

<h1> NOT JUST SKIN DEEP: IDEAS OF RACIAL DIFFERENCE IN GENETIC STUDIES ON ORANG ASLI FROM THE 1950S¹

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<h2> INTRODUCTION

This chapter deals with the blood-group studies carried out by medical doctors Ivan Polunin and P.H.A. Sneath in 1950s Malaya and connects the application of this new technology to earlier ways of classifying indigenous people. The first part of this chapter traces the development of classification schemes for indigenous peoples of the Malay peninsula from the 1800s until the 1930s when indigenous people became firmly divided into three groups and separated from Malays. Following the background into the basis and history of the tripartite division of indigenous people, I then delve into the blood-group studies of the 1950s and examine the rationale behind using blood-groups as a basis for a seemingly more objective classification of indigenous groups. The chapter ends with an assessment of the results of blood-group anthropology, and it positions these studies as the precursor to DNA studies of Orang Asli, which have burgeoned in the twenty-first century.

<h2> KNOWING AND CLASSIFYING INDIGENOUS PEOPLE

The tripartite division of Malaysia's indigenous people, or Orang Asli, was not necessarily an obvious or objective classification even though it has been, as yet, the most long-lasting. The basic framework of the three-way division of indigenous people was presented by British anthropologist W.W. Skeat and linguist C.O. Blagden in their influential work, *Pagan Races of the Malay Peninsula* (1906). Yet, prior to and even during the publication of *Pagan Races*, there were competing theories of classification that went in and out of favour among Western scholars who were interested in and knowledgeable on indigenous people and Malays. As will

become clear, determining who was indigenous and how many indigenous groups there were entailed gradually drawing intellectual boundaries between a conception of “native” Malays and of “indigenous” people who were seen as different from Malays.

Not surprisingly then, the beginnings of classifying indigenous people in the Malay Peninsula began in tandem with classifying Malays. An influential theory about the number of original peoples of the Malay Archipelago was put forth by colonial scholar and officer John Crawfurd in *History of the Indian Archipelago* (1820). Crawfurd hypothesized that there were two indigenous groups in the Malay Archipelago, the “brown” represented by the Balinese and the “black” represented by people from New Guinea. The latter category also included “Oriental Negroes” or “negritos” who were found in the hill regions of Kedah on the Malay Peninsula as reported by another British scholar, John Leyden (1811: 218; Manickam, 2009: 69).

Greater familiarity with the Malay Peninsula came along with the establishment of the Straits Settlements in 1826 which comprised the British colonies of Penang, Singapore and Melaka. From these island and coastal bases, British colonial officers became more involved in the events in the Malay states on the peninsula and came to know better various segments of its inhabitants. In the process of arguing for the independence of one of the Malay states, Kedah, from the strong northern power of Siam, East India Company officer John Anderson inserted observations on the “aboriginal inhabitants” of the Malay Peninsula whom he said included not only “negrito” groups such as Semang, but also non-negrito groups, for instance, “Sakei”, “Orang Bukit [People of the Hills]” and “Orang Laut [People of the Seas]” (1824: xxx–i). Anderson’s formulation changed the way the peoples of the Malay Peninsula were thought of in two crucial ways. Firstly, he excluded Malays from “aboriginal inhabitants”, reinforcing the view of them as “native” but not “indigenous”, and secondly, he expanded the “aboriginal” category to include people not classified as negrito (Manickam, forthcoming 2014).

In this early period of classification, scholars used a range of determining factors to rationalise the inclusion or exclusion of people under the “aboriginal” or “Malay” heading. Outward physical characteristics such as skin, hair and eye colour, the character of the hair (variations between straight and curly), as well as stature were used to distinguish races along with other criteria such as language, culture and economic activity, which may sometimes be of greater importance than the physical characteristics. The expansion of the “aboriginal” category by Anderson is one example of where scholars highlighted the latter characteristics, resulting in the inclusion of non-negrito people as aboriginal. Malays were still distinguished from both negrito and non-negrito indigenous people by virtue of perceived differences in culture, religion and physical characteristics. Yet, with the development of the field of anthropology, to which the study of indigenous people of the Malay Peninsula was most frequently connected, there grew the emphasis on physical characteristics as the determining factors of racial classification (Turnbull 2008: 212). At least outwardly, scholars took to justifying their classifications based on physical attributes of indigenous people, a practice that privileged observations and measurements of the physical body as somehow objectively indicating similarity or difference from other bodies.

