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THOMAS L. MARKEY AND JEAN-CLAUDE MULLER

DAYS AMONG THE MERATUS DAYAK: SMOKING TREES FOR TRINKETS OR REVERBERATIONS OF SANSKRIT IN THE JUNGLE OF BORNEO

> "When the people which spread the Brahminical religion and institutions from the valley of the Ganges, extended them, by migration and conquest, over the Indian peninsula, large portions of the primitive population remained unsubdued and unconverted where physical circumstances specially favoured resistance to force and to the pressure of moral influences; and, accordingly, numerous remnants of them are now seen, scattered widely under the most various aspects, and often under highly interesting relations to the dominant people."
>
> Captain S. Chartres Macpherson (Madras Army, late Agent for the Suppression of Meriah Sacrifice and Female Infanticide in the Hill Tracts of Orissa) From his: "An Account of the Religion of the Khonds in Orissa," *Journal of the Royal Asiatic Society of Great Britain & Ireland* (January 1852, Vol. 13, p. 216).

Chance is often the mother of discovery, as was clearly the case with penicillin and as was certainly the case during our days among the Meratus Dayak (September, 2011). For nearly a

year, we had carefully researched, planned and prepared ourselves for a fieldtrip to the Ma'anyan in the Barito River region of Kalimantan (Indonesian Borneo), the nigh legendary presumed progenitors of Malagasy, long a linguistically inferred hypotheses by, pre-eminently, Dahl (e.g. 1938, 1951, 1991) and Adelaar (e.g. 1989, 1995, 2006), but now a genetically confirmed fact; see Hurles et al. (2005), Tofanelli et al. (2009).

However, as the principal investigator was heading for the elevator at the Hotel Victoria on the morning after he had arrived in Banjarmasin he had a chance meeting with a local retired professor of linguistics (who shall remain anonymous).[1] After a long discussion that morning over breakfast as to why *not* to visit the Ma'anyan (now highly modernized and relatively well off, now mainly Muslim with vanishingly few practitioners of Kaharingan animism, now mostly speakers of Bahasa Indonesia, the national "standard" language, and, in any event, "classical" Ma'anyan has by now been well and truly researched),[2] the decision was made to visit the Meratus Dayak instead.[3]

1. Approaching the Dayak in the area of the Meratus Range

The Meratus Dayak are an Austronesian group with a fractional admixture of residual proto-historical Negritos

[1] Anonymity here is to protect "the innocent": the names of guides, informants, shamans, villagers and villages, etc. have all been changed. And here at the very outset, Markey would like to express his very personal unmitigated thanks and appreciation to Stephen L. Zegura for pithy discussions, numerous references and continually inculcating respect for the pragmatics of scientific argumentation. Here, too, kudos should be awarded Jean-Claude Muller for his excellent photography: all of the accompanying images are his work. The authors claim sole responsibility for errors and misunderstandings.

[2] For a preparatory introduction to Ma'anyan, Alexander Adelaar was so very kind and encouraging as to have provided us with a downloadable version of Gudai (1988). We then found Adelaar's review of Malay origins (2004), as well as many of his other contributions to the field, extremely useful.

[3] The Meratus Dayak of South Kalimantan (*Kalimantan Selatan* or colloquially *Kalsel*) are sometimes known as the *Bukit Dayak*, lit. "hill Dayak", but this is regarded as a disparaging appellation bordering on calling them "hillbillies". The Meratus Dayak of Borneo are also not to be confused with the Bukit Dayak of Malaysia.

(Melanesians?, *orang asli* 'the original people') clustered around the northern summits of the Meratus Range in South Kalimantan; see Reich et al. (2011). They speak a pidgin-derived Dayak variant of Banjar Malay that is sometimes classified as a descendant of the Proto-Malayo-Sumbawan clade and that has been highly influenced by Bahasa Indonesia.[4]

Meratus Dayak liturgical language/shamanic chants conserve archaisms that are, however, largely unintelligible to Banjarese and Bahasa Indonesia speakers, and basilectal Meratus Dayak shares perhaps 20% of its vocabulary with Ngaju; cf., for example, MD *koman* 'to eat' = Ngaju *kuman* vs. BI/Banjarese *makan*.

All of our arrangements had been made many months in advance through Lucas Zwaal, the highly efficient and extremely helpful owner-director of De'gigant Tours (Samarinda, Kalimantan), who had obtained a driver and a guide/interpreter for us. Our guide/interpreter, a native of Banjarmasin who has guided strangers throughout rural Kalimantan for nearly twenty years now and whom we later dubbed Captain Marvel, immediately and ingeniously made new arrangements, and so we abandoned the Ma'anyan completely and went off on a six hour drive to the trailhead at Loksado, where we waved goodbye to our driver and began a long, steamy hike led by Captain Marvel into a roadless, largely unelectrified realm of seductively lovely jungle and our first village/longhouse homestay.

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[4] Throughout, MD abbreviates Meratus Dayak and BI abbreviates Indonesian (*Bahasa Indonesia*). MD and BI forms cited here are written in BI orthography, as seems to be the tradition in Indonesian studies, rather than attempting some sort (broad or narrow) of IPA representation. Cf., for example, BI *tidur* 'to sleep' vs. MD *goring* 'to sleep' = Banjarese *guring* 'id.'. BI *garam* 'salt' vs. MD *uya* 'salt' = Banjarerse *uyah* 'id.'. BI *kiri* 'left' vs. MD *kiwa* 'left' = Banjarerse *kiwa* 'id.'. BI *ikan* 'fish' (cf. Iban *ikan* 'id.', Baktaqiq-Sara/Tiok *iktan*) < Proto-Austronesian **Sikan*) vs. MD *iwak* 'fish (Javanese *iwak* 'id.') = Banjarese *iwak* (Lampung *iwa*), MD/Banjarese *lawas* 'old'= BI *lama*, etc. Note that even Banjarese slang is adopted in Meratus Dayak, e.g. *rambayah* 'very good'. One of the major phonological differences between Meratus Dayak and Bahasa Indonesia is consistent vowel lowering in Meratus Dayak: BI *e*, *u* > MD *a, o*, and this is largely true for Banjarese as well; cf. Banjarese *talinga* 'ear' vs. BI *telinga* 'id.'. In other words, MD and Banjarese use *a* instead of the original schwa or "pepet" of Sumatran Malay.

The most recent ethnographic description of the Meratus Dayak (with a mountain area forest population currently estimated to be about 3,750 or so) by a professional anthropologist is, as far as we know, Anna Lowenhaupt Tsing's *In the Realm of the Diamond Queen*, which appeared in 1993 based on fieldwork that she had conducted from September 1979 through August 1981 and then again over several months (unspecified which) in 1986; that is, a description of the Meratus Dayak that is now at best a quarter of a century out of date. When compared with what we observed in September 2011, *Realm* does, despite its very different focus from our chiefly linguistic one, provide us with an invaluable historical dynamic.[5] When not addressing feminism and gender studies with an eye to marginality, even in the midst of recounting quasi-shamanic practices, *Realm* --- and Tsing's sequel, *Friction: An Ethnography of Global Connection* (2005), are both much concerned about the impending doom of big business clear-cut logging and the threatened subsequent removal (*transmigrasi*) and thus cultural annihilation of the Meratus Dayak as results of the Suharto period's (1966-1998) "New Order" (*Orde Baru*).

None of these threats was fulfilled, at least for now, for the Meratus Dayak, and today's Indonesia for that matter; both are clearly very different cultural spaces in many ways, even in the still relatively isolated mountainous Meratus area: e.g.

[5] Cf. Tsing (1990), which, while discussing Meratus gender domains and briefly noting some ethnographic facts (e.g. that kinship is calculated cognatically), is mainly concerned with Meratus conflict management, specifically a conflict arising from a case of adultery. Tsing's monographic studies (1993, 2005), which are primarily concerned with gender domains or lack of same, marginalization (sexual, social and cultural) and the threat of cultural annihilation by an ever encroaching and increasingly homogenized modern world, while interesting, now read like materials archived in an intellectual museum from that era when academic departments had to meet gender and racial quotas, when feminism in the vein of, say, Julia Kristeva and analyses in terms of various brands of post-structuralist deconstructionism were in vogue. They are products of the discipline's interregnum between the classics of, primarily, British social anthropology, whether tainted or not by the evils of colonialism or post-colonialism, and today's mainstream genetic anthropology with its rapid sequences of game-changing discoveries. As Tsing programatically states in *Realm* (1993:33): "My project is guided especially by feminist critiques and revisions of ethnography." She is hardly a fashioner of insightful conceptual tools. For a fine example of more current trends utilizing archaeology, linguistics and genetics; see Sagart et al. (2005).

seemingly greater religious tolerance, dramatically curtailed *transmigras*i, a vastly improved cash economy for the Meratus Dayaks based on agro-forestry (rubber, cinnamon, nutmeg), substantial rural elementary schools (even offering English), rural health programs that have successfully instilled the importance of practicing regular dental hygiene and family planning (with a goal of but two children per family), as well as vastly increased mobility via motorbike along single-track paths that are sometimes even partially paved with concrete strips. The Meratus Dayak now consistently pay cash for purchases, including high ticket items such as motorbikes, and do not buy on time.

The monetary rewards, recently vastly increased in comparison with the past, for their slash-and-burn agriculture and agro-forestry are, however, mainly spent on the trinkets of modern life such as i-phones and cell phones and other battery powered electronic gadgets. They have not made any major investments toward improvements in public sanitation, water supply, food preservation and preparation, and the like.

Near the conclusion of *Realm*, Tsing (1993:287) says that the "proposed highway" (apparently since the 1970's) from the Hulu Sungai Banjar plains across the Meratus Range near its highest point (Gunung Besar, 1,892 meters) heading (some 30-40 kilometers) toward the east coast of Borneo "has not yet been built," and this is true yet today, but not for long. Just beyond Loksado, a single-lane Bailey bridge (in a state of serious disrepair) across the Sungai Amandit (Amandit River) now blocks any further car and truck traffic, but the roadway beyond has been bulldozed for some 12 kilometers, and an initial single lane of concrete cap about 300 yards long was completed in early September (2011). This means that the five villages we passed through (in two of which we stayed) and numerous others nearby that we did not visit, all with narrow paths leading to the new road, will soon be sliced open to the outside world and no longer enclaved.

For now, however, the "Bailey bridge border," as we called it, is also the border between pigs and animist Meratus Dayaks on the one hand and no pigs and Muslim Banjars on the other.

There is no gray zone of gradual transition: for now the Meratus Dayak are enclosed by a Lakshmana circle.

Despite official admonitions (and even government posters which are frequently attached to the walls of longhouses and which in effect show how to do what is not supposed to be done), the Meratus Dayak still practice semi-nomadic swidden agriculture, the products of which (dryland rice and numerous fruits, roots and tubers and other vegetables) are the primary sources of their diet, together with tiny river fish and small sub-canopy birds (both are aggressively netted), as well as pigs, chickens and occasional bush meat, including beetles and the like. Their free-range pigs, chickens (*Gallus gallus domesticus*, first domesticated in Southern China about 8,000 years ago) and dogs are part of what became a common Austronesian package. This package also included taro (*Alocasia macrorrhizos*), varieties of which were seemingly first domesticated in the Middle Mekong area (**traw?*) and in Melanesia, and in the latter area probably somewhere in the Trans-New Guinea linguistic phylum range that spread deeply into Indonesia, certainly as far west as Sumbawa as evidenced by the scant remains of Tamboran (Temboran) as preciously recorded by Sir Thomas Stamford Raffles in his *History of Java* (1817: Vol. 2); see Blench (2010), Donohue (2007). The other typical members of the Malayo-Polynesian package were bananas, coconuts and breadfruit (first domesticated in Melanesia). This package and its role in what is now considered to have been the rapid colonization of Oceania have been insightfully illustrated and popularized by Diamond (1997:351); see, further, Spriggs (2011). The Meratus diet is, as one might well suspect, overwhelmingly vegetarian.

