

Early social evolution

Late Pleistocene life in Tasmania

from Geoff Bailey

In this issue of *Nature* (p.28), the discovery of a rich archaeological human occupation site at Fraser Cave on the Franklin River in south-west Tasmania is described. The site provides evidence of a specialized hunting economy, focused on the large wallaby, between 20 kyr and 16 kyr BP, and has an important bearing on a crucial period of human social evolution.

Populations of man with distinctively modern characteristics became widespread during the final readvance of the Last Glacial ice sheets (~30–20 kyr BP) and the period of their maximum extent (~20–16 kyr BP). After ~30 kyr BP anatomically modern populations of *Homo sapiens sapiens* with a technological expertise in stone flaking and grinding and firing of clay, and social and subsistence strategies informed by concepts of planning, storage and investment in future returns were widely in evidence. Personal decoration and artistic representation become increasingly prominent towards the Glacial Maximum, suggesting a fully developed capacity for symbolic thought and ritual expression and a greater awareness of individual and group status. Dramatic population expansion occurred, with occupation of Siberia and Australasia — and, at a later date when the continental ice sheets were beginning to retreat, northern Europe and the Americas — if not for the first time, then on a scale which dwarfs earlier evidence. There is greater diversity in the exploitation of food resources, especially from ~20 kyr BP onwards, including more intensive exploitation of foods from the sea and rivers, and new associations with plants and animals which foreshadow the development of full-scale agriculture.

Within the past decade our focus on this period has been progressively sharpened in three ways. First, a vast amount of new information about climatic and environmental change at the Glacial Maximum has become available. Extreme environmental variation was not confined to the vicinity of the ice sheets, but included global effects such as lowered sea level, reduced temperature and precipitation, extension of open tundra, steppe and grassland at the expense of forest, and expansion of arid desert margins, all of which would have had potentially large-scale disruptive effects on human behaviour.

Second, regional studies of archaeological settlement patterns in the Northern Hemisphere have built up an increasingly detailed and complex pattern of demographic and ecological

adjustments to these environmental effects^{1–3}. In some cases there was actual colonization of new territory, in other areas increased population density in already established zones of occupation, elsewhere decreased population density or complete depopulation. Specialization on a single prey species is found in many Upper Palaeolithic sites in Eurasia in response to the increased ecological specialization of extreme environments. The proliferation of art work may symbolize social adjustments to the new ecological conditions, for example the extension of reciprocal-exchange relationships integrating small groups scattered over large territories into social alliances as a form of insurance against the risks of economic specialization at low population densities^{4,5}. The apparent evidence of increased emphasis on marine resources, and at lower latitudes plant foods, may be interpreted as a broadening of diet in response to conditions of environmental or demographic stress.

Third, with archaeological discovery elsewhere, especially in Africa and Australasia, it has become increasingly apparent that Europe and western Asia were not unique centres of origin for demographic, economic and social change^{6–9}.

Hitherto Australia has seemed to differ from other centres by the lack of clear evidence for large-scale hunting — variously attributed to the coastal orientation of the earliest colonizers, unsuitable ecological conditions or poor archaeological preservation. The finds from the Fraser Cave, reported in this issue of *Nature*, significantly modify this picture. The geographical opportunism of the early Tasmanians in taking advantage of land connections exposed by lowered sea level and of hinterlands opened up by reduced forest cover, and their specialization on a single prey species, provide parallels with contemporaneous hunters at high latitude in the Northern Hemisphere. This pattern of convergence is reinforced by other evidence at lower latitudes, such as the similarities between parts of Australia, North Africa and the Near East in the probable shift to increased dependence on plant food during conditions of increased aridity after ~18 kyr BP, while the inclusion of sea and freshwater food resources in the diet occurred at an early period in Australia¹⁰.

These general comparisons underline the potential value of large-scale comparative research and the need for a programme of international collaboration aimed at giving

greater precision to patterns of local and regional environmental change during the onset of the Glacial Maximum, and the economic and social responses to them. This period represents a crucial threshold in human social evolution, during which the integration of characteristics fundamental to our subsequent success as a species first becomes apparent. It was also a period of extreme environmental variation, and more detailed comparative studies of human responses to these extremes would provide new insight into the constraints on human variability.

The Franklin River area offers an ideal regional laboratory for the analysis of long-term interactions between people and environment. There are many more caves than the Fraser Cave, and conditions of preservation are clearly excellent, with abundant stone industries and faunal assemblages. The area is a natural wilderness where the quality of the archaeological record has not yet suffered. However, the plans of the Tasmanian Government to flood the area as part of a hydroelectric scheme have caused international concern (see *Nature News* 300, 679; 23 December 1982). Scientific opinion was mobilized earlier in the year to meet this threat and a Senate Select Committee was set up to report to the Federal Government, which has ultimate responsibility for the area. The committee recently recommended that the caves of the Franklin River area were of such scientific importance that they should not be inundated. It also recommended that the Federal Government should fulfil its obligation under the UNESCO convention for the protection of the world's natural and cultural heritage and proceed with the nomination of south-west Tasmania for world heritage status. The Federal Government has not yet acted on these recommendations and if it does not do so, a unique opportunity to understand the early history of our species will have been lost. □

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