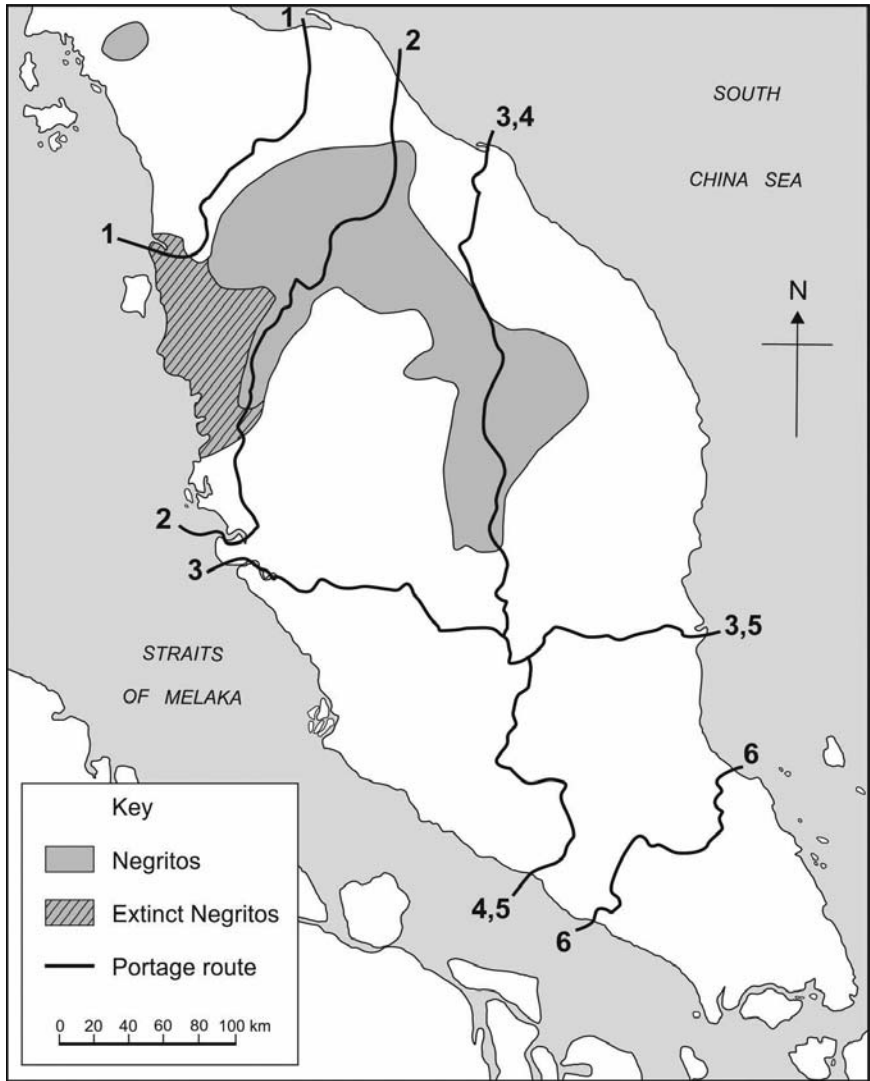


Figure 2. Trans-Peninsular portage routes and recent distribution of negritos. 1, Kedah-Pattani; 2, Perak-Pattani; 3, Bernam-Pahang(-Kelantan); 4, Muar/Melaka-Kelantan; 5, Muar/Melaka-Pahang; 6, Semberong (modified from Benjamin 1983, 1986; drawn by Lee Li Kheng).

A clue is provided in Kirk Endicott's suggestion (1984) that the maintenance of a distinct negrito somatotype is a result of the deliberately complementary socioeconomic relations that they have maintained with their horticultural neighbors. This, through generating a reduced degree of intermarriage, has enabled them to maintain not only distinct identities but also "at least somewhat distinct gene pools." Clearly, though, this is an ambivalent situation because it requires the people to maintain a relationship that combines social interaction (including occasional marriage) with social distance (a situation examined in further detail by Lye in this issue).

The character of such complementary relationships in the Peninsula varies from place to place. But there is a common feature to the history of all "Negrito" populations, whether or not they have followed the Semang societal regime. As shown in Figure 2, the known distribution of negritos in the Malay Peninsula lies within relatively easy reach of the archaeologically authenticated trans-Peninsular portage routes along which trade goods and forest products were transported in earlier times. In southern Thailand, most of the Maniq negritos today sit astride the ancient portage route (not indicated on the map) between Trang on the west coast of the Isthmus of Kra and Phatthalung. The latter site enabled access to Satingphra/Singgora, probably the site of ancient Tambralingga, on the east coast. There is evidence that related populations once lived farther north along other trans-isthmian portage routes. Excavational discoveries of foreign goods have helped to delineate the courses of these major valley routes through the interior of the Peninsula (Benjamin 1986: 28–31; Bulbeck 2004). Similar to the Peninsular negritos themselves (with the exception of some of the Jahais), these routes are situated in the lowlands because the mountain rivers were not used for this purpose. The relevant archaeological findings date mostly from the Indianized period, commencing around 2 kya, and are probably associated with the emergence of the Semang societal regime in the north. The Perak valley, still inhabited upstream by Lanoh and Jahai Negritos, is associated with Hindu and Mahayanist bronze statuettes. Metal-age remains are found, too, especially in the Tembeling valley of Pahang, which leads northward into Kelantan and Thailand, through Batek Negrito territory on both sides. Historical and ethnographic records show that these and the other routes were in use in some cases until the mid-twentieth century.¹⁰

Early complexification and urbanization on the coasts of the Peninsula were linked with mineral resources—tin in the lowlands to the west of the main watershed, and gold to the east. In addition, the forest itself was the source of products that were valuable to the coast dwellers and outsiders. Moving these goods around, however, would require the services of people who knew the forest and riverine tracks but who were not committed to farming-based sedentism, which would have prevented them from traveling far from home. Moreover, the opening up of trans-Peninsular portage routes between urbanizing centers and other settlements on the coast from around 2 kya would have enlarged the ecotonal richness of the region, especially in the isthmus, thereby enabling the foragers to benefit from civilization's leftovers or by direct employment while continuing to hunt and

gather in the forest for their daily subsistence. The instituting of the Semang societal regime was a means of locking them more firmly into the necessary sedentism- and farming-rejecting frame of mind to avail themselves of the opportunity to serve as guides and porters—tasks that some of their descendants perform even today, for tourists.