The chickens, pigs and dogs all live together in relative harmony and run freely under and sometimes into the platform housing (supported by geometrically positioned rows of ironwood stilts), but are strictly disciplined by their owners, sometimes in ways that would make Western animal lovers cringe, but this may be an atavistic response from a time when absolute obedience was demanded of dogs used in (deer) hunting. The dogs stay closest to the houses, next come the pigs,

while the chickens seem the bravest of the lot with their sometimes distant forays for food; cf. the astute observations of such circles of animal/human familiarity by Leach (1964), despite this highly influential article's many linguistic shortcomings. Meratus chickens are bankivoid-like (very loud crowing) close relatives of the *ayam hutan* 'wild chickens' (red junglefowl, *Gallus gallus*), widespread and fairly common on Sumatra, but rare on Java and Bali (probably now only in Bali's sole national park) and introduced on Sulawesi and other islands in Wallacea. As mainly dark meat birds, Meratus chickens can fly much farther and quicker than the white meat chickens of Western agro-industries. They are certainly not threatened by sub-canopy birds, since these (along with snakes) have been virtually eliminated. Pigs and chickens are, however, mainly reserved for festive occasions, sacrifices and payments to shamans. Chickens are apparently for minor, pigs for major sacrifices, and this may have been the case even well before the arrival of (Buddhicized) Hinduism in Indonesia (perhaps as early as ca. 300 AD); see Loeb (1928:403, 1929b:186-187).[6]

[6] It is hard to know what the social anthropology of Austronesia (more specifically Indonesia) was like before the onslaughts of Hinduism, Buddhism and Islam. One of the earliest and most exhaustive nearly pre-contact anthropological accounts from Austronesia (broadly defined) is, of course, Bronisław Kasper Malinowski's *Argonauts of the Western Pacific*, first published in 1922 as an outcome of fieldwork conducted from 1914-1918, and Malinowski (1884-1942) certainly occupied a commanding presence as the influential godfather of British anthropology. He trained such seminal mainstream practitioners as Edmund Ronald Leach (1910-1989), whom the principal investigator knew periodically at close range during the final seven years of Leach's life; Raymond William Firth (1901-2002), justifiably famous for his *We, the Tikopia* (1936); and Edward Evan Evans-Pritchard (1902-1973), whom the principal investigator met only once quite by chance in Oxford in 1968. Finally, mention should be made of the Durkheimian Alfred Reginald Radcliffe-Brown's (1881-1955) early study of the languages (isolates) of the Andaman Islands (1914), although even by this time the earlier cultural and linguistic picture of the islands had been changed drastically. Until further genetic research is carried out in Austronesia it is impossible to conclude whether there were two or more founding events or a single colonization following by extensive population subdivision.

But one of the prize pieces of early ethnography providing fleeting insights into what Indonesian beliefs might have been like before the arrival of Hinduism, Buddhism and Islam is, however, *Mentawei Religious Cult* (1929b) by Edwin Meyer Loeb (1894-1966). This brief study is based on fieldwork Loeb conducted from March to July of 1926 on North Pagai (Pageh), and the Pagai's, north and south, are the southernmost islands of the Mentawai archipelago (off the western coast of Sumatra, part of what are collectively known as the "Barrier Islands"), fieldwork that was financed by his uncles, the sons of none other

However, their favorite food is, sadly enough, pre-packaged, *sedep dan murah* 'instant and cheap,' dried noodles (*mi goreng*), and the Meratus routinely favor woofing down only the contents of the seasoning packet (with its overdose of MSG plus other chemical goodies). They then immediately discard both packages, and the freely discarded packaging of the outside world is woefully littered everywhere in their villages, though there are seemingly voluntary "clean up days" when long-accumulated trash is swept and/or raked into heaps and burned. The resulting refuse smoke is perhaps a contrapuntal extension of their swidden agriculture.

2. Meratus Dayak swidden agriculture and absence of plant domestication

And it is their swidden agriculture that defines the Meratus Dayaks as semi-nomadic, for this is what causes them to periodically move habitations between clearings and sometimes erect isolated stilted rice storage huts (BI *lumbung*) the size of

---

than Meyer Guggenheim (1828-1905), who amassed one of the largest fortunes of the 19th century; see also Loeb (1928, 1929a) and Adriani (1928).

Long isolated as a virtual ethnographic museum, Sumatra's Barrier Islands (from north to south: Simeulue - The Banyak Islands - Nias - the Mentawai Archipelago, comprised of Siberut, Sipura and North and South Pagai, and, finally, Enggano) present a range of intriguingly difficult anthropological, genetic and linguistic puzzles. For example, whereas slash-and-burn agriculture must have long been a fixture of Dayak life, it is a taboo on the Mentawai archipelago. The language of Enggano, clearly an isolate, may not even be Austronesian, a problem addressed for much of his career by the German ethnographer Hans Kähler (1912-1983) and also by his student Alfred Willms, as well as numerous others; visit Roger Blench's thoughtful sites for downloadable early sources and an authoritative linguistic survey:
http://www.rogerblench.info/Language%20data/Austronesian/Enggano/Enggano%20page.htm,
http://www.rogerblench.info/Language%20data/Austronesian/Enggano/Enggano%20and%20its%20history.pdf.

As a whole, the Barrier Islands seem to have more in common linguistically and genetically with the Sulawesi-Philippine axis (as an adstrate?) or even Melanesia or even the Nicobar and Andaman Islands to the north than to neighboring Sumatra or Java. Max Morris (1900), despite its flaws, is an admirable pioneering effort to cover the Mentawai languages; see Pampus (2006). And here one recalls that Reimar Schefold (1938-) spent a considerable portion of his distinguished career among the Sakuddei of Siberut and other Mentawai groups and has written insightfully about their rituals, also in relationship to other Indonesian enclaves; see, for example, Schefold (2001).

small houses near current or former clearings, particularly clearings that are at higher altitudes and somewhat distant from streams. Swidden agriculture is necessarily geographically both sequential and intermittent: swidden clearings, which are farmed for a maximum of five years (but usually for only two or three), are sequenced at intervals of 15, 30 and 45 years with re-use possible after just 30 years, and they are situated intermittently or sequentially (*rabak* 'first-year sites,' lit. 'a large tear or rip'; *balukaran* 'second-year or older sites', and *jurungan* / BI *hutan belukar* 'secondary, re-growth sites') within the remaining patches of mature forest (MD *katuan* / BI *hutan lebat*). Swiddens are used for dry land farming (BI *pertanian tanah kering*) and gardens (BI *kebun*).

The major sequencing intervals of Meratus swiddens are multiples of 'five, Proto-Austronesian **lima* (vs. Dusun Deyah *dimo*, Ma'anyan *dime*, Malagasy *dimy*), which has a remarkable degree of lexical stability in descendant languages and which clearly approximates and is apparently related (certainly so by folk etymology) to Proto-Austronesian *(*qa*)*lima* 'hand', a proto-form that was replaced early on by *tangan* 'hand (including the arm)' in Malay (Common Malay **tangan*, Kawi *tangan*, Ma'anyan *tangan*, cf. Malagasy *tanana* / *tanga*, Meratus Dayak *tanjan*) vs. *lima* 'hand' in Bugis (Sulawesi), 'in Tae' (South Toraja, Sulawesi), etc.; see von Humboldt (1836-1839: Vol. 2. Art. 6, no. 77) on replacement of *lima* by *tangan* and cf. (idiosyncratic) replacement/reformation of **tangan* in various Dayak languages of Borneo, e.g. Punan Kelai *eguy* vs. Ngaju *lenge?* and Bukat *langer* (these latter two examples are seemingly hybridizations of **lima* and **tangan*) and some Kapuas River isolects with *jawi* and Iban *jari* (beside *tanga,* cf. BI *jari* 'finger' vs. Acehnese *jaroe* for 'hand', but *tangin* for 'paw'); see Adelaar (2004:17). Bali is typically conservative, however, with its preservation of *lima* for both 'hand' and 'five'. Sumatra may have been the locus of innovation; note Nias, Toba Batak *tangan* 'hand'.

The general caveat when using replacement patterns to reconstruct language history is, of course, that the larger the replacement range, the more difficult it is to pinpoint the genesis

of the replacement. The narrow replacement or attempted replacement range of, for example, 'leaf' by 'feather', e.g. in Nias and Toba Batak, would seem to permit us to designate northwestern Sumatra as the point of origin; but cf. Karo Batak *bulung* 'leaf, foliage' vs. *embulu* 'feather' and note Mentawai *bukuk* 'leaf'. Here, however, we might merely be witnessing a replacement resulting from a common ('leaf' = 'feather') morphological identification, irrespective of dialectal affinity or not; cf. Enggano (a non-Austronesian ? isolect on the southernmost of Sumatra's Barrier Islands, which were separated off from the west coast of Sumatra some 500,000 or so years ago) where we find *pruru* 'leaf and feather'.

Nevertheless, at first blush what the virtual equivalence historically of 'five' and 'hand', the general replacement of the presumed proto-form of 'hand' (= **lima* or the like) in Dayak and the fact that Dayak swidden farming rotation seems to have been based on multiples of five (or 'hands') permit us to conclude about the age and origin of swidden agriculture on Borneo is difficult to say. One might, however, use this as a piece of evidence in support of an early (ca. 2 millennia ago?) Malayic back-migration from Sumatra to Borneo before Barito Dayak immigration (ca. 700 AD?) to Madagascar in view of Malagasy *tanana* / *tanga*; cf. Adelaar (2004:8-10, *et passim*).

The Meratus slash and burn process (MD *dilinggayi*) to make a swidden clearing (MD *panggang* / BI *panggang* adj. 'something roasted or baked') for a dryrice paddy (MD/BI *ladang padi*) proceeds in three steps starting at the end of the dry season (September/October): 1) cutting (MD *ditabas*, cf. BI *ditebang* 'harvested/felled (timber)' to *tebang* 'to fell, cut down'), now usually carried out with power chain saws, though the largest trees are generally left standing; 2) drying for a period of six days or more; and 3) burning (MD/Banjarese *disalukut*) as a managed burn monitored by the villagers (both men and women) who try to consolidate the main fire in the center of the burn. The burn proceeds with explosive force, particularly when palm fronds ignite, and finally goes up in a central cloud of flames and smoke (MD/Banjarese *kukus* 'smoke' vs. BI *asap* 'smoke', but note BI *kukus* 'steam, vapor'

vs. Kawi *kukus* ‘smoke’; see, further, below). The burning is followed by dibbling and then planting (MD/Banjarese *manugal*) seeds and seedlings directly in the soil, without harrowing or finishing of any kind, after the first rain.

