

The Devils of Oki-shima: A Group of Presumed Micronesian Castaways in Japan

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Abstract

Accidental dispersal of Micronesian voyaging canoes is well known. While most of this occurred within the archipelagos, some was further afield. A twelfth century Japanese report narrates the arrival of a boat of castaways to the Izu Islands (off Tokyo). This paper examines this narrative against the background of other documented long distance dispersal from Micronesia, such as vagrant saltwater crocodiles and a canoe drifting from Lamotrek to Shanghai (China).

Introduction

As is well documented, Micronesians were expert seafarers, able to navigate vast expanses of water open solely by the observation of the stars and/or the swell (Daiber, 1986; Genz et al., 2009). The presence of Micronesians in the Marianas Islands during the Spanish period, for example, is well documented (cf. Barratt, 1988; Driver & Brunal-Perry, 1996). These were certainly planned voyages, as were voyages from Palau to the Philippines (Spennemann, 2020). Much of this tradition is still alive and has seen a revival in recent years (Cunningham, Kranz & Sikau, 2006; Finney, 2007; Genz, 2011; McCoy, 1973; Metzgar, 2006), commonly tied with a reaffirmation of cultural identity (Diaz, 2011).

The vagaries of the weather, especially as tropical storms and typhoons (Spennemann, 2004), however, frequently interfered with the orderly conduct of the voyage, forcing some of the canoes off course. In addition, several of the Carolinian long-distance voyages went awry, usually when the canoes were blown off course during typhoons, with canoes from Ulithi arriving in the Philippines in the 1850s (Jagor, 1873, p. 208). The German administrator of Yap, Georg Fritz (1910), for example, noted that “almost every year individual canoes are cast away to the Philippines”. While such dispersal occurrences from Micronesia to nearby areas were common, some were even farther afield including the East China Sea.

One of these records is a twelfth-century Japanese report on the arrivals of what was described as foreign ‘devils’ on Oki-shima in the Izu Islands (off Tokyo). This paper examines this narrative against the background of other documented long distance dispersal from Micronesia, such as vagrant saltwater crocodiles and a canoe drifting from Lamotrek to Shanghai (China).

Drift Voyages from Micronesia to Japanese waters

A recent review of the occurrence of vagrant saltwater crocodiles in the Pacific examined the evidence for dispersal facilitated by the ocean currents (Spennemann, in

2021, 2020). In addition to numerous examples in the central and southern Pacific, that review also identified three confirmed (Amami-Oshima, Toyama Bay, Koamishiro Bay) and two unconfirmed observations (Iriomote-Jima, Iwo Jima) of vagrant saltwater crocodiles in Japanese waters (Figure 1) (Spennemann, 2021). The review noted that the majority of these vagrants was likely to have originated from northeastern Luzon (Philippines). Their movement was aided by the Kuroshio Current, which, flowing at a speed of about 2 knots, carries objects from the northern Philippines in an arc past Taiwan to the Southern Coast of Japan (Chang et al., 2016). The Tsushima Current branches off south of Japan and carries objects into the Sea of Japan (Figure 1). One of these vagrants, the unconfirmed Iwo Jima specimen, however, certainly would have come directly from Palau (Spennemann, in 2021). As computer simulations showed that objects from Palau drift northwards, either to the Philippines or into the Kuroshio Current (R. Callaghan & Fitzpatrick, 2008), possibly some of the other crocodiles observed in Japanese waters could have come from Palau. Similarly, the drift dispersal of tropical seeds from the Philippines and Micronesia into Japanese coastal waters (both western and eastern coasts) is well documented (Nakanishi, 1987).

Drift voyages of canoes blown off course in the north-western Caroline Islands are likely to follow similar trajectories. Typhoons and tropical storms are, and have been common, in western Micronesia (Spennemann, 2004). The storm tracks follow a similar pattern: a westward movement just to the north of the Caroline Islands, usually coupled with an increase in intensity, followed by an eventual curving off to the north and northeast (Figure 1). The point where the storm track curves northwards varies. Once the winds subside, floating objects will be pushed westwards by the trade winds and will, eventually get caught up in the Kuroshio Current.

One such, major, dispersal is evidenced by major dispersal recorded in the Imperial German colonial files. On Good Friday 1907 a severe typhoon struck the central and western atolls of the Caroline Islands. Woleai Atoll was hardest hit, with the winds stripping breadfruit trees and coconut palms, and the storm surge inundating many of the swamp taro pits, resulting in a severe food shortage (Spennemann, 2004, 2007b). To alleviate some of the effects, six canoes left Woleai for Lamotrek Atoll, some 150 nautical miles to the east, in order to reduce the number of people to be fed on Woleai and to also eventually bring back food and fresh planting stock on the return voyage. The Woleaians stayed on Lamotrek throughout 1908, planting their own crops. Early in 1909 the canoes sailed back but encountered a tropical storm. Five canoes were blown off course and eventually reached Ulithi, 290 nautical miles northwest of Woleai. The sixth and smallest canoe, occupied by five people, became separated from the others. After a 97-day, 3580 km drift voyage the canoe arrived at the Chinese coast and was found, with three survivors, just off Shanghai (Fritz, 1910) (see Figure 1 for locations). The Woleians were eventually repatriated in September 1909 (Anonymous, 1910).