The tripartite classification of indigenous people was likewise justified on the basis of physical anthropological data even though other factors played roles in suggesting and reinforcing the classification. The physical anthropological data used to support Skeat’s classification and the reports accompanying the data often did not give clear-cut indications as to racial grouping or affiliation. Instead, knowledge from the colonial and anthropological encounter, such as which individuals were included in which societies regardless of their physical characteristics, was often the overriding factor (Manickam 2012: 299). Nevertheless, Skeat insisted that any classification must be based on physical measurements without relying on criteria such as social standing or language in the deliberations. Indeed, he named each

indigenous race based on the quality of hair associated with the particular race: either “woolly-haired” Negritos, “wavy-haired” Sakai or “straight-haired” Jakun (1902: 124–7).

Skeat’s classification was partially based on that by physical anthropologist Rudolf Martin, who was hesitant in asserting a third indigenous race and preferred “mixed races” to Skeat’s “Jakun” (Martin 1905; Skeat 1902: 124, n.1). The difference between Skeat’s and Martin’s ideas on the division of races is but one indication that Skeat’s racial schema was not agreed upon by many scholars. Others had their own classifications, for instance anthropologists Nelson Annandale and H.C. Robinson who also conducted research on indigenous peoples. Specifically, they found it hard to distinguish between Sakai and Semang Negritos and expressed reservations at the validity of the Sakai category (Annandale and Robinson 1902: 413). R.J. Wilkinson, author of several books on Malays, indigenous people and Malaya, wrote in 1926 that there are “five distinct tribes or races of aborigines; the Semang, the Northern Sakai, the Central Sakai, the Besis and the Jakun”, which are distinguished by language, race and culture (Wilkinson 1926: 8). Another distinction between “tame” and “wild” aborigines, respectively indicating those who were more and less acculturated to Malay lifestyles, did not become an anthropological category even though Russian anthropologist N. Miklouho-Maclay suggested that it was an important distinction in 1878 (Manickam 2012: 291; Miklouho-Maclay 1878: 211, n. 1). Despite other competing theories, by the end of the colonial period of British Malaya, the tripartite classification was dominant regardless of whether scholars found the classification to be sound based primarily on physical measurements, on observed lifeways or a mixture of both (Manickam, forthcoming, 2014).

<h2> TOWARDS NEW METHODS—BLOOD-GROUP ANTHROPOLOGY

In 1950s Malaya, a new form of physical anthropological measurement was added to the earlier list of outward bodily characteristics, that of blood-groups. Blood-group

testing had been conducted on a group of indigenous people in Malaya in the 1930s, but it was not until after the end of the Japanese Occupation (1941–1945) and the resumption of British military command in Malaya, in the midst of preparing Malaya for some form of self-governance or independence, that these studies were continued and conclusions about the place of indigenous people within a wider humanity were made based on the findings (Green 1949: 130–2).

The interest in distinguishing people based on blood properties can be traced to the work of serologists Ludwik and Hanka Hirschfeld in Europe. In 1919, the pair published their findings on the testing of blood from soldiers in Salonika, Greece during the end of World War I. Earlier, in 1900, Austrian Karl Landsteiner discovered the ABO blood groups, and Hirschfeld himself conducted further research into its methods of inheritance (Hirschfeld and Hirschfeld 1922: 675–9; Mourant, 1958: 1). In their 1919 article, the Hirschfeld's described how blood groups could be of assistance in "the solution of the race problem". This problem was one of finding a way to distinguish differences within the human species based on blood. They suggested that scholars "make use of the properties of blood... to form an anthropological criterion for the discovery of hitherto unknown and anatomically invisible relationships between different races" (1922: 675, 677). Based on groupings of races (for example, "English", "French", "German", "Turk", "Jew", "Negro" and "Indian") the proportion of Group A to Group B blood was calculated, and the number called the Biochemical Racial Index was used as a means of categorizing races. Depending on the proportion of A and B in the overall sample, the Hirschfelds distinguished types: "European type" which had a higher percentage of A, "Intermediate Type" with a more even distribution of A and B, and the "Asio-African Type" of higher B (678). Biological anthropologist and historian Jonathan Marks calls racial serology "the first generation of human population genetics" (2012: S164). While the Hirschfelds did not rank the types, maintaining the index as a

descriptor of different frequencies, other scientists super-imposed a ranking on the index, such that the European type was considered superior to the latter two.