Those who manage swidden burns are constantly inhaling smoke, and smoke and smoking apparently form the very core of Meratus existence. They are intensely addicted to smoking, as many as four packs a day, and before tobacco was introduced they smoked *rarambian* (cf. Banjarese *ramba* ‘luxuriant leafage’) a plant leaf that was used as tobacco, that is, leaves that were rolled up and smoked like a cigarette and were later rolled up in dried corn husks, yet another botanical introduction. Despite government posters that are prominently displayed in villages and that pointedly describe the lethal connection between smoking and cancer, scant attention is seemingly given to such warnings. Indeed, there is a dramatic absence of people, particularly men, fifty and above, although the women seem to smoke as heavily as the men. Moreover, their stilted houses are filled with cooking smoke (MD *manyalukut*) from wood fires (MD/Banjarese *kamandahan* = BI *kebakaran*), since there are no chimneys or even roof holes to let smoke escape. The smoke from swiddens and cigarettes and the fog that rolls in over the mountains each morning are all called *kukus* and considered “good smoke,” but not the smoke from torches (MD *culuk*, cf. Kawi *suluh*) and lamps (MD *latat*). Smoke from cooking fires is also called *kukus*; cf. BI *asap* ‘smoke’, Ngaju Dayak *asep* ‘smoke’ vs. *hasep* ‘fog’, Bakatiq-Sara/Riok Dayak *asup* < Common Malay **hasəp*; but Ma’anyan *atuk* ‘smoke’. The only occasion when smoking appeared to be banned was during shamanic rituals, particularly healing rituals: apparently ‘the great spirit’ (MD *sanghiyan*) is a non-smoker; see below.

The roles played by smoke for the Meratus seem readily interpretatively translatable in terms of Lévi-Straussian structuralism: the marked situation (shamanic curing) was unmarked for smoking, while the unmarked situation of Meratus daily life was fiercely marked for smoking:

[+ marked situation : - smoking]
[- marked situation : + smoking]

This situational mapping of markedness is analogous to the striking opposition between noise (loud, boisterous conversations on the part of the grave diggers) vs. silence (on the part of the observing mourners standing close by) in the (marked) burial vs. (unmarked) mourning situation at Meskwaki funerals as recorded by Michelsen (1925:411) and observed by Markey in 1983, a contrast cited by Lévi-Strauss (1970:65) as evidence for plotting his axes of the "logic" of ritual belief. Edmund Leach (p.c. to Markey ca. 1982) considered such structuralist diagrammatics highly misleading over-simplifications, but we consider them convenient frame conceptions for more detailed investigation.

In some villages there appear to be occupational roles other than the traditional ones of the shaman (*balian*) or village (formerly: longhouse) head (*kepala desa* or *kepala balai*), who is now elected every three years. One such role was apparently that of the village gardener, but this role had to be observed and was never pointed out by the villagers or the gardener himself: shunning pride of position or pride of any kind is a highly valued trait among the remarkably egalitarian Meratus Dayak.

The gardener we observed carefully was the next-door neighbor of our widowed hostess in one of the villages where we stayed. He routinely conducted his daily work of clearing, cultivating and weeding along with his wife and children. The garden plot (MD *halaman*) was an end-term swidden site a short distance from the village and along the main path to it. At the far edge of the garden, the gardener had built a simple roofed hut beside a pool in a stream in which he and his family bathed at the end of each workday. The hut housed various gardening tools and watering tanks, seemingly collectively supplied and/or shared by all the villagers. We visited the gardener a number of times and asked him for the local names of the plants that were cultivated there. It was a seemingly endless spectrum of plants growing completely at random, sometimes in well separated clumps between charred stumps and trunks: chili peppers (*lumbuk*), bananas (several varieties), cassava (*gumbili kayu* lit. 'woody sweet potato' and several other varieties; cf. Banjarese *gumbili* 'cassava'= BI *singkong*), maize (in limited amounts and

of a very poor, primitive teosinte-like quality), papaya (*katila*), gourds (*walu*), snake beans, sugar cane, eggplant (*tumpukan*), various taro-like members of the Araceae family, etc. It was immediately clear, however, that one could spend months among such botanical wealth and still not be a master of Meratus ethnobotany.[7] But an interest in plant names was merely a means to a greater end, and that end required a lot of theatrical gestures (e.g. pretending to be a pollinating bee, even a fertilizing banana flower at one point) and drawings and much intralingual discussion and some mildly sexual jokes.

The greater end was an attempt to discover, among other things, whether or not the Meratus Dayaks had possibly ever or were possibly still engaged in plant domestication, namely, artificial selection/selective breeding (hybridization/crossing and/or self-pollination and, of course, isolation). It was obvious from their dogs, pigs and chickens that little or no effort had been made in recent history to improve breeding stock: dogs, part of the common Austronesian package mentioned above, were probably first domesticated in China some 15,000 years ago, and BI *ayam* 'chicken' clearly derives from Proto-Malayo-Polynesian **qayam* 'domesticated animal (bird)', while pigs were domesticated perhaps as early as 11,000 BC in central Asia. But what about plants? Was there any evidence of early and or continuing "programmed" plant domestication as has been superbly chronicled by, first and foremost, Zohary (1990) and Zohary and Hopf (1988)? This is certainly not a trivial ethnographic concern, and for a reminder of its saliency one need but recall that the initial chapter of Darwin's *Origin* (1859) is entitled "Variation under Domestication". The relationship between plant breeding success and cultural accomplishment is an intimate one. For example, as we now finally know for certain, it was the successful, rapid domestication (by hybridization) of maize, now the world's largest grain crop,

[7] For a detailed list of the contents of their swidden gardens and a highly informative description of dry rice farming among the Meratus Dayak, see Tsing (2005:165-167).

some 10,000 or so years ago that eventually made the emergence of, for example, Maya culture possible.[8]

We finally concluded that there was no evidence for past or on-going programmatic plant domestication by selective breeding.

We then blithely guessed that the Meratus Dayak may not have perceived the benefits of domestication, although we certainly lacked any effective investigative tools to assess this problem thoroughly. Anthropologists have rarely, as far as we know, provided empirically inferred hierarchical inventories of identifiable triggers (inducements) for domestication. Moreover, there is obviously always a gap between observing beneficial phenomena (e.g., in this case, higher and more predictable germination rates, increased size of reproductive organs and different biomass allocations in fruits, roots or stems, and so on) and understanding their underlying causalities, particularly to the point of being able to profit from manipulating them. But an apparent failure to perceive the benefits, much less any necessity for selective breeding, should perhaps have been immediately inferred from the obviously intentional randomization of their swidden gardening, since divergent randomization is well known to improve yields; so why bother with the intricacies of domestication by selective breeding? Several varieties of rice planted together in a paddy will yield

[8] It was long debated whether maize was simply a domesticated form of teosinte, as first proposed by George Wells Beadle (1903-1989) in the 1930's, or the product of hybridization between a diploid perennial teosinte and a yet to be discovered wild or early-stage domesticated maize and *Tripsacum* as initially advocated by Paul C. Mangelsdorf (1899-1989) and then revised and re-asserted by Mary W. Eubanks, who discovered that diploid perennial teosinte breaks the sterility barrier between *Zea mays L.* and *Tripsacum*. More recently, however, starch grain evidence and the discovery of wild teosinte growing in the Balsas river region of Mexico have proven that maize was domesticated from its wild ancestor, possibly as early as 10,000 years ago; see Piperno et al. (2009). Maize cultivation spread rapidly north of the Darién Gap, and Native American groups are still engaged in domesticating it. This was made clear to Markey, who, as one result of his work (1982-1984) among the Meskwaki (Fox), an Algonquian group now living (primarily) near Tama, Iowa, was given a sample of native seed corn which he raised for several summers in Ann Arbor. The final 1985 harvest was completely destroyed by a mild wind storm. As Markey was later correctly informed by a number of agronomists in his section at Peter Ucko's highly controversial and pioneering first World Archaeological Congress (Southampton, September 1-6, 1986), the Plains Indians of North America had consistently and unfortunately rarely selected for stalk quality, but mainly for grain color.

far more grain per acre than a monoculture, an outcome of divergence that Darwin himself realized.[9] In view of the success of their randomized gardening, it is small wonder that the Meratus Dayak, with as many as thirty varieties, simultaneously grow multiple varieties of rice.[10]

But supposedly current or even historically long-past non-engagement in plant breeding by the Meratus Dayak, as well as by other so-called "primitives," may well be due to much more complicated reasons than any perhaps prejudicially perceived failure by us to realize that they on their part see such benefits. The case may well be, for example, that the reproductive cycles of certain socio-economically important plants simply do not conveniently lend themselves to artificial selection, e.g. plants such as cassava that bloom highly irregularly or not at all. Or instances of native selective breeding might be so different from a Western perspective of the matter as to be ignored altogether. A case in point was our nearly missing appreciation of the selective propagation of a smaller-rooted sweet variety (cf. *Manihot dulcis*) of cassava with lower levels of toxic cyanogenic glycosides. The Meratus Dayak eliminate toxicity by boiling or steaming the peeled root, which is then sometimes fried in oil and then salted (or not) to taste. After providing our hostess with such roots for peeling, boiling and frying, the gardener showed us bundles of small-rooted cassava stems that he had cut into sections of approximately 15 cm which he then planted by simply pushing them into the loose soil of his swidden garden just prior to the onset of the rainy season. The Meratus Dayak informed us that they raise cassava as a hedge against a failed rice crop, thereby assuring them of a major alternative source of starch. Indeed, some rainforest peoples

[9] See the provocative discussion of Darwin's principle of divergence, arguably second in significance only to his principle of natural selection, orchestrated by Gould (2002:224-236), a dear friend, in what was lamentably his final book.

[10] As recorded by Tsing (2005:165). Here we recall that rice domestication apparently first occurred in the Lower Yangtze region of Zhejiang, China, between 6900 and 6600 years ago, but *Oryza sativa indica* was probably developed in eastern India several millennia later and then introduced to Indonesia; see Fuller at al. (2009).

seemingly consume far more starch than certain investigators have assumed.[11]

3. Meratus Dayak cultural anthropology

Before concluding with a brief discussion of Meratus shamanic practices and language, a cursory catalogue of other Meratus customs and activities seems in order.

Unlike the Ngaju Dayak and other neighbors, the Meratus Dayak do not practice *tiwah*, the retrieval of the remains of the dead from temporary graves after a prescribed period of time followed by washing and purifying their bones which, after feasting, dancing and ceremonies, are transferred to a family *sandong* (a lavishly painted coffin on stilts); see Schärer (1963:8, 23, 79-80 *et passim*) and now Schiller (1997:3-4, 10-14, 17-21, *et passim*). Instead, the Meratus Dayak have ancient tribal cemeteries well away from their settlements, the precise location of which is kept secret (from outsiders); inhumation, not cremation is the rule.

Divorce is virtually unknown, but one slightly deranged and seemingly intellectually challenged single and sexually aggressive woman in one of the villages where we stayed was rumored to have had three husbands, probably a record, or so the villagers claimed. She was called *gila*, BI for 'crazed, mad,

[11] Cf. Perry et al. (2007), who, while incorrectly contending that rainforest dwellers consume much less starch than inhabitants of arid environments, arrestingly show that different selective pressures have acted on the salivary amylase gene (AMY1) that hydrolyzes starch into its constituent sugars such that populations with high-starch diets have more AMY1 copies than those with traditionally low-starch diets. Higher AMY1 copy numbers and protein levels, as Perry et al. (2007) conclude, "probably improve the digestion of starchy foods and buffer against the fitness-reducing effects of intestinal disease." Cassava, currently the world's third largest source of calories (for some 700 million people living in the developing world), was introduced into Southeast Asia from Brazil by the Portuguese in the 15th century. It grows well in poor, relatively arid soils. It is 30% starch (gluten free), but is poor in proteins, vitamins and other minerals, though Martin Fregene and his team at the BioCassava Plus Program at the Donald Danforth Plant Science Center in St. Louis, MO, is attempting to develop a cassava with lower cyanogenic glycosides fortified with Vitamin A, iron and protein. Cassava leaves (MD *tarok*, cf. BI *talas*) on the other hand, which the Meratus Dayak gather prior to harvesting the roots, are a good source of protein and iron and are alternatively called *bayam* 'spinach' in Meratus Dayak, cf. BI *bayem* 'id.'.

irrational', but *gila* was also synonymically glossed by the villagers with BI *pusing* 'confused'.