The Devils of Oki-shima

This documented drift voyage of the Micronesian canoe, as the dispersal of the saltwater crocodiles, provides context to another historic record of long-distance dispersal, which had been first noted by Kōno Isamu (1942) and later publicised by the Japanologist Alexander Slawik (1955). In his paper on the discovery of a stone axe on Kita-Iwō-Jima (北硫黄島), Volcano Islands (Japan), Kōno discusses whether during earlier times ethnic elements from Micronesia might have penetrated into the Japanese sphere and left their traces (Kōno, 1942). In this context Kōno discusses an example for possible contact reported in Japanese medieval literature. The event is narrated in volume 17 of the *Kokon Chōmonjū* (古今著聞集), a 'collection of (hi)stories from the past and present,' compiled in about 1254 by Narisue Tachibana (橘成季), who was possibly the governor of Iga province at the time (Dykstra, 1992). Story n° 27 entitled 'Arrival of a ship' (Narisue, 1690), provides the following account, as reproduced by Kōno (1942)¹ and translated by Slawik (1955).

承安元年七月八日、伊豆國奥嶋²の濱に船一艘つきたりけり。嶋人ども難風に吹よせられたる舟ぞと思ひて。行むかひて見るに。陸地より七八段ばかりへだてゝ舟をとゞめて。鬼繩をおろして海底の石に四方をつなぎて。

かの鬼八人船よりおりて海に入て。しばし有て岸にのぼりぬ。嶋人粟酒をたびければ、のみくひける事馬のごとし。鬼は物いふ事なし。

そのかたち身は八九尺ばかりにて。髪は夜叉のごとし。身の色赤黒く。眼まるくして猿の目のごとし。皆はだか也。身には毛おひす。蒲をくみて腰⁴にまきたり。身にはやうやうの物かたをゑり入たり。まわりにふくりんをかけたたり。をのをの六七尺ばかりなる杖をそもちたりける。

嶋人の中に弓矢もちたる有けり。鬼こひけり。嶋人おしみければ鬼ときをつくり

"Jōan year 1 [=1171], 7th month, 8th day. A boat arrived at the beach of the island Oki Shima in the Izu province. The islanders [of Oki-shima] believing it to be a boat cast away in a storm went to see it. The boat had stopped some 7 or 8 duan [75-85 m]³ from the shore. The devils dropped ropes and fastened the boat on all four sides with stones on the sea floor. Afterwards eight of these devil men descended from the boat into the sea and emerged at the shore. When the islanders offered them sake made from millet, they drank it like horses. The devils did not say a word.

As far as their constitution is concerned, they were about 8 to 9 shaku [2.4-2.7 m] high, their hair was like that of yakshas, the colour of their bodies was red-black, the eyes round as those of monkeys. All were naked. Their bodies were hairless⁵ [and] they had wound woven reed around their waists.⁴ Motifs or various kinds were cut into their bodies bounded by ornamental borders. Everyone carried a 6 to 7 shaku [1.8-2.1 m] long stick.

Among the islanders were some who carried bows and arrows. The devils

て杖をもちて。まづ弓もちたるをうちころしつ。およそ打たるゝもの九人がうち五人は死ぬ。四人は手を負なからいきたりけり。そのゝち鬼脇より火を出しけり。

嶋人皆ころされなんづと思ひて。神物の弓矢を申出して。鬼のもとへむかひければ。鬼海に入て底より船のものに至りてのりぬ。則風にむかひてはしりさりぬ。

おなじ十月十四日圖解をかきて。おとしたりける帯をぐして國司に奉りたりけり。件の帯は蓮花王院の實藏におさめられけるとかや。

asked for them. When the islanders did not wish to part with them, the devils gave out a war cry and attacked with their sticks first those who had bows and arrows, with an intention to kill them. Of the nine people attacked, five died and four were injured but survived. Afterwards the devils released a fire from the side.

The islanders feared they all would be killed. They requested and brought the holy bows and arrows, and when they attacked the devils, these devils went into the sea and reached the boat via the sea bottom. They fled against the wind.