Although the archaeological evidence of a specifically negrito connection to the inland routes is conjectural, there is at least one early piece of written evidence. The *Malay Annals (Sejarah Melayu)*, thought to have been composed originally in the sixteenth century, recounts the flight of a group of refugees from Melaka eastward into Pahang. They move onto the Tembeling River, whereupon it is reported that someone “said to the people poling the boat, ‘kwai kwai’ which means slowly; until today the rapids are known as Jeram Kwai” (Shellbear 1896: 120). I suspect, therefore, that the published transcription *kwai kwai* of the original Arabic-character version of these non-Malay words was in error. The phrase should almost certainly have been read as *kui kui* or *koi koi* (and in fact, nowadays, these rapids are known as Jeram Koi). As Kirk Endicott (personal communication) has affirmed to me, this would appear to be a version of the Batek Nong or Batek Tanum (Negrito) word for “slowly,” pronounced today as *kɔy*. It seems likely, then, that the Melakans in the *Sejarah Melayu* story were poled upstream by Batek people, which is quite credible, given what we now know about their likely role as porters along the Muar–Tembeling–Lebir route.

Further evidence that the negritos have long maintained links with outsiders comes from the presence of loanwords, especially from Malay, into the basic vocabularies of their languages. As Table 4 demonstrates, the highest rates of borrowing from Malay were found among the smaller and/or forest-collecting negrito populations, especially where the lowland speakers of Northern Aslian languages have straddled old Malay routes through the forest. The lowest rates of Malay borrowings into Aslian, on the other hand, were found among the larger farming populations, resulting from both their more remote situation and their higher degree of self-sufficiency.

Non-“Semang” Negrito I say a little more about the Peninsular negritos’ linguistic alignments in the concluding section. But first, another issue warrants discussion: the finding that not all of the so-called Negrito populations follow the Semang societal regime even though they have historically followed a foraging way of life. This applies specifically to the Lanohs and the Bateks (see Tables 2 and 3). I suggest that this has to do with the variable character of the negritos’ complementary relationships with other populations.

The Lanohs not only follow a mostly Senoi societal regime—I have previously sometimes characterized them as “mixed”—but also, alone among the Peninsular negritos, speak Central Aslian languages related to Temiar instead of Northern Aslian languages like all the others. The Lanohs’ complementarity appears to have been significantly influenced by their close relationships with the swidening Temiars. This has been confirmed in the recent study by Dallos (2011:

Table 4. Basic Vocabulary Loan Rates (%) from Malay in Aslian Languages Spoken by “Negritos” and Their Swiddening Neighbors (from Benjamin 1976: 73)

NORTHERN ASLIAN						
Kensiw	Kintaq	Jahai	Menriq	Batek Dèq	Mintil	Batek Nong
7	5	11	10	21	16	10
CENTRAL ASIAN						
Semnam	Sabüm	Lanoh	Temiar	Semai I	Semai II	
10	5	5	2	7	5	

Shading indicates “negrito” populations.

29–66), who shows in detail how Lanoh society has been characterized by a fluid oscillation between foraging, trading in forest products, and swidden farming. The relative weight of these activities has depended, to some extent, on whether they are living closer to the Temiars or to the (Semang) Kintaqs and Kensiw to their north, who continue to reject farming. Previously, they also had contact with other Northern-Aslian-speaking populations that became extinct in the 1920s.

Without drawing a definite conclusion, Dallos (2011) discusses the possibility that the Lanohs may have derived from the same ancestral population as the Temiars and that therefore their foraging might in some sense have developed in a secondary manner. Certainly, their cooperative sibling- and sibling-in-law foraging arrangements are very Temiar-like, rather than typically “Semang.” This may have something to do with their continued kinship relationship with Temiars. To the extent that they possess a negrito somatotype, however, this cannot be the whole story. Because the Lanohs have had very close dealings with the Temiars, and probably for that reason deviated from the Semang pattern, they may also have shifted from an earlier Northern Aslian linguistic alignment. The pre-Lanohs could have moved into an area where a Central Aslian language was spoken and switched to it as the language of the place, parallel to what Endicott (1997: 45–48) has described as typical of the Bateks. The original speakers of that Central Aslian language might then have intermarried with them, or died out, or moved away into Temiar country, adopting the Temiar language instead. This process can be observed today, as Temiar continues to replace the various Lanoh languages.