Our guide told us that during nearly two decades of travelling throughout most of Kalimantan he had never seen any overt or covert instances of homosexuality, male or female, among the Dayak.

Men are outsourced in this matriarchy, and husbands typically join a wife's household. Young people usually find their mates at annual thanksgiving (harvest) celebrations (MD *salamatan* / BI *selamatan*) to which people come from all over Kalimantan. First cousin marriages are strictly taboo, and second and third cousins do not normally marry. Kinship is calculated cognatically.

Gender domains are not very strictly demarcated or stigmatized. While men do not fabricate rattan basketry, it is primarily men who scrape the outer cortex off cinnamon bark and slice the "cleaned" bark into narrow strips for drying to form the cinnamon sticks familiar to western buyers. One might expect this cleaning task to be exclusively relegated to women.

Menstruation is not circumscribed by taboos (as in many Amerindian groups, e.g. not harvesting plants or gathering foodstuff while menstruating) and seems to be largely ignored

Handicapped and elderly persons, both male and female, regularly perform household tasks as long as and in so far as they are physically able to do so. They are not stigmatized or shunned, but have recognized and respected roles to play in the community. One young man who had survived what must have been a very serious motorbike accident and lost the use of one hand and arm compensated for this loss by skillfully holding in place the cinnamon bark he was scraping with his feet.

No village heads seemed to play decisive and/or imperious authoritative roles: decisions appeared to be made by consensus, involving both men and women. While one village had collectively purchased a generator and all households were paying a monthly fee assessed for its maintenance and fuel another village had also done this, but, noting that the time spent watching television was having a bad effect on school performance, they had simply shut down the generator by

consensus, but had kept it unmaintained in its original shed by the stream.

Major concerns affecting the general welfare of the village and its inhabitants, as well as corrective strategies for alleviating such concerns, were openly discussed outside at impromptu gatherings along the central paths in villages. For example, one village was very concerned that the school teachers were not showing up full time for instruction, and so they (both men and women) planned to bring this problem to the attention of the local school district authorities.

Of the twenty or so (ca. 23?) typical long houses that are left in the Meratus Dayak mountain area, each of which was occupied by as many as ten families or as many as 120 people, many are no longer occupied and are now only rarely used for ceremonial purposes. Consequently, many have fallen into disrepair. Most villages have, in fact, become "*Straßendörfer*". Some villages have, however, elected to have their traditional longhouses rebuilt or rehabilitated. One of the villages in which we stayed had recently opted for rehabilitation (*rehabilitasi balai adat*) by submitting a petition to request this to the local county council on behalf of the village head (*kepala desa*) with funding ultimately from the ASEAN Cultural Fund (established in Jakarta on December 2nd, 1978).

Disciplined children might be hit lightly or otherwise scolded but were then left alone and ignored "to cry it out" until they were ready to rejoin adults or other children. This we took to be an early sign of the Meratus notion that a person is individually responsible for his or her personal intentional or unintentional decisions and/or actions and that these may have unexpected consequences in the future. From early childhood onward gaining an understanding of the inchoate intricacies of *adat* (see below) is an implicit experience.

The Meratus Dayak have seemingly totally abandoned some traditional child-rearing practices that have been proven to be very harmful, one significant example being so-called "secondary feeding" when they learned that such exposure could have serious pandemic consequences; see Wolfe (2011). Secondary feeding is when the mother pre-chews a small

portion of her own food and then inserts this premasticated wad into the child's mouth with her unwashed fingers.

Meratus Dayak do not pay health care insurance or property taxes or income taxes. They do, however, have to pay out of pocket for health care, but if they can show a certificate of indigence, then the government may elect to cover their health care costs.

They do not have formal adoption, but do have fosterage, in which case the father's brother is preferred as the foster parent.

They do not have masks, nor, seemingly, shadow puppets (or puppets of any kind for that matter), but they do have oral literature, even somewhat dramatized oral literature, as well as riddles (MD *capatian* / Banjarese *cacapatian* = BI *teka-teki* 'riddle, puzzle').[12]

One evening we witnessed a village shaman (Shaman A, reputed to be more than 85), surrounded by people of all ages from various families, recite and marginally act out a "trickster tale," and the mouse, rather than the lesser mouse-deer (*Tragulus javanicus*) that is more frequently invoked on Borneo, is seemingly always the wily trickster in Meratus tales. The tale was clearly well known to the large audience of all ages and sexes, but it was the women, both older and younger, and not the men who would interject with asides and corrections, and afterward Muller suggested that all those corrective asides and interpolations in Homer, some of which are sometimes assumed

[12] Lack of puppets and puppetry among the Meratus Dayak is a significant observation because of its implications for linguistic history since Kawi is commonly still used as the language of Javanese and Balinese puppet theater. Puppet (BI *wayang* = Kawi *bayang* 'shadow') theater is a feature of many Southeast Asian cultures, probably since the very introduction of Hinduism and Buddhicized Hindu culture, a heritage that it preserves: it is, for example, the much altered latter half of the Old Javanese *kakawin Rāmāyaṇa* from the 6th and 7th century AD that is performed in all Indonesian *wayang* presentations. Moreover, puppetry was and still is a major component of, for example, Burmese culture; see Aung (1937), Singer (1992). Cambodia, too, has shadow puppets that are virtually identical (albeit typically more filigreed) in format to the Indonesian (Java, Bali) *wayang kulit*, which are made from buffalo hides as one dimensional cutout figures and then painted and mounted on bamboo sticks. In addition to *wayang kulit*, there are three-dimensional wooden puppets (*wayang golek*) and in East Java *wayang kelitik* or *wayang kerucil* (~ *kercil*), flat wooden puppets carved in low relief that are featured in performances without a shadow screen, as well as *wayang orang*, dance dramas with humans as the puppets, and *wayang topeng*, a variant of *wayang orang* in which only the dancers wear masks (BI *topeng* 'mask'); cf. von Humboldt (1836-1839: Vol. 2, pp. 4-6).

to stem from scholiasts, are probably in fact the echoes of the women in those ancient audiences.

4. Totems and taboos, oaths and ordeals

The Meratus Dayak seemingly lack totems, except for the bird/dragon (serpent?) deity representations on certain pieces of the central altar configurations in longhouses; see below and visit Evans-Pritchard (1981:153-169) for what we still consider to be one of the most probing and provocative discussions of totemism to date, a discussion that formed a roadmap for our observations.

This absence of totems is notable given the apparent mutual exclusion of [totem - taboo] vs. [oath - ordeal] constellations in innumerable cultures; see Markey (1985). The implication is that cultures with [totem - taboo] lack [oath - ordeal] (and vice versa), while cultures with both constellations, such as that of the Konso, an East Cushitic people of mixed Caucasoid and Negroid ancestry located in the arid highlands of southwestern Ethiopia, or those with crossovers, such as a [taboo - oath - ordeal] constellation, as indicated to us by village Shaman A for the Meratus Dayak, are rather rare.[13]

The fundamental taboos (MD/BI *tabu*, Ngaju *pali, ceacea* = Hardeland's *djeadjea*), circumscribed by *adat* (largely unarticulated customary civil law, rules for correct behavior and land tenure rights in accordance with the patterns of Dayak and Indonesian animist cosmology in general) for the Meratus Dayak as recited to us by Shaman A primarily pertain to constraints on social behavior: not to insult people (MD *mauwada* = Banjarese *mawada* = BI *mengejek* 'to tease, mock, ridicule), not to commit adultery (MD *bakinutan*), not to be drunk (MD/Banjarese *mau'k* = BI *mabuk*), not to spy on or peak

[13] Here Markey would like to thank Kalla Gezahegen Walda Dawit, leader of the Kertita clan, an important patrilineal unit of the Konso, for detailed discussions (March 9th, 2008) about their totemic practices, various taboos and the conduct of ordeals with hot iron (*munga*) and silver (*tunga*) to prove one's innocence when there are no witnesses to a serious misdeed such as burning a house.

at (nude) people (MD *manyuok*, cf. Ngaju priestly language *manyawau* 'to behold, watch'; see Baier et al. [1987:93]), not to use obscene language (MD *lalanjian*) and not to steal (MD *mancuntan* = BI *mencuri*).

5. A shaman's epiclesis as garbled Kawi-Sanskrit

Shaman A related these rules for conduct to us at a meeting we had scheduled in order to spend a morning with him inside his house in a village where we are staying. His wife was present and acted as his assistant, his *panjulang* as such accompanists are known, and the suspicion is that, historically, shamanism was primarily a domain for women. This meeting, or perhaps more appropriately an instructional session, in which shamanistic lore and custom were related and interpreted for us was itself conducted within the framework of a ritual. We sat on the floor around a plate of dry cooked brown rice sprinkled with dark brown palm sugar. The shaman then sequentially placed this plate on each of our heads (Markey, Muller and Captain Marvel) during which a brief incantation was recited after which we all, including the shaman, had to eat a handful of the sweetened rice.

During this morning session, Markey asked Shaman A to repeat the invocational/initial chant (*berpantun* 'to recite a traditional four line stanza', a *pantun*) with which Shaman A had begun what we later learned was the the third and last harvest festival ritual. Indeed, this *pantun* includes MD *pon* = Kawi *pon*, the name in the *ngoko* 'informal Javan register' of the third day of the ancient Javan five-day "hand" week, the *pasaran*, a cultural icon. This was from the ritual celebration at the rice storage hut that we had previously visited together with Shaman A and his wife, acting as his *panjulang* 'assistant', in the hills far above the first village where we stayed. This *pantun* was the epiclesis, the introductory section (Kawi *mangala*) of the ceremony at the hut that lasted from about nine in the evening until about four in the morning:

de di rantau walang
di panggar duwa
sawah lau pon kalawot
diganang juwah

'then from river pests away
in raised frames two
rice paddy soul third past
to be irrigated anew'

The deity invoked was, as we later learned, *Uria*, who takes care of all manner of pests and prey that spoil plants; cf. Kawi *urit*, *angurit* 'to plant', BI *urat* 'root' and see below. On the Dayak custom of securing the rice's soul (MD *lau,* cf. Ngaju *liau* 'soul of a deceased', Ma'anyan *a-diau* 'id.' < Proto-Malayo-Polynesian **ilau* 'to mirror, reflect, a shade') at the third and final harvest festival, see Greenwood (1863:Vol. 1, p. 69 f.) and on the proto-form **ilau* and its cultural significance, see Dahl (1991:68-69). The raised frames are the truly large circular rice storage tubs made of sheets of bark that are "sewn" together with thongs made of palm strands. Traditionally, the Dayak ceremony for securing the rice's soul may only be performed by the chief priest alone, which was certainly our experience.