In the same year, 10th month, 14th day, one wrote an illustrated report and sent it together with a belt, that had been lost, to the governor. The belt is reported to have been deposited in the treasury of the Rengeō-in."⁶

Text based on Kōno (1942)

Translation based on Slawik (1955)

Kōno does not doubt that this narrative represents the landing of a foreign people on Japanese soil. He believed to recognise in the description the cultural traits of Micronesians, based on the description of the tattoos, the loincloths, the use of clubs and the lack of knowledge about bows and arrows (Kōno, 1942). Kōno argues that these arrivals were Micronesians who had been carried to Japan by the Kuroshio Current.⁷ Slawik (1955) seems to concur. Given the geographical trajectory of that current however, an origin in the northern Philippine Islands, such as Luzon, is likewise possible.

Examining the Critical Descriptive Elements

Deconstructing the entry in Kokon Chōmonjū, the critical descriptive elements of the arrivals are: head hair, body hair, skin colour, eye shape, tattoos, dress, implements and reaction to bows and arrows, all of which shall be examined in turn.

Let us consider the physical features first, which requires the use of nineteenth and early twentieth century anthropological sources that include somatological descriptions.⁸ The stature height, given as 8 to 9 shaku [2.4-2.7 m], is clearly clouded by imagination and exaggeration. Given that the round shape of their eyes was notable ('round as those of monkeys'), which suggests a lack of epicanthic folds, the arrivals were clearly not of Mongoloid,⁹ but of Philippine or Micronesian background.¹⁰ The

skin colour, which is given as 'red-black,' suggests again people of Philippine or Micronesian background¹¹ as opposed to Malayan or Vietnamese.¹²

The hair of the arrivals was likened to that of yakshas, which in Buddhist tradition are a class of nature fairies and daemons, but which can also be interpreted as malevolent spirits, ferocious-looking persons, or demonic warriors. The depiction of the yakshas varies, but tends to involve open, unruly hair, occasionally braided at the back (Misra, 1981). In this, the hairstyle differed markedly from the Japanese and Korean topknots (Choi, 2006), as well as the Chinese queue (Godley, 1994). Palauans, on the other hand, traditionally wore their hair open in long frizzy big curls, combed back and occasionally tied in a knot (Krämer, 1919, p. 302f.) (see also Hunt, 1950). Other Micronesians wore their hair long and open, occasionally tied into a tail (Lukunor: Krämer, 1935, p. 9).

The observation regarding the body hair of the arrivals is confusing. While Kōno's text states that the devils had hair on their body, Slawik's translation states the opposite. Japanese males tend to have very little facial and body hair, compared, for example, to Ainu (Hanihara, 1990) and Caucasians (Hamilton, Terada & Mestlert, 1958). Micronesian men tend to have facial hair,¹³ as well as light body hair.¹⁴ Little is published about the hirsuteness of medieval and even modern populations in the Luzon and the Philippines, heavy body hair is reported in populations on Mindoro and Palawan (Conklin, 1949). The body hair of the arrivals cannot have been extreme, however, as otherwise the commentary would have made reference to monkeys or other animals (as it did for the eyes).

Let us now turn to body ornamentation and material culture, i.e. tattoos, dress, implements and the reaction to bows and arrows. While tattooing has traditionally also been practiced in parts of the Philippines (Salvador-Amore, 2002), tattoos, in particular large chest and full body tattoos were common throughout Micronesia as a social and ethnic marker for men (e.g. Eilers, 1935; Eilers, 1936; Krämer, 1926, 1935, 1937; Spennemann, 2009). The lack of dress bar loin cloths ('all were naked') clearly set the arrival apart from the cultural norms of the Oki-shima islanders. The arrivals had 'had wound woven reed around their waists', which suggests, woven mats, grass skirts and loin cloths woven from *Pandanus*, which were of course the common dress style throughout Micronesia (e.g. Eilers, 1935; Eilers, 1936; Krämer, 1926, 1935, 1937). Clothing made from banana fibres, which dominated in the Philippines (Mintz, 2017), resembles in its fine weave flax and like fabric, and does not correspond with the description of 'woven reed.'

The description that every one of the arrivals "carried a 6 to 7 shaku [1.8-2.1 m] long stick" suggests the use of spears as long clubs are absent in Micronesia and the Philippines. Traditionally, spears were common in parts of the Philippines (Krieger, 1926) and also in use in Palau (Krämer, 1926, p. 120f.). The reaction to bows and arrows is more complex. Kōno (1942) interprets this as a desire to obtain items that were unknown to the arrivals. The same text, however, can also be interpreted as a desire to obtain the bows and arrows as weapons for their own defense. While the use of bows and arrows is absent in the Western and Central Carolines (Eilers, 1935, 1936; Krämer, 1935, 1937), they were common in the Philippines (Amazona, 1951; Krieger, 1926;

Rahmann & Maceda, 1955). They are also on record in Palau, where they were primarily used for bird hunting (Krämer, 1926, p. 67ff.).