At the eastern end of the negrito arc, the Batek Negritos also do not follow the Semang societal regime. It is possible that this is a recent development and that they formerly did follow the Semang pattern, as the closely related Menriqs still do. But I suspect that the Bateks never fully imposed any of the Semang/Senoi/Malayic regimes that I outlined earlier, and that they consequently remain mostly “mixed.” The Bateks do show some slight Malayic tendencies, however, in their willingness to marry cousins. This might be explained by their known close relationship with Malays: Endicott (1997: 40) mentions that the Bateks have occasionally married Malays. Indeed, the Bateks of Kelantan were formerly greatly

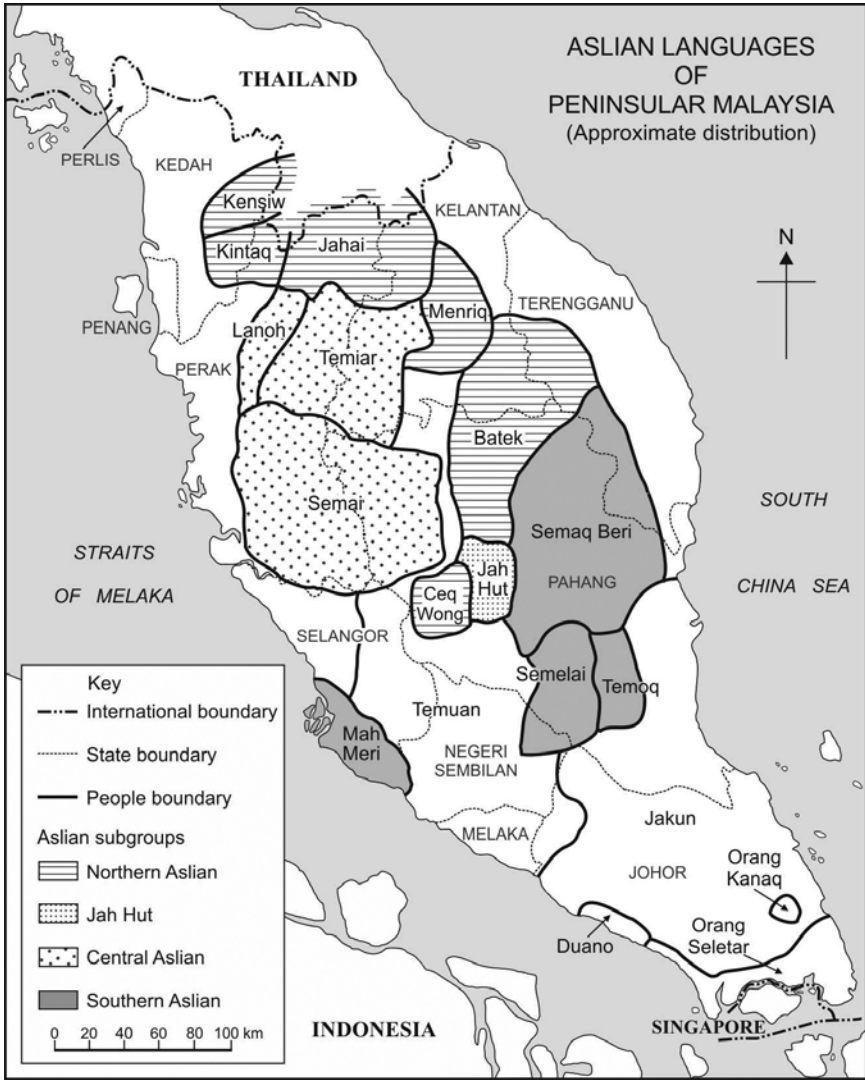


Figure 3. Aslian languages of Peninsular Malaysia. The map indicates the maximal known historical distributions of the languages rather than their present-day locations, which are more restricted. The separated Aslian (“Maniq”) languages of southern Thailand are not shown. Temuan, Jakun, Orang Kanaq, and Orang Seletar are Malayic dialects spoken by Orang Asli. Duano is an unclassified Austronesian language (from Benjamin 2013; drawn by Lee Li Kheng).

outnumbered in their own valley by Malays, with whom they traded. They have also married (non-negrito) Semaq Beri, another foraging Orang Asli population. (On the relations between Bateks and Semaq Beri, see Lye, this issue.) I suspect that a further factor in the Bateks' nonadherence to the Semang regime is that they did not in the past have direct contact with the Temiars and thus had no need to dissimilate themselves from the Senoi tradition. (Note the gap between the two populations in Figures 1 and 3.)

As to the "mixed" character of their societal pattern, it is worth pointing out that today it is precisely along the Lebir/Tembeling/Muar axes (routes 4 and 5 on Figure 2) that are found those Orang Asli populations who appear never to have locked themselves into any single societal tradition. Lye (this issue) also notes the relatively unspecialized, opportunistic character of the appropriative modes followed by some of the populations living along this ancient route. These populations—Bateks, Jah Hut, Che' Wong,¹¹ and Semaq Beri (see Figures 1 and 3)—are characterized as "mixed" in my publications because they have deliberately availed themselves of whichever modes of appropriation they have found suitable through the accidents of their own local history without committing themselves exclusively to any one of them. In that regard, as Dunn et al. (this issue) have also noted, they continue to follow a way of life that must have been more widespread in earlier times.

The Negritos and the Aslian Languages A persistent question in the older literature is whether the Semang/Negritos retain traces of a language or languages prior to the Austroasiatic languages they now speak. Clearly, since the Peninsula was already inhabited long before the advent of either Austroasiatic or Austronesian languages, other languages must have been spoken there. Blagden (1906: 462–463) claimed to have found 57 "Semang" words unrelated to those of any other language. But Diffloth's (1975: 17) quick survey of Blagden's list showed that 15 of the words, although they were chosen for their apparent strangeness, were actually in regular phonological correspondence with Central Aslian cognates, and in a proportion corresponding to the expected degree of lexicostatistic distance between the Northern and Central branches. And since the study of Austroasiatic vocabulary had hardly begun in the 1970s, there was good reason to think that more cognates would emerge. Diffloth therefore concluded that there was no direct lexical evidence that the Peninsular negritos ever spoke non-Austroasiatic languages before switching to Aslian. Just possibly, the identification of any such languages might benefit from further investigations based on Blevins's (2007) detailed suggestions of specific, pre-Proto-Austronesian links for some of the Andamanese languages. But it is difficult to see how this could proceed on the basis of the data currently available, the more so as Blevins's claims have not yet been supported by other qualified researchers.