In Malaya, one of the first known blood-group studies to be conducted on indigenous peoples was in 1931. In the 1949 publication of the *Bulletin of the Raffles Museum*, R. Green, Senior Bacteriologist at the Institute of Medical Research, wrote on the results of blood tests on samples taken from 117 Semai indigenous people in the state of Perak (Green 1949: 130–2; IMR 1951: 9, 33). The samples were taken already in 1931, but results of the test appear not to have been published until after the war.² The results showed a high frequency of blood type O, which was attributed to the “general conception” that blood-group O is usually the blood type of “island folk or [those who] have otherwise been isolated (sic)” (Green 1949: 130–2). Based on this frequency, connections were drawn between these indigenous people and other groups such as Tho and Muongs in mainland Southeast Asia and Tobas in Sumatra. Green reiterated, however, that “Blood grouping... is considered an accessory only to other anthropological factors, in assessing relationships between people” and he relied heavily on the pre-World War II work of anthropologists such as Ivor H.N. Evans, Father Paul Schebesta and H.D. Noone in explaining who the Semai were (Green 1949: 130–2).

This post-war phase of physical anthropology overlapped with, and was different from, the endeavours during the colonial period in significant ways. The measuring that took place from the 1800s to the 1930s primarily involved collecting measurements on outwardly accessible parts of the body such as the height of individuals, the length of bones in the legs and arms, and a variety of skull measurements in addition to skin, eye and hair colour. One of the hallmarks of this period of measuring was the assumption of the inferiority of indigenous peoples, and that taking bodily measurements, besides being a form of data collection such as making observations on lifeways, would also “show” such inferiority. The post-war phase is characterized by the beginnings of studying difference that was not just skin

deep. The fact that the blood and cells of people could be studied and differentiated, and that those differentiations could again be grouped according to race, was a new technique of studying human difference which began to take the name of blood-group anthropology and that later scholars would call racial serology (Marks 2012: S164; Mourant 1947: 139–44). Unlike many scientists operating during the colonial period, the scholars writing about indigenous blood-groups in post-war Malaya were not interested in ranking the groups according to their perceived inferiority or superiority vis-à-vis other groups. They were, however, interested in using blood-groups as a marker of racial difference, and they approached blood-groups much like they approached hair characteristics: as indications of a racial affiliation with those who had similar blood-group frequencies and racial divergence from others who had different blood-group frequencies. Significantly, the racial categories that they used were those in common usage, which were based on a mixture of external physical features and cultural ones. They did not propose that clusters of blood group frequencies suggested entirely new groupings of races.

The main study of indigenous blood-groups was conducted by Dr Ivan Polunin and P.H.A. Sneath in a series of articles from 1952 to 1954. Polunin was then part of the Department of Social Medicine and Public Health, University of Malaya in Singapore. Born in Britain to British and Russian parents, he came to Singapore in 1948 and settled there until his death in 2010 (NUS Museum 2012; See 2010). In 1950, Polunin was granted research funds from the University of Malaya “with a free hand to investigate diseases of Malayan aborigines” (Polunin 1952: 70. See Figure 1). Along with Sneath, a British microbiologist stationed in Malaya at the same time, the two conducted research and wrote articles on the blood-groups of aborigines that would later be used by the pioneer of blood-group anthropology, A.E. Mourant in his worldwide studies on blood-group distribution (Jones and Grant 2011; Mourant *et. al.* 1958; Polunin and Sneath 1953; Sneath 1954). Mourant was, at the time, Director of the Medical Research Council Blood Group Research Laboratory in London and

well-known for his work on blood groups. He discovered and co-discovered several blood factors and wrote extensively on blood groups of racial groups around the world (Wellcome Library, accessed October 2012). The collection of blood in Malaya, however, was not initially a matter of scholarly curiosity. Rather, it was intertwined with the history of post-war Malaya and the development of health-care of the Malayan population. As such, the research on blood-groups and its relevance to anthropology was a minor project related to the over-arching endeavour of determining the health of Malaya's people.

<h2> DRAWING ABORIGINAL BLOOD

After World War II, research into various diseases and aspects of health of the Malayan population resumed under the medical department of the Federation of Malaya and the Institute for Medical Research (IMR) in Kuala Lumpur. The IMR was founded in 1900 as the Kuala Lumpur Pathological Institute to study the diseases which affected Malaya's population before it became known as the Institute for Medical Research in 1901 (IMR 1951: 37–40). After the Japanese Occupation, the British reoccupied Malaya in September 1945, with the British Military Administration (BMA) governing Malaya until March 1946 (Harper 1999: 62). During this time, the Nutrition Team of the BMA was based at the institute and tasked with ascertaining the nutritional levels and requirements in towns and rubber estates. In addition to this, inoculation against cholera, typhoid and rabies was also a priority, and great quantities of vaccine were prepared (IMR 1951:75–6).