While the majority of the descriptive elements of the arrivals may originate from either area, some elements are diagnostic. The loin cloth made from 'woven reed' strongly points to Micronesia as does the long and curly head hair and the commentary on body tattoos. The only counterpoint is the commentary on body hair. While facial and thoracic hirsuteness is on record for some communities in mid-twentieth century Mindoro and Palawan, these locations are on the western side of the Philippines and therefore unlikely source islands (Figure 1). Given that Japanese males tend to have very little facial and body hair, any observable body hair was deemed remarkable. Micronesian men exhibit facial and, albeit light, body hair.

Conclusion

Given the above discussion, there can be little doubt that the narrative in *Kokon Chōmonjū* refers to a group of castaways from either the Philippines or Micronesia. On balance, it is more likely that the vessel came from Western Micronesia, probably Palau. This Japanese narrative, when combined with the evidence of vagrant saltwater crocodiles, the drift of plant matter and the 1910 record of Micronesians drifting to waters off Shanghai, highlights that the southern Japanese islands were exposed to random contacts with the Southern Seas.

As far as we know, these contacts went only one-way until the second half of the nineteenth century when Japanese traders developed formal connections with the northern Mariana Islands (Spennemann, 2007a, 2008) and western Micronesia (Hezel, 1994), as well as engaged in the exploitation of seabird populations in the Central Pacific (Spennemann, 1998a, 1998b). All historic records of vessels drifting away from Japanese waters relate to trans-Pacific drift (Kakubayashi, 1981), with no evidence of drifting directly to Micronesia.

We can only speculate what happened to the devils of Oki-shima after they boarded their canoe again. Given that they had drifted all the way to Japan suggests that their sails (or mast) had been damaged, preventing them from sailing back to the waters they knew. If they kept on drifting, the currents would eventually have carried the canoe across the Pacific to the coasts of Washington or Oregon, or to Hawai'i as rafting evidence from the Sendai earthquake of 2011 has shown (Carlton et al., 2018; Eernisse, Draeger & Pilgrim, 2018). Whether the crew would have survived such a trip is unknown. The level of thirst they demonstrated when offered sake suggests that their ability to obtain rainwater was low, as was their ability to osmotically absorb water through the skin (while immersed in seawater between the hull and the outrigger). This does not bode well for the chances of their survival.