Several other problems remain in attempting to explain where the negritos fit within the array of Aslian languages. A naive survey would lead to the view that the Northern Aslian languages somehow belong with the negrito phenotype.

But a closer look shows that the issues are more complicated. As noted earlier, the negrito phenotype does not fully accord with language: not all Northern Aslian languages are spoken by “negritos,” and there are “negritos” who speak Central Aslian languages. Recent linguistic studies (Burenhult et al. 2011; Dunn et al. 2011; Dunn et al. this issue) have clarified the picture considerably while leaving several questions unanswered, as the authors admit. At least two themes have emerged: languages spoken in nomadic forager societies possess some peculiar features that demand wider attention from linguists, and various Aslian language shifts have a bearing on the “negrito” question. I pursue the first theme no further here. The second has been shown to yield best to low-level explanations in relation to local contexts, rather than as the reflexes of higher-level Aslian language phylogeny. In this regard, Fix (2011: 288) has recently suggested that the hypothesized language shift to Aslian on the part of the negritos could well have occurred through a process of “trickle” marriage (rather than any demic migration) of forager women to farmer men, with the women taking over the language (and malaria-resisting HbE genes) and contributing their mitochondrial DNA haplotypes. As Fix says, this would assist in explaining both the genetic and linguistic alignments of the Aslian speakers.

I have already discussed the somewhat unexpected Central Aslian alignment of the Lanohs. The other main linguistic mystery is the fact that Che’ Wong, a conservative Northern Aslian language, is spoken by a population who show no trace of the negrito phenotype and whose lifeways have differed somewhat from those followed by the other Northern Aslian speakers. Presumably, they represent, in part, the descendants of the population from whom the negritos took their Northern Aslian languages. Any other non-negrito Northern Aslian languages could then have failed to survive (through extinction or through a further switch by their speakers to some other Aslian languages). The geography of such a scenario is unclear. The center of Aslian linguistic diversification, in which all four branches of the subfamily are found in close proximity, is in central Pahang (Figure 3). These are Northern Aslian (“Jahaic”), Central Aslian (“Senoic”), Southern Aslian (“Semelaic”), and Jah Hut. (For differently orientated surveys of the Aslian languages, see Diffloth 1975; Benjamin 2013; Dunn et al. this issue.) But the original center of gravity of the negrito phenotype is farther north, probably in southern Thailand. Linguistic evidence would support the scenario just suggested. According to Diffloth (1975: 7), the sequence of phonological changes in Northern Aslian vowels implies that there had been a gradual movement toward the north, starting from the middle section of the Pahang River up to Thailand. Blagden (1906: 388–389) commented on the continuity of Northern Aslian (“Semang” and “Pangan”) speech over a distance of more than 120 miles along what are, in effect, the same trade routes. He also commented on the extinct “Low Country Semang” dialects (Figure 2, “Extinct Negritos”), presumably Bila (p. 390). These would have been situated near the Kedah trading sites, which have since been investigated archaeologically.

Dunn et al. (this issue) suggest that the association of negritos with Northern Aslian began when they imported or shifted to the “Proto-Maniq–Menraq–Batek” division after it had separated from Proto-Northern Aslian, perhaps 2 kya. They go

on to suggest that the hunter-gathering niche (which the negritos had entered) then effectively adopted Northern Aslian languages, thereby preserving them right up to the present. Note, however, that this says nothing about the negrito phenotype as such; it merely assumes that the phenotype was present in the population that switched to Northern Aslian speech, which thereafter had something to do with maintaining the phenotype's distinctiveness. (Fix's suggestion of a genetic "trickle" effect might assist in explaining the linkage.) Nicole Kruspe, who has done detailed linguistic research on Che' Wong, has commented to me on this as follows: "Could it be that the Northern Aslian speakers were originally Mongoloid like the Central and Southern Aslian speakers, and the Ceq Wong did not intermarry with the Semang? Until we have genetic samples, I guess we can only speculate" (personal communication).

This set of hypothesized language switches implies the existence, two or more millennia ago, of well-established traffic along what was later to become the Tembeling/Lebir portage route (Figure 2, route 4). This could be interpreted as a movement of the people living there (other than the direct ancestors of the Che' Wong) to avail themselves of the opportunities offered by the progressive opening up of trade routes across the Peninsula and Isthmus of Kra. In this regard, Blagden's (1906: 391) comments on some language shifts that took place in that area over a century ago are especially interesting. In discussing a population whom he described as "Pangan-speaking Sakais" (i.e., Northern-Aslian-speaking non-negritos), he wrote:

Included among the more typically Semang dialects are two, collected by Clifford in the Lebir valley in Kelantan, and the Kerbat in Trengganu respectively, which are spoken by tribes whom the collector, a careful observer, describes as being physically Sakai. If that is so, it is clear that these tribes must have adopted the speech of their Negrito neighbours, or they may have been originally Negritos whose physical type has been modified by crossing with a Sakai strain.

This might have some relation to the presumed takeover of Aslian speech by Semang/negritos, assuming that they originally spoke something else. Alternatively, and less problematic, the people referred to by Blagden could possibly have been Semaq Beri who were speaking Batek while staying in the Lebir Valley, in a temporary language switch that continues to the present day.

A more general explanation of such language switches, not (to my knowledge) mentioned by any other writer on Aslian issues, is the possibility that considerations of prestige were involved. After all, language shifts have occurred all over the world, not least in Europe. In her article "Why Don't the English Speak Welsh?" Tristram (2008: 202) writes:

Why would substrate speakers want to acquire the language of their masters?
What would their personal motivation be? The trivial answer is, of course,

because of their desire to partake in the prestige, social advancement and economic success of the elite and above all because of their desire to gain access to the social benefits associated with prestige status. Bilingual speakers already have social advantages compared to monolingual substrate speakers. The main incentive for superstrate, second language acquisition in diglossic societies therefore is utilitarian.