The Federation of Malaya was created in February 1948, with the Sultans retaining their sovereignty but a British High Commissioner appointed with overall authority. In June that year, a state of emergency was declared by High Commissioner Sir Edward Gent due to attacks by the Malayan Communist Party and associated groups against the British colonial government in Malaya (Andaya and Andaya 1989: 256–8; Leary 1989: preface). Throughout the late-1940s, research into

diseases and public health initiatives continued, with reports of the Medical Department of the Federation of Malaya showing the efforts of intervention in public health by producing photographs of Malay school girls drinking milk and another of a man inoculating a young indigenous woman (MacGregor 1952: facing title page, facing p. 24). It was during the ten to 15 years after the war that blood-group studies on Orang Asli were mostly carried out as one of a battery of tests on blood in order to determine if there were problems of nutrition and public health. Crucially, there were a few medical practitioners who believed in the value of blood-types to anthropological studies, and they wrote on racial relationships and origins based on blood-type studies and older anthropological material.

The first mention of taking blood of indigenous peoples specifically for research purposes after the war was in 1950. In that year, the IMR began a hematological survey in Malaya primarily for public health reasons. It was an anaemia survey of rural communities that sought to determine the hemoglobin levels in various “social and racial groups”, and to distinguish people who had iron-deficiency anaemia from those who suffered from nutritional megaloblastic anaemia (Struthers, 1953: 30).³ Approximately a thousand people were examined, with the subjects comprising “Malays, Tamils and Senoi and Negrito-Senoi aborigines” (Struthers 1953: 30). In 1951, the results of the report indicated that Indians and Negrito-Senoi suffered from the most severe types of anaemia, and treatment was provided (Gross 1953: 19).

Further investigations into the blood-groups of indigenous peoples from an anthropological perspective were carried out specifically by Polunin and Sneath. Under the University of Malaya grant and in association with the anthropological blood-grouping programme organized by Mourant, they attempted to answer many of the same questions asked by colonial anthropologists: what were the divisions of the indigenous peoples of Malaya and what were their connections to indigenous groups in places such as Africa and Australia. The two men conducted tests on four

indigenous groups in Malaya and Borneo (“Negritos”, “Malayan Senoi”, “Aboriginal Malay” and “Land Dayaks”) and they expressed interest in addressing how blood-group typing would add to determining racial groups, and the evolutionary question of how “races and subspecies would be produced” (Sneath 1954: 28). The people were tested for several blood-group systems, such as ABO, MNS, Rhesus and Kell, with the data concerning the ABO system analysed in greatest detail compared to the other systems (Polunin and Sneath 1953: 221–2).

Old questions were asked with renewed vigour with the addition of new technology to possibly provide a different answer than what scientists came to before. Most notably, the question of the connections between Negritos of Malaya and other Negrito populations in Southeast Asia and Africa once again became a subject of interest. In 1820, Crawfurd considered that the Negritos of Southeast Asia might have been the descendants of a wrecked slave ship from Africa, but he also entertained the idea of a connection deeper in time that hinted at waves of human migration into the Malay Archipelago with Negritos being one of the earliest arrivals to the region (1820: 27–30). The Pan-Negrito theory, the concept that all indigenous peoples of Malaya were of Negrito origin and were connected to others with “negrito” physical characteristics, was dismissed by Skeat in 1906 as “absurd” (1906: 24–5). In the period immediately before the start of World War II, Negritos took centre stage in debates about human migration in the work of Paul Schebesta (1952), who studied African and Asian “Pygmies” or “Negritos” and explicitly connected the two Negrito groups in the two continents. Schebesta’s engaging writings on Negritos led to a rekindling of interest among anthropologists in the subject (Manickam, forthcoming 2014). In the 1950s, blood-grouping, as the latest technique at the disposal of scientists, was applied to this question as well as other general questions concerning connections between the other two indigenous categories and peoples around the world.