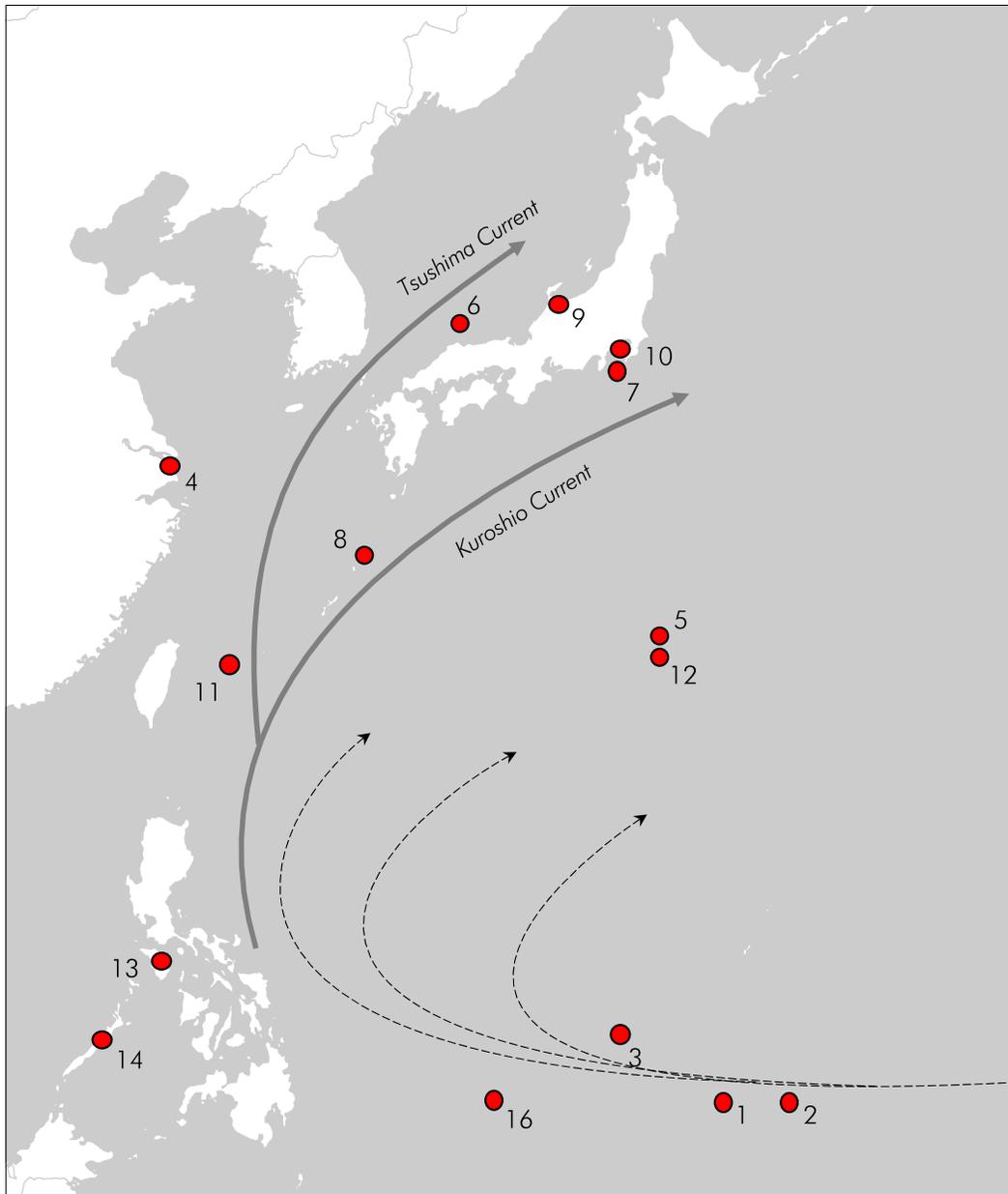


Figure 1. Map of locations mentioned in the text. The dashed lines indicate schematic typhoon tracks. 1 Woleiai; 2 Lamotrek; 3 Ulithi; 4 Shanghai; 5 Kitawō-Jima ; 6 Oki-ni-shima; 7 Izu Oshima; 8 Amami-Oshima; 9 Toyama Bay; 10 Koamishiro Bay; 11 Iriomote-Jima; 12 Iwo Jima; 13 Mindoro, 14 Palawan; 16 Palau¹⁵

Endnotes

1. The various imprints of Kokon Chōmonjū differ slightly in their text.
2. Kōno annotates the text 奥嶋 (Oki Shima) as ‘オキノシマ’ (Oki-no-shima), which on face value would place the location on the western side of Honshu, as part of the Oki Islands, Shimane Prefecture. The text, however, states clearly that Oki Shima is part of the Izu province, which is on the eastern side of Honshu, facing the Central Pacific, and the Ogasawara island chain. There is also Izu Ōshima (伊豆大島) in the Izu Islands group, which while now part of Tōkyō Prefecture was part of the former Izu province. Slawik (1955), on the other hand, speculated that the island may have been Onbasejima (恩馳島, also in the Izu Islands. The island is comprised of two sub islands, the north-eastern of which is commonly called Ojima (オジマ).
3. While in recent usage 段 duan (tan) refers to a unit of area measurement (1 duan = 991.7m²), during the Edo period 段 was also used as a measure of length, where one duan was equivalent to six 間 ken (*i.e.* 10.91 m). The reported distance from the shore was therefore 76–87 m (in the translation rounded to 75-85 m).
4. Kōno’s footnote (his n° 3) reads: 岩波文庫本「古今著聞集」には「蒲をくみて煙にまきたり」とあるが、國史大系本には「腰にまきたり」と爲って居る。"Kokon Chomon ju" (A Collection of Tales Heard, Past and Present), a book of Iwanami Bunko, says 'I picked up a bulrush and threw them into smoke,' but Kokushi Taikai-bon (Japanese History Series) says that picked up a bulrush and wrapped it around my waist.'
5. Kōno’s text states that the ‘devils’ had hair on their body.
6. The Rengeō-in (蓮華王院) (also known as Sanjūsangen-dō) is a major Buddhist Temple in Kyōto.
7. Kakubayashi (1981) has compiled data on Japanese drift records, but these are confined to drift voyages emanating from Japan (see also Braden, 1976; R. T. Callaghan, 2003).
8. The anthropometric and somatological research during the nineteenth and early twentieth century had, of course strong racial motivations and undertones, that justifiably have been widely criticised (e.g. Ariffin & Binti, 2019; Lorimer, 1988; Smedley & Smedley, 2005). For the purposes of this assessment of somatological characteristics, however, publications derived from somatological research form a valid resource.
9. For epicanthic folds among Chinese, Japanese, Korean and Malay see (Boo-Chai, 1962; Lu et al., 2017)
10. For the eye shape of people in the Philippines see (Anies et al., 2013; Barrows, 1910; Demayo et al., 2010), for Palauans see (Krämer, 1919, p. 303) for outer islands of Chuuk (Krämer, 1935, p. 9).
11. It should be noted, though, that given the extensive inter-Micronesian voyaging, there is a considerable variation in skin colour. See commentary by Petersen (2007). —Krämer (1935, p. 9) generalised and described the skin colour of the population of Lukunor (outer islands of Chuuk) as ‘chestnut brown’.
12. For skin colour of Chinese see (Xiao et al., 2012), of Japanese see (Wagatsuma, 1967).
13. Palau (Krämer, 1919, p. 303); Lamotrek (Krämer, 1937, p. 10); Fais (Krämer, 1937, p. 304); Woleai (Krämer, 1937, p. 220).
14. Palau (Krämer, 1919, p. 303).
15. Deanna Duffy (Spatial Analysis Network, Charles Sturt University) kindly produced the underlying base map for Figure 1.