During that same morning session, Shaman A told us that an oath (BI/Kawi *sumpah* 'curse, oath, vow', Kawi *cinoran* 'to swear, administer an oath to'), contesting an alleged violation of taboos could be tested by an ordeal (MD *paduh*, BI *cobaan* 'test, trial, temptation', but Kawi *parīksā* < Skt. *parīksā* 'ordeal', as in Sita's *agni parīksā* 'trial by fire' in the *Rāmāyaṇa*), and, as an example, he then described an ordeal of walking into a river with one's hands tied. If innocent, then the water would not rise; but if guilty, then the water would rise. His description of this ordeal was accompanied by a mantra (MD *bamang*), on which see below.

To us, recalling that the [oath - ordeal] constellation was apparently an early introduction (along with, unless improbably massive recessivity is assumed, weaving, paddy cultivation of

rice, advanced metallurgy, hierarchical social structures with chieftaincies, more refined and wheel-thrown ceramics and divination [e.g. hepatoscopy]) to Austronesian from India, this ordeal seemed to be a distant reflection of Rama's retirement at the conclusion of the *Rāmāyaṇa* after Sita had proven her innocence before the world by successfully completing an ordeal. Afterward, when Rama, the seventh avatar of Vishnu, decided to retire from the throne of Kosala, his brothers Bharata and Shatrughna joined him. But when Rama walked into the river, he was transformed into his eternal and original "Mahavishnu"" form (that of the almighty absolute supreme personality of godhead), and Bharata and Shatrughna also walked into the river and were united with him.

We note that the main river of central Java is the Serayu, seemingly an echo of the Sarayu, which features prominently in *Sarga* 25 (50-61, 78-81, 106-108) of Yogiśwara's *kakawin Rāmāyaṇa* (from ca. 870 AD). These are probably interpolations; but they are clearly departures from the *Bhaṭṭikāvya* that seemingly formed the basis of ca. 60% of Yogiśwara's rendition, particularly through *Sarga* 18 or so of its total of 26 sargas.[14]

Here it should be recalled that it was a form of Shaivite Hinduism that dominated early Indonesia, particularly during the Sumatran Srivijaya (ca. 500 - 1200 AD) and Javanese Majapahit (1293 - ca. 1500 AD) empires, as well as pre-Islamic Malaya. Shiva and Vishnu were combined into a Shiva-Buddha deity (Kawi *Bhaṭṭāra Guru* = Shiva) which in effect was neither, but the supreme god (*sanghiyan tunggal*, roughly 'the very one god') of the realm.

In *bahasa sanghiyan* 'the language of the ancestors, the sacred liturgical language' that introduced his description of the

[14] The problem of interpolations in the *kakawin Rāmāyaṇa* has, of course, long been debated; see Hooykaas (1955:54-61), a classic, and Khanna and Saran (1993), who demonstrate that the *kakawin* poet's wide range of knowledge of Sanskrit literature extended far beyond Vālmīki's *Rāmāyaṇa* and the *Bhaṭṭikāvya*. For a brilliant translation with extensive notes that permits ready access to the notoriously difficult *Bhaṭṭikāvya*, see Leonardi (1972).

ordeal by water, the shaman's epiclesis = Kawi *mangala* was: *sanghiyan wanang jagat dewa bahatara*.

Anthropologists such as Schiller (1997:18, 28, 78-79, 101) and even Schärer (1963:10, 16, 31, 36-37, 44, 57-58, *et passim*), both apparently with little or no formal training in historical linguistics, typically gloss *sanghiyan* (*sangiang*) as 'immortal, upper world supernatural beings' or 'supreme deity' or 'ancestral spirits'. Such glosses are simply informant dictionary entries, in the cases of Schiller and Schärer from their Ngaju informants, and we were provided with the very same glosses by both our translator/guide and our Meratus Dayak informants. In the Ngaju creation myth, as recounted by Schärer we are told that *Maharaja Sangiang jari tato oloh pantai Sangiang* '*Maharaja Sangiang* became the ancestor of those who settled on the *banks of the Sangiang river*,' so Schärer (1963:196). *Sanghyang* is also a Balinese term for ritual trance dances. But it is when we turn to Kawi, a heavily Sanskritized ancestor of Modern Javanese that is marginally in use yet today in puppetry performances, and Wilhelm von Humboldt's (1767-1835) accounts of the Kawi equivalent of *sanghiyan* in his posthumously published *Über die Kawi-Sprache auf der Insel Java* (1836-1839) that insightful interpretation emerges.[15]

[15] Today, with some 70 million speakers, Javanese is one of the largest regional languages of Indonesia, and, as in Kawi times, it has socially definable registers, though these are now seemingly rapidly disappearing: *Krama Inggil* is the highest level register, *Krama* is the mid-level register and *Ngoko* is the lowest level register. von Humboldt, who never set foot on Indonesian soil, was at the mercy of the rather imperfectly edited and published Kawi sources that were available to him at the time. Among these was a Kawi version of the *Bhāratayuddha* 'India's War' or 'The War of the Bharatas' (as indicated in the text itself, composition commenced on November 6th, 1157 AD). This is a greatly condensed (23 to 9) *kakawin* rendering of the *Udyogaparva* (Bk. 5) and *Bhismaparva* (Bk. 6) of the *Mahābhārata* associated with the Javanese Shiwaitic (initial portion of the text) and Wishnuitic (final portion of the text) cults. The *kakawin Bhāratayuddha* consists of 711 four-line stanzas (52 cantos), 135 of which were transliterated and translated by none other than (Sir) Thomas Stamford Bingley Raffles (1781-1826), the founder of Singapore and an accomplished zoologist, botanist, linguist, military strategist and business man; see Raffles (1817: Vol. 2). The *Bhāratayuddha* was composed by two poets, *mpu* Sedeh (through Canto 32) and a certain Panuluh, with no indication of a title, from Canto 33 to the end. It was carried out under the patronage of the East Javan (Kediri) king Jayabhaya who reigned from 1135-1157 AD. With more than 90 surviving manuscripts (vs. 70 for the Old Javanese *Rāmāyaṇa*) the *Bhāratayuddha* was clearly the most copied and probably the most widely circulated and culturally influential medieval Indonesian text. For a definitive diplomatic edition, English translation and commentary, see Supomo (1993). But even various 19th

In Kawi, *sang ywang* (= *sanghiyan*) is typically followed by the name of a deity, e.g. *Sang ywang Guru*, and von Humboldt (1836-1839: Vol. 1, p. 102 ff.) identified *sang* as what we would now call an honorific particle 'the (one)' used in titles, while Kawi *y*(*w*)*ang* = BI *yang* 'that, which, who', so that Kawi *sang y*(*w*)*ang tunggal* 'the one who is alone, the singular one' or 'the very one god' is an epithet for 'god', which, upon deletion of *tunggal*, emerged as a head noun *sanghiyan* (or the like); cf. Raffles (1817: Vol. 2, Appendix E, No. III, p. clxviii). So, too, in the shaman's chant *sanghiyan* is followed by the name of a deity (*Wanang*): this is Kawi *Wenang* or *Wanang*, the supreme deity, the father of *Sang ywang Tunggal*, who was in turn the father of the (Kawi) deity *Bhaṭṭāra Guru*; see von Humboldt (1836-1839: Vol. 1, pp. 101 and 191 f.).

Bhaṭṭāra Guru has also been interpreted as *Batara Guru*, who stands for Shiva, and Kawi *Bhaṭṭāra* 'god, king/lord' < Skt. *bhattāra* 'lord, venerable person' has in turn been re-interpreted as *Hatara* and then Islamized as *Hatalla*, the *Hatalla-Jata* of the Ngaju; see Schärer (1963:12-14), Schiller (1997:84-86, 89, 113). In the new, officially recognized (March 31st, 1980), Hindu Kaharingan religion (*Agama Hindu Kaharingan*) of Central Kalimantan among the Ngaju, *Hatalla-Jata* was promoted to *Ranying Hatalla Langit* as the creator god, an almighty and most holy elevated heavenly divinity; see Baier (2007).

The remainder of the shaman's epiclesis, *jagat dewa bahatara*, is an only slightly garbled version of a Kawi-Sanskrit *jágat dewá Bhaṭṭāra* '(animate) world / universe' + 'god' + 'lord'; see von Humboldt (1836-1839: Vol. 1, pp. 190, 236-237; Vol. 2, p. 50). Kawi, like modern Indonesian, lacked nominal case and merely plugged in uninflected Sanskrit nominal stems. We might well reconstruct the shaman's *sanghiyan wanang jagat dewa bahatara* as Kawi *Sang ywang Wanang jagat dewa Bhaṭṭāra* 'the one who is Wanang, the lord god of the universe'

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century missionaries had suspected Sanskrit and/or Kawi to be embedded in Dayak *bahasa sanghiyan*, which, as August Hardeland (1814-1891) correctly noted (1858:4) for Ngaju: "man das dajacksche Sanscrit oder Kawi nennen könnte."

which, with a caesura after the fifth syllable and a total of thirteen syllables is a *jagatī pada* plus an additional thirteenth syllable as part of a final tetrabrach. *Wanang* seemingly lives on in BI in *kewenangan* 'competence, authority', cf. Kawi *wenang* 'capable, able, competent'. Its further etymological history is unclear, but it might derive from a Sanskrit *anusvāra* compounding form *vanam-* with the sense 'wood, grove, spring, thick cluster', though it more likely represents Prakrit *vanam* 'abundance'. As von Humboldt (1836-1839: Vol. 2, p. 54) points out, *anusvāra* is typically represented by *-ng* in Kawi. This would permit translating *Sang ywang Wanang jagat dewa Bhaṭṭāra* as 'the one who is the stream/abundance (deity), the lord god of the universe', which would certainly be a suitable epiclesis for a numinous ordeal by water.

6. A shamanic healing ceremony inside a balai

Muller has been plagued for years by some weird type of psoriasis, and that plague turned out to be our unique entry ticket to a series of cultural discovery moments at a private session of shamanic curative healing. The son-in-law, a Kahayan / Kayan Dayak, of one of our hosts was similarly plagued, though to a lesser extent. He made it clear that he could cure the problem, particularly the itching, with herbal medicine (MD *alat* = BI *alat* 'tool, instrument'). He gathered leaves of MD *gulinggang* / BI *gelenggang* 'candlestick senna' (*Senna alata* / *Cassia alata*) which he chopped and then ground up in a mortar and mixed with vegetable oil to make an ointment that he said should be applied 2-3 times a day.[16]

[16] The leaves of *Senna alata* have laxative properties and can be effective as such. They also have antimicrobial and antifungal activity and can be used against dermatophytic infections such as tidea pedis (athlete's foot). They are also used for superficial mycoses and in the treatment of pityriasis versicolor (a chronic fungal infection), and the flowers too have antifungal properties. *Senna alata* is a widely spread rainforest plant: Africa, Southeast Asia, the Pacific Islands and tropical portions of the Western Hemisphere. *Cassia alata* or *Senna alata* is often called the "Ringworm Bush" because of its highly effective fungicidal properties for treating and other fungal infections of the skin. Its laxative effect, due to its anthraquinone content, has also been well proven.

Muller's cure was not as rapid as desired, so the son-in-law called in his brother-in-law, the local shaman (Shaman B, about 32 years old) who had been trained by his deceased father and who now lives in another village. Muller was then termed a *baharagu*, Meratus Dayak for 'a sick person who seeks out or goes to a curative balian/shamanic ceremony, or a person who seeks to be liberated from a curse'; cf. Skt. *Bhṛgu* masc. which has multiple significances, one of which is the name of a wish born son of Brahma, but also the name of a class of demigods who discover fire and bring it to men; see *RV* 1.58.6, but note that Vedic texts are never referred to in Kawi.