There is evidence that both Mon and Khmer were languages of civilization on the northern edge of the Peninsula (Bauer 1992; Benjamin 1997: 105–112) and that at least some of the traders moving along the riverine trade routes would have been speaking those languages. The local populations living along those routes might therefore have come to regard the intrusive Mon-Khmer languages as prestigious. The “utilitarian” feature here would be the benefits the people could acquire through associating with those intruders. Such an argument would require a detailed examination of the time depths involved, and a more specific investigation of the relation of Aslian to the rest of Mon-Khmer than is so far available. Relevant factors are that the Aslian languages have not yet been conclusively demonstrated to descend all from the same proto-language and that the Southern Aslian languages in particular (Diffloth 2005: 79; Dunn et al. this issue) may be less closely related to the other Aslian languages than the latter are to each other.

A Final Comment

The Peninsular “negritos” form an extremely small portion of the Malaysian and southern Thai populations. But against all odds, they remain a persistent presence, and they deserve great respect for that and other reasons. Moreover, if it were not for their presence, our understanding of the *longue durée* of Peninsular history and society would be seriously defective.

Notes

1. For an explicit statement on the disjuncture between linguistic and genetic phylogeny in the region, see Donohue and Denham (2011), based on the findings of the Human Genome Organization (HUGO Pan-Asian SNP Consortium 2009).
2. For an insightful critical review of this and related issues, see Wells et al. (2011), who suggest that “canalization” may result in an effective degree of linkage in the resultant phenotype.
3. Note that as a linguistic term “Aslian” refers solely to the Austroasiatic (Mon-Khmer) languages spoken by the Orang Asli and the Maniq (“Sakai”) populations of southern Thailand. It does not refer to the Austronesian (in this case, Malay) dialects spoken by other Orang Asli populations, in the south of the Peninsula.
4. In this issue, see Détroit et al. for a survey of Philippine negrito archaeology, and Reid for an assessment of the negritos’ languages.
5. This would possibly be at odds with Bellwood’s (1993) view, cited below, that the negritos have displayed a primarily northern distribution.
6. For responses to this approach, see Andaya (2002), Bellwood (1993), Bulbeck (2004), Burenhult et al. (2011), and Fix (1995, 2011).

7. For a comprehensive listing of the various negrito populations of southern Thailand and Peninsular Malaysia by an anthropologist who has worked among both, see Nagata (2006).
8. *K* refers to *carrying* capacity; *r*, to the maximal intrinsic *rate* of natural increase (Pianka 1978: 45).
9. For discussion of the differential social and demographic consequences in the peninsula of Semang patri-bias, Malayic matri-bias, and Senoi cognaticism, see Benjamin (1985: 253–258, 2011: 177–180).
10. For Kelantan and neighboring states, see Benjamin (1987: 134–142, 1997: 83–87) and Endicott (1997: 37–40).
11. This ethnonym has been spelled in various ways: Che’ Wong by Malaysian governmental agencies, Chewong by the ethnographer Signe Howell, Ceq Wong by the linguist Nicole Kruspe, and Siwang by the anthropologist Rodney Needham. The designated population is the same in all cases.

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Literature Cited

- Adi Bin Haji Taha. 1985. The re-excavation of the rockshelter of Gua Cha, Ulu Kelantan, West Malaysia. *Fed. Mus. J. N.S.* 30:iii–134.
- Allen, L., H. K. Estrada, G. Lettre et al. 2010. Hundreds of variants clustered in genomic loci and biological pathways affect human height. *Nature* 467:832–838.
- Andaya, L. 2002. Orang Asli and Melayu relations: A cross-border perspective. *Antropol. Indon.* 67:46–68.
- Ang, K. C., M. S. Ngu, K. P. Reid et al. 2012. Skin color variation in Orang Asli tribes of Peninsular Malaysia. *PLoS One* 7:1–7.
- Baer, A. 1999. Review of Oppenheimer’s “Eden in the East,” *Asian Perspect.* 38:257–268.
- Baer, A. 2000. The genetic history of the Orang Asli: Uniting patchwork data. *Indo-Pacific Prehistory Assoc. Bull.* 19:3–10.
- Bauer, C. 1992. Mon–Aslian contacts. *Bull. Sch. Oriental Afr. Stud.* 55:532–537.
- Becker, N. S. A., P. Verdu, B. Hewlett et al. 2010. Can life history trade-offs explain the evolution of short stature in human pygmies? A response to Migliano et al. (2007). *Hum. Biol.* 82:17–27.
- Bellwood, P. 1993. Cultural and biological differentiation in Peninsular Malaysia: The last 10,000 years. *Asian Perspect.* 32:37–60.
- Benjamin, G. 1976. Austroasiatic subgroupings and prehistory in the Malay Peninsula. In *Austroasiatic Studies, Part I*, P. N. Jenner, L. C. Thompson, and S. Starosta, eds. Honolulu: University Press of Hawai’i, 37–128.
- Benjamin, G. 1983. Language map with notes: “Peninsular Malaysia.” In *Language Atlas of the Pacific Area*, Pt. 2, S. A. Wurm and S. Hattōri, eds. Pacific Linguistics C67. Canberra: Australian Academy of the Humanities.
- Benjamin, G. 1985. In the long term: Three themes in Malayan cultural ecology. In *Cultural Values and Human Ecology in Southeast Asia*, K. L. Hutterer, A. T. Rambo, and G. Lovelace, eds. Ann Arbor: Center for South and Southeast Asian Studies, University of Michigan, 219–278.
- Benjamin, G. 1986. Between isthmus and islands: Reflections on Malayan palaeo-sociology. Department of Sociology Working Papers 71. Singapore: National University of Singapore.
- Benjamin, G. 1987. Ethnohistorical perspectives on Kelantan’s prehistory. In *Kelantan Zaman Awal: Kajian Arkeologi dan Sejarah di Malaysia*, Nik Hassan Shuhaimi bin Nik Abdul Rahman, ed. Kota Bharu: Perpaduan Muzium Negeri Kelantan, 108–153.