References

- Amazona, Damian. (1951). Some Customs of the Aetas of the Baler Area, Philippines. *Primitive Man*, 24(2), 21-34. doi:10.2307/3316360
- Anies, Olive S, Torres, Mark Anthony J, Manting, Muhmin Michael, & Demayo, Cesar G. (2013). Landmark-based geometric Morphometrics in describing facial shape of the Sama-Banguingui tribe from the Philippines. *Journal of Medical and Bioengineering*, 2(2), 131-136. doi:10.12720/jomb.2.2.131-136
- Anonymous. (1910). Deutsch-Neuguinea. Verschlagene Karoliner. *Deutsches Kolonialblatt*, 21(9), 389.

- Ariffin, Mohamed, & Binti, Nur Dayana. (2019). American imperialism, anthropology and racial taxonomy in the Philippines, 1898-1946.
- Barratt, Glynn. (1988). Carolinean contacts with the Islands of the Marianas: The European record. *Micronesian Archaeological Survey Reports*. N° 25. Saipan, CNMI: Division of Historic Preservation, Department of Community and Cultural Affairs.
- Barrows, David P. (1910). The negrito and allied types in the Philippines. *American Anthropologist*, 12(3), 358-376.
- Boo-Chai, Khoo. (1962). The mongolian fold (plica mongolia). *Singapore medical journal*, 3(3), 132-136.
- Braden, Wythe E. (1976). On the probability of pre-1778 Japanese drifts to Hawaii. *Hawaiian Journal of History*, 10, 75-89.
- Callaghan, Richard, & Fitzpatrick, Scott M. (2008). Examining prehistoric migration patterns in the Palauan archipelago: a computer simulated analysis of drift voyaging. *Asian Perspectives*, 28-44.
- Callaghan, Richard T. (2003). The Use of Simulation Models to Estimate Frequency and Location of Japanese Edo Period Wrecks Along the Canadian Pacific Coast. *Canadian Journal of Archaeology / Journal Canadien d'Archéologie*, 27(1), 74-94.
- Carlton, James T, Chapman, John W, Geller, Jonathan B, Miller, Jessica A, Ruiz, Gregory M, Carlton, Deborah A, McCuller, Megan I, Treneman, Nancy C, Steves, Brian P, & Breitenstein, Ralph A. (2018). Ecological and biological studies of ocean rafting: Japanese tsunami marine debris in North America and the Hawaiian Islands. *Aquatic Invasions*, 13(1), 1-9.
- Chang, Yu-Chia, Tseng, Ruo-Shan, Chu, Peter C, & Shao, Huan-Jie. (2016). Global Energy-saving Map of Strong Ocean Currents. *The Journal of Navigation*, 69(1), 75-92.
- Choi, Na-Young. (2006). Symbolism of hairstyles in Korea and Japan. *Asian Folklore Studies*, 65(1), 69-86.
- Conklin, Harold C. (1949). Preliminary Report on Field Work on the Islands of Mindoro and Palawan, Philippines. *American Anthropologist*, 51(2), 268-273.
- Cunningham, Lawrence J., Kranz, Ward, & Sikau, Manny. (2006). Restoring Traditional Seafaring and Navigation in Guam. *Micronesian Journal of the Humanities and Social Sciences*, 5 1-2(1-2), 314-318.
- Daiber, Andrew J. (1986). Significance of constellations in Carolinian navigation. *The Journal of the Polynesian Society*, 95(3), 371-378.
- Demayo, C, Torres, M, Olvis, P, & Manlegro, N. (2010). Face shape differences in selected indigenous peoples' groups in Mindanao Philippines. *The Internet Journal of Biological Anthropology*, 4(1).
- Diaz, Vicente M. (2011). Voyaging for anti-colonial recovery: Austronesian seafaring, archipelagic rethinking, and the re-mapping of indigeneity. *Pacific Asia Inquiry*, 2(1), 21-32.
- Driver, Marjorie G, & Brunal-Perry, Omaira. (1996). *Carolinians in the Mariana Islands in the 1800s: Selected Documents from the Holdings of the Spanish Documents*