Kaharingan (glossed as 'serving existence, the power of life' and also called *adat balian*) practices among the Dayak differ from group to group, but shamans, specialists in ecstatic flight to other spheres, are central to Dayak Kaharingan in all groups. Shamans serve to bring together the various realms of the upper-world and the earth, and even the under-world; see Heinze (1991). So, for example, they heal the Dayak by retrieving their souls which are thought to be on their way to the upper-world of the dead and the immortals; they protect the souls of dead persons on the way to their proper place in the upper-world; and they preside over annual renewal and agricultural regeneration and harvest festivals, etc. On specific numinous occasions, a spirit (*sanghiyan*) is believed to descend to partake in a celebration, a mark of honor and respect for past ancestors and a blessing for a prosperous future.

The healing ceremony in which we participated was performed in the village longhouse beside a traditional altar platform (described below).[17] As far as we could tell, the ceremony had four parts, but it clearly had three main participants, the shaman, a drummer and the person to be cured, in this case Jean-Claude Muller, who, stripped to his boxers, was reclining on his back, face upward during the entire ceremony:

[17] On the components, entreaties, and functions of this healing ceremony compare those described by Lewis (1988, 1989) from groups on Flores, and see Schefold (2001).

Part 1: The *sanghiyan*s were invoked (epiclesis) by the shaman's chants accompanied by his clashing of five brass rings (MD *salanghian* / *hiang*), as well as by a drummer beating with a small stick on one end and his bare hand on the other end of a relatively short double-headed drum with a relatively small circumference that was supported by his feet as he sat on the floor of the longhouse.

Part 2: The shaman, who was wearing ordinary long trousers and a shirt, paused and put on a white sarong (*tapi*, cf. Ngaju *tapih*) tied in front at the waste. This sarong was very similar in format to the white neck scarf that is put on by all attendees at ceremonies before entering a Buddhist temple (e.g. in Bhutan).

Part 3: The shaman began chanting again, again accompanied by the drummer, and he then stood and stomped his feet almost as if dancing Shiva-like and grasped a palm strand suspended from a pole near the central altar that was ornamented with white orchid blossoms; he continued chanting and dancing, pausing only briefly to place a branch of marigolds (*Tagetes patula*, BI *bunga telekan*. Germ. *Samtblume*), well known for their anti-microbial properties and healing powers in fungal infections due to thiophenes, as a flower offering on Muller's forehead, and the shaman then resumed his chanting.[18]

Part 4: The shaman paused briefly and then stomped his feet and invoked the deity while clashing the brass rings, and he then chanted a prayer (asking for forgiveness/pardon with his eyes closed) while the drummer stopped and, when finished praying, the drummer resumed his drumming. The shaman then repositioned the branch of marigold flowers on Muller's chest three times and then removed it and moved the branch like a wand over Muller's body, particularly his limbs, and accompanied these movements with hissing. The ceremony ended, seemingly rather abruptly after about two hours (ca. 8:30 AM - 10:30 AM).

As compensation for performing the healing ceremony, the shaman was paid a rather large amount (undisclosed) of dollars

[18] On Shiva's cosmic dance, also accompanied by a drummer with a double-headed drum; see Coomaraswamy (1918: 56-66).

and presented with a large pig and two chickens to be sacrificed later.

The strand of the palm frond that the shaman held was suspended from a central pole and was but one strand of many in a virtual umbrella of palm strands. This central pole is one of the main supports for the so-called *langgatan*, the central offering platform or rack, an "altar" structure that is described in more detail below. The pole holding the palm strands was ornamented with a small branch of white orchid blossoms. Fronds below the blossoms were ornamented with a thin, flat piece of wood (MD *kurap* lit. 'a scab') shaped like a large (exaggerated) fishhook (MD *tatalangu ungyak*; cf. MD *tatalangu* and Kawi *teleng* 'depth/deep in a river or the sea' and MD *ungyak* and Kawi *unggah* 'to ascend, climb ... with sexual overtones'). This exaggerated fishhook was tied by its neck to the pole that suspended the palm strands. This fishhook is supposedly for the regeneration of the major deity (*sanghiyan*). The fishhook separates *sanghiyan wanang bahatara* (in this context: 'the deity Lord Wanang,' also the deity of rice) from mortals: the shaman held a portion of a palm frond that was well below the fishhook. After the ceremony, Muller was told that he was not to eat spicy food or fish from the sea. Here, it should be interjected that it is a Dayak tradition that fish from rivers are considered good, while those from the ocean are considered bad.

The *langgatan* "altar" (see Figures 1 and 2) is a central bamboo offering rack that is shaped like a bed frame. It is suspended by rattan "ropes" attached to its corners that are in turn attached to the ceiling in the center of the longhouse near the central palm frond umbrella pole (described above). The bottom of the rack is filled with rice straw and is the locus of food offerings. It has three central posts: (1) dedicated to *sanghiyan wanang bahatara* (detailed above), (2) called *manusia* 'human beings' (Kawi *manuṣya* 'man' < Skt. *manuṣya* 'man') and (3) which apparently now lacks a name but is for blessings.

The decorative cutouts on the altar components which are symbolically painted are called *ringitan* 'carved, notched'; and

they are shaped like the heads of birds, the ancestor bird, perhaps a Garuḍa (or perhaps a serpent, a Naga).

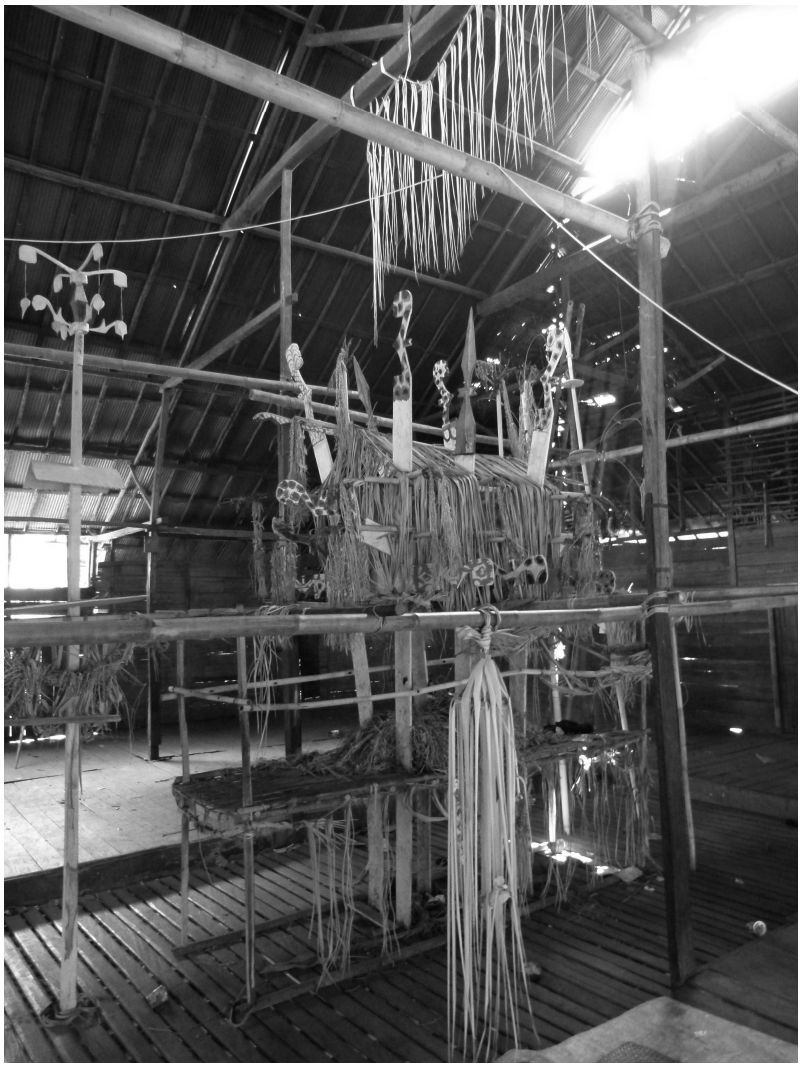


Figure 1. Side view of the 'altar' (Photo © Jean-Claude Muller).

Figure 2. The ‘altar’ viewed from the West End (Photo © Jean-Claude Muller).

There are three opposing sets of two flat board supports that form V-frames (which, if inverted, would be like the terminal roof frames at either end of traditional houses) that protrude from the *langgatan* “bed frame” are collectively termed *panggung*, the BI word for ‘stage, raised platform’, cf. Ngaju *pangun* ‘something erected, e.g. a house’. The bottom of the offering rack (bed frame) beneath the two opposing sets of three flat board supports is termed *susadian*. This entire offering platform assembly (with the two sets of three flat board supports) is termed *panggung lambang adat* and, as mentioned above, has a rice straw covering over its bottom on which *sanghiyan* is thought to sleep, but this belief is held only by the Meratus Dayak. For *lambang*, cf. Balinese *lumbung* ‘a hut for storing rice’. Thus, *panggung lambang adat* is literally a ‘traditional rice storage platform on stilts’.

The spear-like end post (1) of the *panggung* ‘stilt structure’ also symbolizes the god of the hunt = *sankar galung*, and *galung* originated from Kawi *galung* ‘war’; while *sankar*

'manifestation of the supreme deity' may be related to Ngaju *seher* 'magic spell'= BI *sihir* < Arab. *sihr*. The disks on this and the two other posts are collectively termed *campan* (cf. Nguja sacred language *jampena* 'place, abode'; see Baier et al. [1987:44]) and symbolize boundaries of respect for the deity (deities). The mid post (2: *manusia*) has two disks, then a roof crest, symbolizing a house (MD *punduk* = BI *pundak* 'shoulder'), and it is topped by a sort of whirligig with four bamboo prongs (MD *paringihan*; cf. Banjarese *paring* 'bamboo', but note Nguja sacred language *paring* 'roof of a boat'; see Baier et al. [1987:140]).

These four prongs, for want of a better term, are terminated by abstract Garuḍa-like figures that symbolize the four cardinal directions: these Garuḍa-like figures were like those that were carved as cutouts by Shaman A's wife from palm frond strands for the all night third and last rice harvest festival we attended at the remote rice storage hut we visited in the hills far above the first village where we stayed. Indeed, Garuḍa-like bird representations, seemingly the Meratus Dayak *mantit*, their ancestral bird, are typical components of Dayak iconography. They seemingly recall the rhinoceros hornbill (*Buceros rhinoceros*, Germ. *Nashornvogel*, a very low density resident in Sumatra, Java and Kalimantan only), extraordinary birds now threatened with extinction. The Ngaju consider them the progenitors of the first humans, the feathers of which are emblematically worn by Kaharingan seers (healers) and priests (shamans); see Schärer (1963:158 f.), Schiller (1997:50-51, 54, 66, 68, 71, 76, 86). In the Ngaju sacred language (*basa sangiang*) as recorded by August Hardeland (1814-1891) and Hans Schärer (1904-1947), the hornbill is called *bungai*; see Baier et al. (1987:19). Indeed, the Garuḍa, with the Kawi epithetic byname *kagapati* (Raffles' *kagengpateh*) < Skt. *khagapati* 'lord of the birds' is so significant in Indonesia that it is considered the emblematic equivalent of our eagle.