- Benjamin, G. 1997. Issues in the ethnohistory of Pahang. In *Pembangunan Arkeologi Pelancongan Negeri Pahang*, Nik Hassan Shuhaimi bin Nik Abdul Rahman, Mohamed Mokhtar Abu Bakar, Ahmad Hakimi Khairuddin et al., eds. Pekan: Muzium Pahang, 82–121.
- Benjamin, G. 2002. On being tribal in the Malay World. In *Tribal Communities in the Malay World: Historical, Social and Cultural Perspectives*, G. Benjamin and C. Chou, eds. Leiden and Singapore: International Institute for Asian Studies and Institute of Southeast Asian Studies, 7–76.
- Benjamin, G. 2011. Egalitarianism and ranking in the Malay World. In *Anarchic Solidarity: Autonomy, Equality and Fellowship in Southeast Asia*, K. S. Sillander and T. Gibson, eds. New Haven, CT: Yale University Southeast Asia Studies, 170–201.
- Benjamin, G. 2013. The Aslian languages of Malaysia and Thailand: An assessment. In *Language Documentation and Description*, Vol. 11, P. K. Austin and S. McGill, eds. London: Endangered Languages Project, School of Oriental and African Studies, 136–230.
- Bernstein, R. M., and N. J. Dominy. 2013. Mount Pinatubo, inflammatory cytokines, and the immunological ecology of Aeta hunter-gatherers. *Hum. Biol.* 85:231–250.
- Blagden, C. O. 1906. Language. In *Pagan Races of the Malay Peninsula*, Vol. 2, W. W. Skeat and C. O. Blagden, eds. London: Macmillan, 379–775.
- Blevins, J. 2007. A long-lost sister of Proto-Austronesian? Proto-Ongan, mother of Jarawa and Onge of the Andaman Islands. *Oceanic Linguist.* 46:154–198.
- Blust, R. 1981. Linguistic evidence for some early Austronesian taboos. *Am. Anthropol.* 83:285–319.
- Blust, R. 2013. Terror from the sky: Unconventional linguistic clues to the negrito past. *Hum. Biol.* 85:401–416.
- Bongaarts, J. 1980. Does malnutrition affect fecundity? A summary of evidence. *Science* 208:564–569.
- Bulbeck, D. 1981. Continuities in Southeast Asian evolution since the late Pleistocene. M.A. diss. Canberra: Australian National University.
- Bulbeck, D. 1985. The 1979 Gua Cha skeletal material. *Fed. Mus. J. N.S.* 30:appx. 2.
- Bulbeck, D. 2004. Indigenous traditions and exogenous influences in the early history of Peninsular Malaysia. In *Southeast Asia: From Prehistory to History*, I. Glover and P. Bellwood, eds. London: RoutledgeCurzon, 314–336.
- Bulbeck, D. 2011. Biological and cultural evolution in the population and culture history of *Homo sapiens* in Malaya. In *Dynamics of Human Diversity: The Case of Mainland Southeast Asia*, N. J. Enfield, ed. Canberra: Pacific Linguistics, 207–255.
- Bulbeck, D. 2013. Craniodental affinities of Southeast Asia’s “negritos” and the concordance with their genetic affinities. *Hum. Biol.* 85:95–134.
- Bulbeck, D. P. Raghavan, and D. Rayner. 2006. Races of *Homo sapiens*: If not in the southwest Pacific, then nowhere. *World Archaeol.* 38:109–132.
- Burenhult, N. 1996. Deep linguistic prehistory with particular reference to Andamanese. *Dept. Linguist. Wkg. Pap.* (Lund University) 45:5–24.
- Burenhult, N., N. Kruspe, and M. Dunn. 2011. Language history and culture groups among Austroasiatic-speaking foragers of the Malay Peninsula. In *Dynamics of Human Diversity: The Case of Mainland Southeast Asia*, N. J. Enfield, ed. Canberra: Pacific Linguistics, 257–275.
- Chaubey, G., and P. Endicott. 2013. The Andaman Islanders in a regional genetic context: Reexamining the evidence for an early peopling of the archipelago from South Asia. *Hum. Biol.* 85:153–172.
- Cooper, J. M. 1940. Andamanese-Semang-Eta cultural relations. *Q. Bull. Catholic Anthropol. Conf.* 13:29–47.
- Cooper, Z. 2002. *Archaeology and History. Early Settlements in the Andaman Islands*. Delhi: Oxford University Press.
- Cyranowski, D. 2009. Asia populated in one migratory swoop: Large genetic study brings message of ancestral unity. *Nature*, 10 December. doi:10.1038/news.2009.1139.
- Dallos, C. 2011. *Roots of Inequality: Social Change among Newly Sedentary Lanoh Hunter-Gatherer Traders of Peninsular Malaysia*. Toronto: University of Toronto Press.