- Collection at the Micronesian Area Research Center*. Guam: University of Guam, Micronesian Area Research Center.
- Dykstra, Yoshiko K. (1992). Notable Tales Old and New: Tachibana Narisue's Kokon Chomonjū. *Monumenta Nipponica*, 47(4), 469-493.
- Eernisse, Douglas J, Draeger, Anthony, & Pilgrim, Erik M. (2018). Chitons (Mollusca: Polyplacophora) rafted on tsunami debris from Japan to the shores of Washington, Oregon, and Hawai'i. *Aquatic Invasions*, 13(1).
- Eilers, Anneliese. (1935). *Westkarolinen: Songosor, Pur, Merir*. Hamburg: Friedrichsen, De Gruyter & Company.
- Eilers, Anneliese. (1936). *Westkarolinen: Tobi und Ngulu*. vol. 2. Hamburg: Friederichsen, De Gruyter & Co.
- Finney, Ben. (2007). Tracking Polynesian seafarers. *Science*, 317(5846), 1873-1874.
- Fritz, Georg. (1910). Letter Georg Fritz, district administrator Yap, to Reichskolonialamt, dated Yap 23 February 1910. Reichskolonialamt Verwaltungssachen III Gr.28 Verwaltungssachen 12f, Allgemeine Angelegenheiten der Karolinen pp. Inseln Bd. 9. December 1908 to December 1911, File 3006 Yap 1256/09 N° 25. National Library of Australia, Microfilm Mfm G 18,242.
- Genz, Joseph. (2011). Navigating the revival of voyaging in the Marshall Islands: Predicaments of preservation and possibilities of collaboration. *The Contemporary Pacific*, 23(1), 1-34.
- Genz, Joseph, Aucan, Jerome, Merrifield, Mark, Finney, Ben, Joel, Korent, & Kelen, Alson. (2009). Wave navigation in the Marshall Islands: Comparing indigenous and Western scientific knowledge of the ocean. *Oceanography*, 22(2), 234-245.
- Godley, Michael R. (1994). The End of the Queue: Hair as Symbol in Chinese History. *East Asian History*(8), 53-72.
- Hamilton, James B., Terada, Harumi, & Mestlert, Gordon E. (1958). Studies of Growth Throughout the Life Span in Japanese: II. Beard Growth in Relation to Age, Sex, Heredity, and Other Factors*. *Journal of Gerontology*, 13(3), 269-281. doi:10.1093/geronj/13.3.269
- Hanihara, Kazuro. (1990). Emishi, Ezo and Ainu: an anthropological perspective. *Nichibunken Japan Review*, 35-48.
- Hezel, Francis X. (1994). *The first taint of civilization: a history of the Caroline and Marshall Islands in pre-colonial days, 1521-1885*. Honolulu: University of Hawaii Press.
- Hunt, Edward E. (1950). A view of somatology and serology in Micronesia. *American Journal of Physical Anthropology*, 8(2), 157-184.
- Jagor, Ferdinand. (1873). *Reisen in den Philippinen*. Berlin: Weidmann'sche Buchhandlung.
- Kakubayashi, Fumio. (1981). Japanese drift records and the Sharp hypothesis. *Journal of the Polynesian Society*, 90, 515-552.
- Kōno, Isamu. (1942). 北硫黄島発見の圓鑿型石斧 [Kita-lōjima hakken no marunomigata sekifu]. *人類學雜誌 [Jinruigaku-Zasshi]*, 57(7), 1-5 (273-277). doi:10.1537/ase1911.57.273

- Krämer, Augustin. (1919). *Palau. Ergebnisse der Südsee-Expedition 1908-10. Abteilung III: Siedelungen, Bezirke, Dörfer, Verfassung. Abteilung IV: Demographie, Anthropologie, Sprache.* vol. 1. Hamburg: L.Friedrichsen.
- Krämer, Augustin. (1926). *Palau. Ergebnisse der Südsee-Expedition 1908-10. Abteilung V: Stoffliches; Abteilung VI: Geistige Kultur.* vol. 3. Hamburg: L.Friedrichsen.
- Krämer, Augustin. (1935). *Inseln um Truk (Centralkarolinen Ost). 1. Halbband: Lukunor-Inseln und Namoluk; Losap und Nama; Lemar, Afat, Namonuito oder Onoun; Pollap-Tamatam.* vol. 1. Hamburg: L.Friedrichsen.
- Krämer, Augustin. (1937). *Zentralkarolinen 1. Halbband: Lamotrek-Gruppe- Oleai - Feis.* vol. 1. Hamburg: L.Friedrichsen.
- Krieger, Herbert W. (1926). The collection of primitive weapons and armor of the Philippine Islands in the United States National Museum. *Bulletin of the United States National Museum.*
- Lorimer, Douglas. (1988). Theoretical racism in late-Victorian anthropology, 1870-1900. *Victorian Studies*, 31(3), 405-430.
- Lu, Ting Yin, Kadir, Kathreena, Ngeow, Wei Cheong, & Othman, Siti Adibah. (2017). The Prevalence of Double Eyelid and the 3D Measurement of Orbital Soft Tissue in Malays and Chinese. *Scientific Reports*, 7(1), 14819. doi:10.1038/s41598-017-14829-4
- McCoy, Michael. (1973). A renaissance in Carolinian-Marianas voyaging. *The Journal of the Polynesian Society*, 82(4), 355-365.
- Metzgar, Eric. (2006). Carolinian voyaging in the new millennium. *Micronesian Journal of the Humanities and Social Sciences*, 5 1-2(1-2), 293-305.
- Mintz, Malcolm W. (2017). Fibre, Cloth and Clothing in the Philippines at the Turn of the Sixteenth Century with particular reference to the Bikol region. In *Intersections-Gender and Sexuality in Asia and the Pacific . Monograph 1: The Philippines at the Turn of the Sixteenth Century.* Canberra: Gender and Cultural Studies, School of Culture, History and Language, College of Asia and the Pacific, The Australian National University. Retrieved from http://intersections.anu.edu.au/monograph1/mintz_introduction.html
- Misra, Ram Nath. (1981). *Yaksha cult and iconography.* New Dehli: Munshiram Manoharlal Publsihers.
- Nakanishi, Hiroki. (1987). Stranded tropical seeds and fruits on the coast of the Japanese mainland. *Micronesica*, 20(1-2), 201-213.
- Narisue, Tachibana. (1690). *古今著聞集[Kokon Chōmonjū; A Collection of Tales Written and Heard in Ancient and Modern Times].* vol. 17 [怪異第廿六, Chapter 26 Mysteries; 変化第廿七, Chapter 27 Apparitions]. Kyoto: Nagata Chobei.
- Petersen, Glenn. (2007). Hambruch's Colonial Narrative: Pohnpei, German Culture Theory, and the Hamburg Expedition Ethnography of 1908-10. *Journal of Pacific History*, 42(3), 317-330.
- Rahmann, Rudolf, & Maceda, Marcelino N. (1955). Bow and arrow of the Visayan Negritos. *Philippine Journal of Science*, 84(3), 323-332.