The entire "altar" assembly is called *campan nini* 'the abode of those above, the ancestors'; cf. Banjarese *nini* = BI *nenek* 'elder' in the BI phrase *nenek moyang* 'ancestors'.

Something like this assembly may well have originated among the Sundanese people of western Java, early devotees of Hinduism starting with the Taruma Kingdom (358-669 AD), which ended as a result of the Srivijaya invasion from Sumatra, on which consult Wolters (1962), now somewhat dated in light of the more recently discovered Srivijayan sites near Palembang and Jambi

It should be interjected, however, that not all early Kawi/Sanskrit vocabulary was as widely dispersed in Indonesia as that associated with religious practices. There is the well-known probative example of Skt. *megha* masc. 'cloud (filled with rain)', attested from Vedic (*RV* 1.116.3, 1.181.8) onward, that appears in Kawi as *megha* > Javanese *mega* (Gonda 1998:96), which was thence transplanted to Madagascar as *mika* (Tanosy dialect), and which Dahl (1951:102; 1991:111-112) cites as a principal piece of evidence that the immigrants from Kalimantan to Madagascar made an intermediate stop in the Srivijaya area (of Java?), probably before 700 AD; cf. von Humboldt (1836-1839: Vol. 2, p. 228). For 'cloud' Ma'anyan has *rakun*, which in itself is unusual as most Malayic dialects reflect Proto-Malayic **a*(*bw*)*an* > BI, Banjarese, Iban *awan*, Toba Batak *obbun*, but Balinese *gulem*.

7. The Aruh Gunal Festival, the Fibonacci sequence, and the cultural defiance of the Meratus Dayak

Prior to the third and final harvest ceremony that we witnessed (September), a ritual that serves to secure the soul of the rice (the very life force of the grain itself) to ensure continued sustenance, there is a major harvest festival, the so-called *Aruh Ganal* 'Major Festival' in which the etymology of *aruh* is unclear, while *ganal* = Banjarese *ganal* 'large, major, great'. This festival, which we did not witness but which was described to us in detail later, usually takes place in mid July. It can last as long as six days depending on the success of the harvest. It is seemingly a janus-like coalescence of two festivals:

(1) a harvest festival (celebrating accomplishment = past) and (2) a planting festival (preparation for a harvest = future).

Identification of these festivals as tripartite describes a linear recurrence relation: 1, 1, 2, 3, in effect a Fibonacci sequence; on the further implications of which see below. This sequence is apparently stipulated on the side of one of the flat board supports that protruded from the *langgatan* "bed frame" altar in proximity to which the healing ceremony, detailed above, for Muller took place; see Figure 3 which shows "3" as the base of the decorated cut-out terminal and a central squished O representing a grain of rice between 2 and I I.

Non-Dayak visitors and people from all the neighboring villages are invited to the *Aruh Ganal*, and this is a time of communal celebration and solidarity when gossip is exchanged and couples meet and possibly eventually marry. Traditionally, each day's event with chanting by shamans and seers and drumming begins about nine in the evening and lasts a full twelve hours.

Figure 3. The ‘altar’ cross piece (Photo © Jean-Claude Muller).

For many days in advance of the *Aruh Ganal* the central ceremonial room of the longhouse is prepared with three "shrines" for three major deities: (1) *Mantit*, the name of the ancestor bird, whose shrine is set up at the entry to the longhouse; (2) *Uria*, the name of the deity who takes care of plants and protects them from diseases and pests (cf. Kenja Dayak *urip* 'life'), whose shrine is inside the longhouse, and (3) *Nyaru* (= Ngaju *nyahu* 'thunder'), the god of thunder, whose shrine is to the right of the entry to the longhouse and who is identified with Shiva: MD *siwara hujan kamuru*, in which *siwara* 'Shiva' has the agentive/relationship marker *-r*, cf. BI *saudara* 'relative, family member, brother, sister'. Cf. MD *kamuru* 'thunder' with BI *gemuruh* 'id.' vs. Iban, Banjar *guntur* 'thunder. Finally, *juhan* is also BI/Banjarese for 'rain', cf. Ngaju *ujam* 'id.'.

These shrines are actually enclosures constructed with elevated lines over which are hung palm fronds with the same terminal cutouts as we saw at the third and final harvest ceremony. Here, too, the rule obtains that the potency of a shamanistically venerated deity is keyed to its "relative" inaccessibility. These shrines, which look like enormous grass skirt enclosures, are the "homes" of the deities and are called *kalangkang*, cf. Mentawai *galangang* 'the first building to be erected for a new village which serves as a gathering place and storehouse'; see Loeb (1929b:192).

The "relativity" of shamanism and its inaccessibilities are further manifested in the artistry of the vertical stacking of discs at intervals on the support poles of Dayak altars; see Figure 4. Indeed, as Eliade repeatedly (e.g. 1972) stressed, the notion of vertically "stacked" parallel worlds (living vs. dead) is virtually a universal aspect of shamanic societies, and so too among the Meratus Dayak.

Figure 4. The ‘altar’ support pole (Photo © Jean-Claude Muller).

Given the fact that the Meratus Dayak are soon to be unalterably exposed to the outside world by a new road, even more exposed than they are now electronically with access to cyberspace, television and all manner of trinkets of game gadgetry, one wonders what role(s), if any, shamanism will still play in their future socio-political and economic configurations, not to mention health care. Why, indeed, call for a shamanic cure if a modern clinic is only a short drive away? Pushing the clock back, one wonders why shamanism has persisted for as long as it has in rural Borneo. It must have played some highly significant culture-defining role, in both polity and belief, that caused it to be so seemingly unquestioningly regarded as intrinsically centralizing and essential, not only for an adequate livelihood (successful harvests), but also for the well-being of society itself. Could it be, as Basso (1995:22-23) has so astutely inferred for formerly cannibalistic tribes in Brazil's Alto Xingu, that the potential malice of a vengeful witchcraft and shamanic sorcery replaced the hostility of headhunting and cannibalism? Could there, then, be some abidingly latent fear of losing one's cultural identity and intra-group stability if shamanism were to be abandoned? The answers to these questions may well lie in oral histories, however guarded they may be, that have yet to be investigated.

And who is to come forth for a new generation of (male) shamans if this institution is to persist? We did not learn or observe anything about the inner dynamics of shamanic selection or training, but what we did observe was that the ranks of able-bodied males are thinning dramatically as young men (18 to 28, say) have left for a better life in urban centers and mines. In fact, many of the men in this age group who had stayed in the villages were physically (blind, crippled, ill) and, possibly, mentally challenged.

Opening the Meratus Dayak to the outside world raises the perennial questions posed by ethnographers about the blessings and curses of such exposure. Suddenly the Meratus housewife will surely want a modern kitchen with running water and plumbing, and suddenly the Meratus Dayak region may become a vacation subdivision. But why should so-called primitives be

kept in some protective park, such as Brazil has done since about 1961 for the peoples of the Alto Xingu by establishing its *Parque Indígena do Xingu*? The "it's for their own protection" argument is inherently spurious and ultimately selfish, particularly in so much as it satisfies some thirst on our part for exoticism. Indeed, for all the good that she did in preserving an image of their culture with her marvelous photography and her husband's hospitality at Na Bolom, Getrude "Trudi" Duby-Blom (1901-1993) was openly and perhaps correctly criticized for shielding the vanishingly small population of Lacandón (Maya) Indians of eastern Chiapas (Mexico) from change; see Brunhouse (1976:200-239). Integration as moderation, as a compromise between completely rejecting traditions vs. wholeheartedly embracing innovations has had a balancing effect in some cases: witness the harmonious balancing act between preserving porter traditions and servicing eco-tourism currently being played out by the Pemón Indians of Roraima (Venezuela); see Salazar (2001).

Contrary to what a majority of ethnographers and social anthropologists apparently once thought, there is no structural stability in time. As Leach (1954:63) aptly contended in his classic study of Kachin *gumsa* society: "What can be observed now is just a momentary configuration of a totality existing in a state of flux." True enough, the Nuer photographed and depicted by the Viennese ethnographer, Hugo A. Bernatzik (1897-1953), in the late 1920's and their portrayal by Evans-Pritchard (1940) little more than a decade later afford virtually identical views, but the intriguing account by Hutchinson (1996) of the Nuer more than forty years after that by Evans-Pritchard shows both continuity and arresting change: e.g. recent soaring divorce rates but the persistence of scarification in male initiation rites despite official bans on the practice; cattle slaughtered ritually as sacrifices before the advent of Christianity, but now as an act of hospitality after the advent of Christianity. For details of the unfortuante encounter between Bernatzik and Evans-Pritchard in the Anglo-Egyptian Sudan in the spring of 1927 and its consequences, see Byer (1999:49-63).

Resilient acceptance or resistance, adaptation or not and vulnerability or not are obviously all highly unpredictable as possible alternative outcomes in the face of trenchant cultural and environmental change, but the bad effects of the latter change, dramatized as "ecocide," as Jared Diamond (1997, 2005) would have it, have apparently recently garnered the most attention, both by academicians and the general public. Ecocide is the societal morbidity or near morbidity that results from self-inflected ecological devastation, e.g. clear-cutting Easter Island some 900 years ago, but see O'Brien (2009). Diamond's *Guns, Germs and Steel* (1997) won a Pulitzer Prize and has had massive popular appeal and enjoyed numerous effusively positive reviews; and the same acceptance holds for his *Collapse* (2005), e.g. as in Malcolm Gladwell's review ("The Vanishing") in *The New Yorker* (January 3, 2005). There, Gladwell uncritically swallows Diamond's account of failure by ecocide of the medieval (from 982 until ca. 1485 AD) Norse settlements on Greenland.[19]

Diamond, who collaborated with the distinguished evolutionary biologist, Ernst Mayr (1904-2005), for thirty years or more, began as, well, a taxonomist, which is a fancy term for someone who classifies organisms in an ordered system of categories; see, for example, Diamond (1966). Diamond has therefore long been pre-occupied with what strikes him as saliencies of goodness of fit, and he simply continued this perspective when it came to accounting for what he saw as ecocide scenarios. However, as demonstrated by many of the more provocative contributions in McAnany's and Yoffee's *Questioning Collapse* (2010), Diamond often mistakes effects for causes, rather than the other way around, as he purports to be doing. Given such analytic myopia, he sometimes fails to give probatively diagnostic historical accounts of socio-cultural changes. We will now detail one classic case of what might be

[19] For an archaeologically much more professional assessment of the Greenland "experiment"; see Joel Berglund's "Did The Medieval Norse Society in Greenland Really Fail?" in *Questioning Collapse* (2010:45-70), edited by Patricia A. McAnany and Norman Yoffee.

imputed to be a case of ecocide, but what is actually the effective outcome of a very different cause.

The multi-faceted and multilingual Silk Road (ca. 150 BC - ca. 1200 AD) civilizations were built on intensive long-distance trade, primarily the outcome of the secret of sericulture, successfully guarded until about 440 AD when it reached Khotan (modern Hetian), a kingdom on the southern rim of the Taklamakan desert. Up and down the Silk Road network that ringed the Taklamakan desert the principal silk traders and fabricators from the 2nd century BC to the 10th century AD were the Sogdians. They were an Eastern Iranian people who left a rich legacy of Manichaean, Nestorian Christian and Buddhist translation literature written in a variety of scripts derived from the Aramaic alphabet. These texts were eventually "discovered" in the course of the first decade of the last century, but their language had probably died out by the 11th century AD. Yaghnobi, which was discovered in the late 19th century in a remote part of the valley of the Yaghnob River about 100 km north of Dushanbe in Tajikistan, is the only known surviving successor of Sogdian.