- Delfin, F., J. M. Salvador, G. C. Calacal et al. 2011. The Y-chromosome landscape of the Philippines: Extensive heterogeneity and varying genetic affinities of Negrito and non-Negrito groups. *Eur. J. Hum. Genet.* 19:224–230.
- Détroit, F., J. Corny, E. Z. Dizon, and A. S. Mijares. 2013. “Small size” in the Philippine human fossil record: Is it meaningful for a better understanding of the evolutionary history of the negritos? *Hum. Biol.* 85:45–66.
- Diffloth, G. 1975. Les langues mon-khmer de Malaisie: Classification historique et innovations. *Asie du Sud-Est et Monde Insulindien* 6:1–19.
- Diffloth, G. 2005. The contribution of linguistic palaeontology to the homeland of Austroasiatic. In *The Peopling of East Asia: Putting Together Archaeology, Linguistics and Genetics*, L. Sagart, R. Blench, and A. Sanchez-Mazas, eds. London: Routledge Curzon, 77–80.
- Donohue, M., and T. Denham. 2011. Languages and genes attest different histories in Island Southeast Asia. *Oceanic Linguist.* 50:536–542.
- Duckworth, W. L. H. 1934. Human remains from rock-shelters and caves in Perak, Pahang, Perlis and Selinsing. *J. Malayan Branch Roy. Asiatic Soc.* 12:149–167.
- Dunn, M., N. Burenhult, N. Kruspe et al. 2011. Aslian linguistic prehistory: A case study in computational phylogenetics. *Diachronica* 28:291–323.
- Dunn, M., N. Kruspe, and N. Burenhult. 2013. Time and place in the prehistory of the Aslian languages. *Hum. Biol.* 85:383–400.
- Endicott, K. M. 1972. *An Analysis of Malay Magic*. Oxford: Oxford University Press.
- Endicott, K. M. 1984. The association of “negritos” and foraging in the Malay Peninsula. Paper presented to the Conference on Ethnicity and the Control of Natural Resources, Ann Arbor, MI, 22–24 August.
- Endicott, K. M. 1997. Batek history, interethnic relations, and subgroup dynamics. In *Indigenous Peoples and the State: Politics, Land and Ethnicity in the Malayan Peninsula and Borneo*, R. L. Winzeler, ed. Yale Southeast Asian Studies Monograph 46. New Haven, CT: Yale University Southeast Asian Studies, 30–50.
- Enfield, N. J., ed. 2011. *Dynamics of Human Diversity: The Case of Mainland Southeast Asia*. Canberra: Pacific Linguistics.
- Fix, A. 1977. *The Demography of the Semai Senoi*. Anthropological Papers 62. Ann Arbor: Museum of Anthropology, University of Michigan.
- Fix, A. 1982. Genetic structure of the Semai. In *Current Developments in Anthropological Genetics*, Vol. 2, M. H. Crawford and J. H. Mielke, eds. New York: Plenum, 179–204.
- Fix, A. 1995. Malayan paleosociology: Implications for patterns of genetic variation among the Orang Asli. *Am. Anthropol.* 97:313–323.
- Fix, A. 2011. Origin of genetic diversity among Malaysian Orang Asli: An alternative to the demic diffusion model. In *Dynamics of Human Diversity: The Case of Mainland Southeast Asia*, N. J. Enfield, ed. Canberra: Pacific Linguistics, 277–291.
- Gomes, A. G. 1982. Ecological adaptation and population change: Semang foragers and Temuan horticulturalists in West Malaysia. East-West Environment and Policy Research Institute Research Report 12. Honolulu: East-West Center.
- Gomes, A. G. 1983. Demography and environmental adaptation: A comparative study of two Aboriginal populations in West Malaysia. In *Population Change in Southeast Asia*, W. F. Arce and G. C. Alvarez, eds. Singapore: Institute of Southeast Asian Studies, 391–447.
- Groves, C. 1978. Biology and culture in the study of agricultural origins. *Canberra Anthropol.* 12:27–33.
- Guillot, E. G., M. K. Tumonggor, J. S. Lansing et al. 2013. Climate change influenced female population sizes through time across the Indonesian archipelago. *Hum. Biol.* 85:135–152.
- Harrower, G. 1933. Skeletal remains from Kuala Selinsing excavations. *J. Malayan Branch Roy. Asiatic Soc.* 11:190–210.
- Heyer, E., M. Georges, M. Pachner, and P. Endicott. 2013. Genetic diversity of four Filipino negrito populations from Luzon: Comparison of male and female effective population sizes and differential integration of immigrants in Aeta and Agta communities. *Hum. Biol.* 85:189–208.

