Thesis Abstract: Genetic Patterning at Austronesian Contact Zones

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The advance of Neolithic culture was a defining process in human history. Chronicled by the distribution of Austronesian languages, one such expansion of Neolithic peoples swept through the Indo-Pacific region just 4,000 years ago. A record of this dispersal is carried in the genes of modern people. Yet human populations have a much older history in the region, and their genetic legacies also persist to modern times. Examination of the genetic patterns that resulted from contact between these Austronesian and non-Austronesian peoples forms a central focus of this thesis. Research was directed towards three geographical regions in which Austronesian languages are still spoken today: the island nations of Indonesia, Madagascar, and Vanuatu. Inherited genetic characters were examined from nearly six hundred individuals, and analysis focused on two genetic systems. Firstly, mitochondrial DNA, which is inherited through the maternal line; and secondly, the Y chromosome, which is inherited through the paternal line. Disengaging the genetic lineages of men and women allowed exploration of possible sex-specific structuring in the contact process. An examination of spatial patterning, and the application of novel genetic techniques for dating human population expansions, gave additional facets to the study. Four thousand years of human mobility have blurred prehistoric patterns in the genetic variation displayed by modern populations. No spatial or sex-specific patterning was detected. Yet it can be inferred that less than a fifth part of the modern populace carry genetic markers once diagnostic of the dispersing Austronesian speakers. It seems that non-Austronesian populations have contributed significantly to modern populations. Genetic analysis suggests that, at least in Vanuatu, adoption of a Neolithic economy triggered a period of population growth for non-Austronesian peoples. This was contemporary with the arrival of the first Austronesians. Thus, the spread of Neolithic society seems to have been driven in part by biological dispersal, and in part by cultural diffusion. The genetic data best fit a model of leapfrogging, whereby Austronesian populations crossed the Indo-Pacific region in bounds, each of which subsequently formed a staging ground for cultural diffusion. Although not reflected so clearly in the archaeological and linguistic records, non-Austronesian peoples were active players in the emerging Neolithic world. They encountered the dispersal of the Austronesians, adapted culturally to their changing situation, and biologically, they kept on going.

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