Polunin and Sneath's blood-group anthropology results, published in 1953, did not remake racial boundaries nor draw completely new ones. While the tone of their writing indicated that they were open to discovering new categories, they only reinscribed old ones according to blood-group. Despite the decline in the view that races could be ranked as superior and inferior during the 1950s, the use of physical characteristics as indicators of human connections and "race" remained, thereby connecting blood-group anthropology to pre-war racial scientists. Idealistically perhaps, Mourant, the authority on blood-group anthropology and director of the blood-group programme, wrote that blood-group classification gives scientists "objective criteria far removed from the traditional marks of 'race'" which were also "almost completely free from the effects of subjective judgments". "Though non-scientific racialism is by no means dead", Mourant added, "a scientific anthropology is coming into being" which will be established based partly on blood groups (Mourant 1954: 1). The main hope behind collecting anthropological material such as blood group types and calculating gene frequencies was in order to "enable far-reaching conclusions to be drawn regarding the past migrations of the peoples concerned", indeed the aim of pre-war anthropology in Malaya (Mourant 1954: 139).

Though a scientific study of race that was free from prejudice was perhaps the hope and belief of many practitioners concerning this new method, the data were usually subject to agreement with the earlier anthropology. For Malaya, Polunin and Sneath's results were unsurprising in that they were mostly based on physical anthropological findings and categories from the colonial period. Yet, this is also the reason why the results are problematic. Other than the general finding of the prevalence of blood-group B in Asia, more specific data on individual groups were placed in the previous anthropological frame of reference with hardly any deviation. While purporting to investigate race through blood-typing, race was instead used as a taken-for-granted category that was laid over the data (Marks 2012: S164, S167). For indigenous people of Peninsular Malaya, Skeat's basic tripartite division between

“dark-skinned and wooly-haired” Negritos, “wavy-haired” Senoi and “lank-haired” Aboriginal Malays, though slightly altered in name to “Negritos”, “Malayan Senoi” and “Aboriginal Malay”, was used as a basis for collecting blood samples, and the data was compared between these already present categories (Polunin and Sneath 1953: 247. See Figure 2).

Possible connections, based on similar blood-group frequencies of other populations or “races”, were posited, but only when such connections were seen to be reasonable or in keeping with the prevailing view of anthropological connections. Where the data coincided with pre-existing assumptions about connections, these results were taken as definitive, yet when the data disagreed with those assumptions, it was assumed to be random or unimportant. Again, the case of Negritos is particularly instructive. Polunin and Sneath noted the complete absence of the sickle-cell trait in Negritos of Malaya, and they cast doubt on the connection to Africans since this trait was supposed to be distinctive of Africans or African ancestry. This fact was highlighted as anomalous to older anthropological reasoning based on outward characteristics, or even that the blood-group data was “conflicting” (Polunin and Sneath 1953: 224). However, in a summary of their findings written by Sneath and published in another journal in 1954, the issue was revived again by his pointing out the similarities in frequency of one of the Rhesus genes between Malaya’s Negritos and Africans. In vague terms, the similar incidence was said to support “the belief that the Negritos and Africans are descended from a *common stock* [emphasis added]”. As to the lack of sickle-cell trait, Sneath wrote that in any case “there is some doubt whether this trait is a safe criterion of African ancestry” (Sneath 1954: 28). Sneath thus appeared to selectively rely on the blood-group data where it was in agreement with former Pan-Negrigo views. Likewise, the similarities between the Senoi ABO frequencies to those of people in India and Burma were taken to mean relationships between these groups, yet ABO similarities between Negritos of Malaya and people in Vietnam, India, Western Europe and people in Africa were seen as

accidental because of the prevailing assumption that these groups did not share a more recent past (Mourant 1954: 112).

Despite the new technology, it was uncertain what the results of blood-group anthropology could have offered that would have been different from the older anthropology. While emphasizing “neutral” characteristics unseen by the naked eye as a basis for racial classification, in a later paragraph Polunin and Sneath note that the “greater stability of the traditional measurements of physical anthropology [as compared to changeable blood-group frequencies] may make them more valuable than gene frequencies in the differentiation of some races” (Polunin and Sneath 1953: 247). Indeed, throughout their report, the older physical anthropological data was the defining and structuring feature of the blood-group data. Hence, it is unclear what place blood-group data was supposed to play in racial identification since, as they argued, “blood-group genes” were different from “genes determining physical characteristics”, and each method would give different classifications (Polunin and Sneath 1953: 247). Moreover, similar to the older physical anthropology, differences, and not similarities, mattered. The ABO blood system was not the only blood system that was known at the time, yet it was preferred to other blood group systems such as M and N since the latter were more similar between populations and was dubbed by Mourant as having no “great anthropological value” (Mourant 1954: 141–2).