- Hochegger, H. 1963. Introduction. In *The Negritos of the Philippines*, H. Hochegger and J. M. Garvan, eds. Wiener Beiträge zur Kulturgeschichte und Linguistik, Band XIV. Horn-Wien: Verlag Ferdinand Berger, 1–5.
- HUGO Pan-Asian SNP Consortium. 2009. Mapping human genetic diversity in Asia. *Science* 326:1,541–1,545.
- Jeschke, J. M., W. Gabriel, and H. Kokko. 2008. R-Strategist/K-Strategists. In *Encyclopedia of Ecology*, S. E. Jørgensen and B. Fath, eds. Kidlington: Elsevier, 3,113–3,122.
- Jinam, T. A., L.-C. Hong, M. E. Phipps et al. 2012. Evolutionary history of continental Southeast Asians: “Early train” hypothesis based on genetic analysis of mitochondrial and autosomal DNA data. *Mol. Biol. Evol.* 29:3,513–3,527.
- Jinam, T. A., M. E. Phipps, N. Saitou, and The Hugo Pan-Asian SNP Consortium. 2013. Admixture patterns and genetic differentiation in negrito groups from West Malaysia estimated from genome-wide SNP data. *Hum. Biol.* 85:173–188.
- Jonsson, H. 2011. Ethnology and the issue of human diversity in mainland Southeast Asia. In *Dynamics of Human Diversity: The Case of Mainland Southeast Asia*, N. J. Enfield, ed. Canberra: Pacific Linguistics, 109–122.
- Kashyap, V. K., T. Sitalaximi, B. N. Sarkar et al. 2003. Molecular relatedness of the aboriginal groups of Andaman and Nicobar Islands with similar ethnic populations. *Int. J. Hum. Genet.* 3:5–11.
- Lansing, S. J., M. P. Cox, T. A. de Vet et al. 2011. An ongoing Austronesian expansion in Island Southeast Asia. *J. Anthrop. Archaeol.* 30:262–272.
- Leroi, A. M. 2005. A family tree in every gene. *J. Genet.* 84:3–6.
- Li, B. 2012. An exploratory analysis of combined genome-wide SNP data from several recent studies. Preprint, <http://arxiv.org/abs/1101.5519>.
- Liu, E. 2010. Genetics: Building a multi-national family tree. Available at www.research.a-star.edu.sg/research/6109, accessed 17 June 2013.
- Lye Tuck-Po. 2013. Making friends in the rainforest: “Negrito” adaptation to risk and uncertainty. *Hum. Biol.* 85:417–444.
- Macdonald, C. 1988. Bons et mauvais coups de tonnerre. *L’Homme* 106/107:58–74.
- Martin, R. D. 2007. The evolution of human reproduction: A primatological perspective. *Yearbook of Physical Anthropol.* 50:59–84.
- Migliano, A. B., I. G. Romero, M. Mespalu et al. 2013. Evolution of the pygmy phenotype: Evidence of positive selection from genome-wide scans in African, Asian, and Melanesian pygmies. *Hum. Biol.* 85:251–284.
- Migliano, A. B., L. Vinicius, and M. M. Lahr. 2007. Life history trade-offs explain the evolution of human pygmies. *Proc. Natl. Acad. Sci. USA* 104(51):20,216–20,219.
- Migliano, A. B., L. Vinicius, and M. M. Lahr. 2010. Why are pygmies so short? A defense of Migliano’s hypothesis. *Hum. Biol.* 82:109–113.
- Murphy, R. F. 1957. Intergroup hostility and social cohesion. *Am. Anthropol.* 59:1018–1035.
- Nagata, S. 2006. Subgroup “names” of the Sakai (Thailand) and the Semang (Malaysia): A literature survey. *Anthropol. Sci.* 114:45–57.
- Needham, R. 1964. Blood, thunder and the mockery of animals. *Sociologist* 14:136–149.
- Nichols, J. 1992. *Linguistic Diversity in Space and Time*. Chicago: University of Chicago Press.
- Perry, G. H., and N. J. Dominy. 2008. Evolution of the human pygmy phenotype. *Trends Ecol. Evol.* 24:218–225.
- Peterson, J. T. 1977. The merits of margins. In *Cultural-Ecological Perspectives on Southeast Asia: A Symposium*, W. Wood, ed. Southeast Asia Series 4. Athens: Ohio University Center for International Studies.
- Peterson, J. T. 1978. Hunter-gatherer/farmer exchange. *Am. Anthropol.* 80:335–351.
- Pianka, E. R. 1978. On *r*- and *K*-selection. In *Readings in Sociobiology*, T. H. Clutton-Brock and P. H. Harvey, eds. San Francisco: W. H. Freeman, 45–51.

- Rambo, A. T. 1988. Why are the Semang? Ecology and ethnogenesis in Peninsular Malaysia. In *Ethnic Diversity and the Control of Natural Resources in Southeast Asia*, A. T. Rambo, K. Gillogly, and K. L. Hutterer, eds. Ann Arbor: Center for South and Southeast Asian Studies, 19–35.
- Schebesta, P. 1936. Einheit, Ursprung und Stellung der Pygmäen in der Geschichte der Menschheitsentwicklung. *Anthropos* 31:659–671.
- Schebesta, P. 1952. *Die Negrito Asiens: Geschichte, Geographie, Umwelt, Demographie und Anthropologie*. Mödling: St.-Gabriel Verlag.
- Schebesta, P. 1973. *Among the Forest Dwarfs of Malaya*. Kuala Lumpur: Oxford University Press. [First published in 1927 as *Bei den Urwaldzwerge von Malaya*, Leipzig: Brockhaus, and in English translation, 1928, by Hutchinson.]
- Scholes, C., K. Siddle, A. Ducourneau et al. 2011. Genetic diversity and evidence for population admixture in Batak Negritos from Palawan. *Am. J. Phys. Anthropol.* 146:62–72.
- Shellabear, W. G., ed. 1896. *Sejarah Melayu* [Jawi text]. Singapore: American Mission Press.
- Sieveking, G. de G. 1956. The iron age collections of Malaya. *J. Malayan Branch Roy. Asiatic Soc.* 29:79–138.
- Sims-Williams, P. 1998. Genetics, linguistics, and prehistory: Thinking big and thinking straight. *Antiquity* 72:505–528.
- Soares, P., J. A. Trejaut, J.-H. Loo et al. 2008. Climate change and postglacial human dispersals in Southeast Asia. *Mol. Biol. Evol.* 25:1,209–1,218.
- Stock, J. T. 2013. The skeletal phenotype of “negritos” from the Andaman Islands and the Philippines relative to global variation among hunter-gatherers. *Hum. Biol.* 85:67–94.
- Thangaraj, K., L. Singh, A. G. Reddy et al. 2003. Genetic affinities of the Andaman Islanders, a vanishing human population. *Curr. Biol.* 13:86–93.
- Tristram, H. 2008. Why don’t the English speak Welsh? In *Britons in Anglo-Saxon England*, N. Higham, ed. Woodbridge, UK: Boydell Press, 192–214.
- Wang, H.-W., B. Mitra, T. K. Chaudhuri et al. 2011. Mitochondrial DNA evidence supports north-east Indian origin of the aboriginal Andamanese in the Late Paleolithic. *J. Genet. Genomics* 38:117–122.
- Wells, J. C. K., and J. T. Stock. 2011. Re-examining heritability: Genetics, life history and plasticity. *Trends Endocrinol. Metab.* 22:421–428.
- Williamson, S. H., M. J. Hubisz, A. G. Clark et al. 2007. Localizing recent adaptive evolution in the human genome. *PLoS Genet.* 3:901–915.