At first blush the archaeology of the oasis trade centers of the Southern Silk Road certainly seems to point to ecocide: failure to maintain an adequate irrigation system by, for example, judiciously managing and allocating (Himalayan) run-off. Rivers in the area, such as the Cherchen Darya, that until recently reached lakes now end in shallow marshes. The once mighty Tarim, bordering the northern side of the Taklamakan desert, has been completely dried up along its southern course since 1921, and what were formerly luxuriant oases with a wealth of cultural exchange activities have long been abandoned and left neglected as ghost towns buried in sand; see Baumer (2000:121-136).

This ecological destitution is not, however, the result of ecocide, but the simple fact that it got to be far safer and far more prosperous to ship silk and other goods by sea rather than by caravans across a heartless desert with little coherent political control under the Uighur. The Silk Road and its oases

were junked because of the emergence of compelling new trading dynamics, not ecocide.

So are the Meratus Dayak committing ecocide by practicing semi-nomadic swidden agriculture, whether coupled with (the "smoke link") animistic shamanism or not? The answer is: probably not. In fact, even random range burning without any clearly beneficial agricultural purpose or apparent ecologically degrading effects has long been practiced by the Pemón of Venezuela. They routinely burn parts of Venezuela's Gran Sabana to reduce the snake population and to symbolically signal their neighbors. The modern Maya also continue to practice swidden agriculture, and further instances without ecologically disastrous results could be cited in legion.[20]

Swidden agriculture as practiced by the Meratus Dayak may, moreover, well be an act of cultural defiance (either consciously or unconsciously), an assertion of cultural independence in the face of even greater socio-economic instability in the future and the threat of possible total absorption by and incorporation into greater Muslim Borneo. For them the present is clearly a critical transitional phase: longhouses have generally been abandoned, their language has been pidginized, their only stable political structure is the village while all larger scale political federations are beyond the village level and currently in a state of flux. They may soon be faced with an intensely difficult transition from a polity freely based on common lineage and cognatic dependence to an ultimately restrictive landlord-tenant

[20] At the "When Worlds Collide" conference at the Rockefeller Foundation's Bellagio Study and Conference Center (February 8th-13th, 1988), Colin Renfrew vociferously asserted that there is no known instance of a hunter-gatherer society's having reverted to this state after having achieved organized agriculture, however primitive or nomadic that agriculture might have been. In the ensuing discussion, Eric P. Hamp immediately enlightened Renfrew that the modern Maya situation is a well known counterexample to this assertion. Unfortunately, Hamp subsequently addressed Renfrew as Cambridge's Walt Disney Professor of Archaeology. For the conference proceedings, see Markey and Greppin (1990). Putting *ad hominem* imprecations aside, the important difference between Hamp vs. Renfrew is essentially one of theoretical perspective: Renfrew was apparently schooled in a British social anthropology that staunchly upheld equilibrium theory and systems while denying history with its possible imposition of successive subjunctive phases; that is, Evans-Pritchard's Nuer are "the" Nuer of all time, forever suspended in a state of equilibrium, an unreal static condition. Hamp is, of course, a leading historical linguist and thus intensely attracted to uncovering examples of and reasons for absences of equilibrium.

relationship; on the investigatory problematics of which see Leach (1954:288).

But this part of the world is probably uniquely unsurpassed with its long history of successful adaptive uses of nature. Timor was, as we have only very recently been informed, the surprisingly early birthplace of pelagic fishing; see O'Connor, Ono and Clarkson (2011). Moreover, as we have detailed above, this is an area that long ago preserved elements of animism while cloaking them in Buddhistic Hinduism, another example of its adaptive capability. And as difficult as it has been for anthropologists to develop investigative methodologies or modeling for changing social systems, our account of Dayak shamanic animism and its associations with Buddhist Hinduism suggests an arithmetic analogue that may provide a useful model for conceptualizing the progression of changing social and cultural paradigms; namely, the Fibonacci Sequence.[21]

This is the series of numbers 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144 ... in which each number after the first is obtained by adding together the two numbers that precede it: here recency is the product of an identifiable predecessor, and change is assigned a retracement history. Intriguingly, such numbers also appear in nature, particularly in flowers where the number of petals are in sets of 3, or 5, or 8, ... and in ratios (e.g. 34:55) of, for example, clockwise to counter-clockwise spiral tendrils. These are, of course, proportions that the human eye perceives as beautiful, and they often underlie the patterns of "primitive" art. Moreover, the higher ratios asymptotically approach the so-called "Golden Ratio" (= $\sqrt{5}$-1/2 = 0.6180339), which Pythagoras was apparently the first to discover: 34/55 = 0.6181818, 55/89 = 0.6179775, 89/144 = 0.6180555).

[21] In September of 2009, Muller pointed out to Markey the cultural importance of the Fibonacci Sequence when Muller showed Markey that the sequence was used as the basis of a design on the floor of the Hagia Sophia, the very place where the Byzantine emperors were crowned. It may be a coincidence, but an inductive method for finding Pythagorean triples based on the sequence of odd integers that appears in Leonardo Pisano Fibonacci's *Liber Quadratorum* (1225 AD) also appears in an eleventh century Byzantine manuscript now in the Old Palace (*Eski Saray*) library in Istanbul (available there for viewing upon request).

Figure 5. Garuḍa-like decorations on a basket being produced in village B. The dark colour is green (Photo © Jean-Claude Muller).

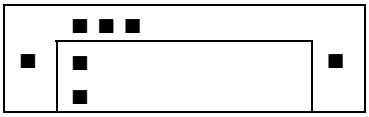
Figure 6. Shaman A's wife making Garuḍa-like cutouts (Photo © Jean-Claude Muller).

The paucity of plastic art among the Meratus Dayak is arresting. The geometric designs on the baskets woven by the women were, it initially seemed, a singular manifestation [(Figure 5). Then we noted the terminal Garuḍa-like cutouts on palm fronds prepared by Shaman A's wife as mentioned above (see Figure 6) and finally the altar constellation itself, but there was nothing else.

There were no masks or costumes or carvings or jewelry, nothing else. Moreover, the decorative painting on the flat board supports that protruded from the *langgatan* "bed frame" altar was perplexing. Whereas the geometric designs on baskets were crisply articulated with well defined patterns, those painted on the supports, in every primary color except blue, were fuzzy. They were ill-defined, seemingly hastily done random blotches reminiscent of children's finger painting. They seemed to lack any meaningful correlational or oppositional relationship. Initially, they appeared to be intrinsic isolates with no implicit (diacritic) relationship to nature, the kind of epistemic definition that Lévi-Strauss ascertained for the Kwakiutl Dzunukwa masks of the Pacific Northwest in his *La voie des masques* (1975). Here, Lévi-Stauss contrasts, on the one hand, intrinsic representation (Dzunukwa) as that which exists in isolation without implicational relationships and, on the other hand, diacritic representation as that which implies implicational relationships, typically implicational references to nature or culture (ritual masks). The intrinsic mask (Dzunukwa) does not prompt immediate comparison with the human face that wears it, while the diacritic (ritual) mask does. As a general rule, when plastic form is diacritic, semantic function is inverted (while like a real human face, we know that, as diacritic forms, masks are only imitations implying a human face), but when plastic form is intrinsic (Dzunukwa), then semantic function is preserved: Dzunukwa was clearly never meant to be human, but an absolutely otherworldly ogress or specter or cannibal woman who eats children. Once again, cannibalism has been replaced by witchcraft; recall our reference to Basso (1995:22-23) above.

The blotchy dark (typically black) dots on the decorated ends of the board supports are generally surrounded by or immersed in a contrasting color field, often red. They are highly reminiscent of the annulated figures typical of Australian Aboriginal Dreaming art; see the numerous examples and fine discussions of same in Caruana (2003). In view of the fact that the altar's primary function is presumably to serve as a symbolic nucleus for harvest festivals focused on rice cultivation, we infer that these annulated dots represent grains of rice. If so, then does their patterning make a reference to nature that might support this supposition? In at least one articulation of dots we noted a pattern from which a Fibonacci sequence (1, 1, 2, 3, 5) could be extrapolated; see Figure 7 and compare the schematic abstraction below:

Pattern Abstraction from Figure 7



and, in fact, this is a planting pattern that was repeatedly replicated in the village gardener's plot that is detailed above. Moreover, as we have already pointed out, such patterns are botanically common in foliage and petal configurations and would naturally suggest themselves to gardeners, particularly those like the Dayak who are engaged in randomized dibble planting. What we are inferring is that Dayak altar art replicates nature and vice versa, and we are not in any way implying, with our allusions to a Fibonacci sequence, that the Dayak are adept practitioners of number theory. The abstract annulated decorations on the ends of the altar board supports are diacritically representative of this culture's major survival crop. As another instance of diacritic representation and a further example of so-called "primitive" art implicationally replicating nature, Markey was long puzzled by the repetitive, strand-like granular sequences commonly found in Australian Aboriginal art: what was their analogue in nature? Then one afternoon

while walking Cape Kimberley Beach north of Cairns the connection was made: the granular sequences in the paintings replicated the sand droppings caused by crabs.

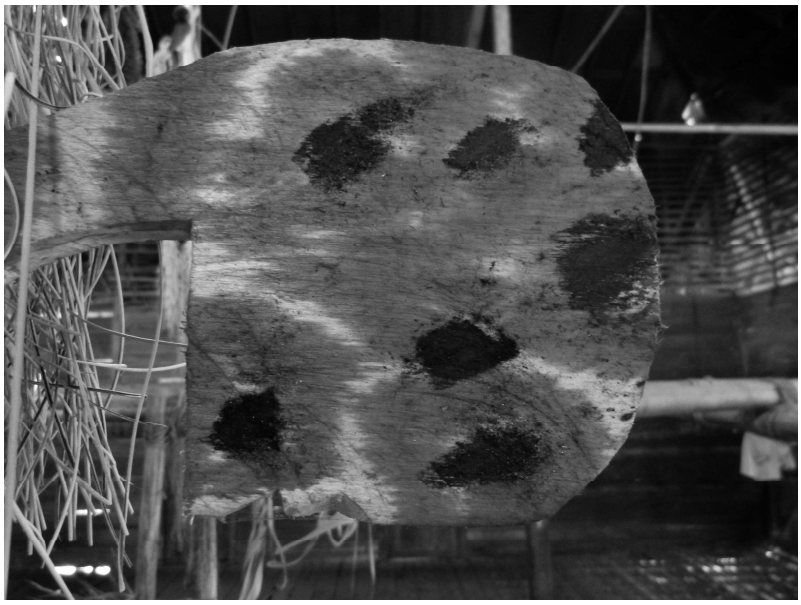


Figure 7. Dot sequences on the head of the 'altar' cross piece (Photo © Jean-Claude Muller).

Finally, then, we hope to have demonstrated that the arts, artifacts and cultural evolution of the Meratus Dayak, all now seemingly threatened with explosive change and perhaps implosive oblivion, clearly evidence finely tuned analogical memories, insightful ability to manipulate cognitive models over time and a talent for articulating metaphorical abstractions, as well as nigh stunning adaptability given the challenges posed by their rather limited resources.

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Abreviations:
BI = Bahasa Indonesa
MD = Meratus Dayak

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