Polunin and Sneath’s sympathy towards the peoples they studied is undoubted. Polunin himself continued working with and teaching about indigenous peoples in Singapore, and his dedication to their health is undisputed. Yet, how these two men saw indigenous people in relation to the wider humanity is another question based on their scientific beliefs and practices. In studying Orang Asli in the 1950s, it was unavoidable that scholars relied in pre-war physical anthropology since that was the most recent application of anthropological theories on Orang Asli. However, the goal of the project, to have a non-prejudicial racial classification based on neutral markers, did not take into account the cultural and political underpinnings of racial

science which makes the dream of neutrality when it comes to classification nearly impossible.

<h2> CONCLUSION

The first-half of the twentieth century saw vast changes in the studies of indigenous people of Malaya by European anthropologists and colonial officials. Biological anthropological methods took over in emphasis from earlier studies focussing on indigenous languages. While the outward measuring of bodies took place in the early 1900s, from the 1930s onwards new ways of testing racial provenance became available in the form of blood-group studies which prefigured later, more comprehensive genetic studies of indigenous peoples in Malaya.

Such studies were conducted under immense political and social upheaval. In the thick of the Emergency, Polunin and Sneath were able to conduct tests on indigenous peoples in what could have been treacherous conditions. Yet, Polunin could write that “a good time was had by all”, in reference to indigenous people poking fun at the “strange antics of the medical investigator” (Polunin 1953: 165). In fact, the upheaval caused by the Emergency, much like the rapid development during the colonial period which granted many anthropologists access to little known peoples, brought about new chances to study indigenous peoples. Many of the communities studied by Polunin were newly resettled by the BMA in order to deprive communist insurgents who were based in the jungle of indigenous people’s help, to ensure that indigenous people were not swayed by contact with communists and to protect them from the fighting. Thus, the work of collecting blood samples was made easier due to the subjects being in accessible areas (Polunin 1953: 72–3).

Blood group anthropology is of great importance as a bridge between the first phase of bodily measurements and racial theorizing from the 1800s–1930s, and the most recent spate of studies in the present. In the last 20 years or so, genetic studies on indigenous people of Malaysia and elsewhere have continued to excite the interest

of biologists, pre-historians and politicians alike. These studies are undertaken by local and international researchers who collect biological material, subject the material to tests and computer simulations in order to calculate degrees of similarity or difference from other “populations” based on certain genetic markers (Ang *et. al.* 2011; Hatin *et. al.* 2012). Alan Fix’s article (this volume) analyzes one such study where mtDNA was used to posit a theory of Orang Asli isolation after an initial migration out of Africa. As frequently argued by humanities scholars of science, such studies rarely debunk the assumption of racial difference and essentialisation, with popular reports of such studies still maintaining that there are inherent differences and characteristics between peoples whatever the scientist may believe. Furthermore, in the case of Malaya, the initial grouping of such studies already demonstrates a reliance on popular racial-typecasting and historically-specific anthropological classification that was formed during the colonial period and continually utilized until the present (Manickam, forthcoming 2014). Despite the absence (mostly) of assumptions of inherent inferiority, the present-day studies, like the blood-group analyses of the 1950s, nonetheless exhibit a reliance on material that was formerly steeped in racial rankings.

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Figure 1: Original caption of photo from *Straits Times* (23/12/2010) “Ivan Polunin interviewing tribal woman 1953”

Figure 2: Chart of ABO blood group frequencies presented according to community. Taken from Ivan Polunin and P.H.A. Sneath, “Studies of Blood Groups in South-East Asia”, *The Journal of the Royal Anthropological Institute of Great Britain and Ireland* 83: 2 (1953): 219.

¹ This chapter is partially based on a paper presented at the conference, Asia-Europe Encounters: Intellectual and Cultural Exchanges, 1900–1950 (7–8 December 2012, Singapore), entitled “Drawing Blood at a Time of Emergency: New Studies of Orang Asli during Malaya’s Decolonization”. The author would like to thank Kirk Endicott for his many helpful comments on the chapter.

² It is not known who exactly took the blood tests and the circumstances of the collection.

³ Iron-deficiency anaemia results in fewer or smaller red blood cells, while nutritional megaloblastic anemia is due to deficiency in Vitamin B12 and Folic Acid, resulting in larger than normal blood cells.