

Using Numbers from Somewhere Else

COMMENT ON CHAPPLE'S 'NEW ZEALAND NUMBERS FROM NEARLY NOWHERE: 80,000 TO 100,000 MĀORI CIRCA 1769'



SIMON CHAPPLE'S ARGUMENT is a welcome departure from conventional wisdom about early historical Māori demography and it deserves serious consideration. I would like to take up one aspect of it, which is whether we should seek to understand contact-era Māori demography analogically through examples from the tropical Pacific; an approach that would support higher estimates of Māori population size. The rationale for using Pacific analogues, Polynesian especially, seems to be a conviction that cultural practices (perhaps of marriage, infanticide, warfare, etc.) were so influential in shaping demographic histories amongst daughter populations of the Polynesian diaspora, for instance, that demographic trends in one archipelago could elucidate evidence in another. There might be validity in this at some scales of analysis, but in population biology universally long-term trends in fertility and mortality, and their consequences for population density, reflect more profoundly the 'density-dependence' of population growth upon limiting resources, especially in the food supply.¹ The primary means of lifting such limits, and increasing population density, is by food production, especially agriculture. In this respect New Zealand was an exception.

In the tropical Pacific, diverse, intensive, year-round root and tree crop cultivation was facilitated by high temperatures across a broad altitudinal range, low seasonality, wide diversity of crops and, in some cases, notably Tonga, Tahiti and Hawaii, state-like political organization of labour. On these relatively small islands, population densities climbed rapidly. Recent estimates of contact-era densities are: 15–20 (Hawaiian Islands), 24 (Samoa), 25 (Easter Island), 32 (Kosrae), 35 (Maui Island, Hawaii), 45 (Tonga), 47 (Moorea), 70 (Tahiti), people/km,² often with 200 people/km² exceeded in district densities.²

Māori colonization extended across 23 degrees of latitude, subtropical to sub-polar, from the Kermadecs to Auckland Islands (cf. Shetlands to Sicily), and New Zealand alone is at least seven times the size of any other remote Oceanic archipelago. It is also in the temperate zone, which precluded the survival of most tropical cultigens: coconut, banana, mountain

plantain, breadfruit, arrowroot and sugarcane were notably absent, plus pig and chicken. Kumara was productive in northern districts, but large-scale, intensive horticulture seems to have arisen only after A.D. 1500, notably in the Waikato interior.³ Effective political organization was restricted to local hapū, and fishing and foraging were the basic subsistence modes in most of New Zealand. In addition, the span of habitation, beginning about A.D. 1250, was 200 years shorter than in Tahiti and only 20% that of Tonga, Samoa, Fiji and New Caledonia. Unusually brief occupation of a very large and temperate landmass that had limited opportunities for agriculture maintained a dispersed, clan-based population in which few polities attained the consumer density sufficient to require intensive food production, or could command the necessary labour, until quite late in the pre-European era. A Māori population of 100,000 at A.D. 1800 would have had a population density of 0.37 people/km² and, at 200,000 people, 0.74/km².

All estimated contact-era population sizes and densities on Pacific islands, including New Zealand, are unreliable to some extent, yet it is important to note that the overall difference between tropical island and New Zealand population densities is huge, around two orders of magnitude. It seems improbable that such a difference could be explained generally by historical mistakes in estimating population sizes, or by errors in retrodictive or predictive techniques. I think we have to accept that tropical Pacific demography, although analogically useful in thinking about post-contact change, does not provide a suitable framework for estimating the contact-era Māori population, or the history by which that developed.

A more suitable context for understanding the New Zealand evidence might be other mid-latitude cases where food production was limited by its early phase of development or by long-term environmental constraints. For example, in the traditional pastoral and fishing economy of Iceland, the recorded population density at A.D. 1800 was 0.45 people/km² after about 900 years of settlement.⁴ Archaeological methods that use density distributions of houses, graves, ornaments etc., indicate around 0.60 people/km² for the earliest farming districts in western Europe, c. 5000 B.C.⁵ Populations having limited agriculture, or which were very largely involved in foraging, had lower contact-era densities: the Canadian Indian population at 0.05 people/km² and 0.01 people/km² each for North America and Australia.⁶

On these various grounds, a contact-era Māori population density around 0.4 people/km² seems plausible, although there is slight evidence here, more in the tropical Pacific, and much in prehistoric Europe, to show that introduction of agriculture induced a sharp population boom, followed by substantial bust with densities declining over several centuries; by 30–

60%, in the European Neolithic.⁷ If that happened in New Zealand then peak population, of unknown magnitude, occurred some time before European contact.

Numbers from somewhere else are helpful for constructing a fairly capacious demographic envelope in which the Māori case is probably enclosed, but to get much further requires better methods, more evidence and stronger critical scholarship, as Chapple observes. Archaeologists need to take the lead for the period up to European contact, and we have the tools to do so. Methods of constructing prehistoric population curves by summed probability distributions of radiocarbon dates have developed rapidly and are being applied globally.⁸ Comprehensive radiocarbon dating of the 7000 or so Māori pā sites, and the even more numerous storage pit sites, would provide reliable proxies for these approaches. However, current research on pā chronology⁹ is heavily constrained by lack of funding. This is a pity because demography is fundamental to archaeological and historical research and its study becomes the more urgent when serious deficiencies in prevailing thinking are exposed.

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NOTES

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8 Williams, 'A new population curve for prehistoric Australia'; Timpson et al., 'Reconstructing regional population fluctuations in the European Neolithic using radiocarbon dates'.

9 Geoffrey Irwin, 'Wetland archaeology and the study of late Maori settlement patterns and social organization in northern New Zealand', *Journal of the Polynesian Society*, 122 (2013), pp.311–32.