- Salvador-Amore, Anlyn Ikin V. (2002). Batek: Traditional Tattoos and Identities in Contemporary Kalinga, North Luzon Philippines. *Humanities Diliman*, 3(1), 105-142.
- Slawik, Alexander. (1955). Mikronesier landen im 12. Jahrh. n. Chr. in Japan. *Beiträge zur Japanologie*, 1(1), 25-27.
- Smedley, Audrey, & Smedley, Brian D. (2005). Race as biology is fiction, racism as a social problem is real: Anthropological and historical perspectives on the social construction of race. *American psychologist*, 60(1), 16.
- Spennemann, Dirk H.R. (1998a). Excessive exploitation of Pacific seabird populations at the turn of the 20th century. *Marine Ornithology*, 29, 49-57.
- Spennemann, Dirk H.R. (1998b). Japanese economic exploitation of Central Pacific Atoll seabird populations 1898-1915. *Pacific Studies*, 21(1/2), 1-41.
- Spennemann, Dirk H.R. (2004). *Typhoons in Micronesia. A history of tropical cyclones and their effects until 1914*. Saipan, Commonwealth of the Northern Mariana Islands: Division of Historic Preservation.
- Spennemann, Dirk H.R. (2007a). *Edge of Empire. The German Period in the Mariana Islands 1899-1914*. Albury, NSW: {retrospect}.
- Spennemann, Dirk H.R. (2007b). *Melmel. The Good Friday Typhoon of 1907 and its aftermath in the Mortlocks, Caroline Islands*. Albury, NSW: {retrospect}.
- Spennemann, Dirk H.R. (2008). *Luta: I Tiempun Aleman. Rota as seen through German Eyes 1899-1914*. Albury, NSW: retrospect.
- Spennemann, Dirk H.R. (2009). *Tattooing in the Marshall Islands*. Honolulu: Bess Press.
- Spennemann, Dirk H.R. (2020). Introduction of coccinellid beetles to control the coconut scale insect *Aspidiotus destructor* Signoret 1869 in Micronesia 1901-1914. *Oriental Insects*, 54(2), 197-215. doi:10.1080/00305316.2019.1604445
- Spennemann, Dirk H.R. (2021). Cruising the currents: observations of extra-limital Saltwater Crocodiles (*Crocodylus porosus* Schneider, 1801) in the Pacific Region. *Pacific Science*, 74(3), 211-227.
- Spennemann, Dirk H.R. (2020). Matthäus Merian's crocodile in Japan. A biblio-forensic examination of the origins and longevity of an illustration of a *Crocodylus niloticus* in Jan Jonston's *Historiae naturalis de quadrupetibus*. *Script & Print*, 44(1), 201-239.
- Wagatsuma, Hiroshi. (1967). The social perception of skin color in Japan. *Daedalus*, 407-443.
- Xiao, Kaida, Liao, Ningfang, Zardawi, Faraedon, Liu, Haoxue, Van Noort, Richard, Yang, Zhixiong, Huang, Min, & Yates, Julian M. (2012). Investigation of Chinese skin colour and appearance for skin colour reproduction. *Chinese Optics Letters*, 10(8), 083301.