

## Risk, resilience and the ecology of farming/language dispersals

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The farming/language dispersal hypothesis is ultimately about demography. As farmers have more babies, their population increases and they expand at the expense of hunter-gatherers who have lower fertility. This process is known as the Neolithic Demographic Transition and occurred despite the fact that farming also led to higher mortality through new disease vectors. The basic pattern of farming expansion from centres of domestication is now well-understood. Until recently, archaeological studies of this expansion were based primarily on archaeobotanical and zooarchaeological data relating to the distribution of plants and animals. However, new approaches using isotopic and biomolecular archaeology are now enabling us to study questions of ecological ‘adaptation’ in farming dispersals in more detail. Three aspects are relevant here: the ways in which farmers adapted their crops and domesticated animals to different environments as they expanded into novel territories; the extent to which farmers made use of wild resources such as nuts and fish; and their responses to environmental change over both the short- and long-term. This perspective acknowledges that, while farming was economically more productive than hunter-gathering, it was also associated with high risks. In fact, the most productive peasant economies (such as Late Imperial China) were often associated with the highest level of risk: when something went wrong, it had very serious impacts on the livelihoods of huge numbers of people. Yet another recent approach in Neolithic studies is a greater focus on traces of violence resulting from new methods aimed at identifying cranial trauma. This work has shown that warfare and inter-personal violence were common in Neolithic societies, raising further questions about risk and resilience in early agriculture.

The first part of this presentation will summarise recent research on the cultural and environmental adaptations of early farmers, using examples from Europe, Japan and Island Southeast Asia. The discussion considers how such adaptations worked to enhance risk buffering and resilience. In the process of settling in to a territory, language must have been a key element of social learning, yet new evidence that has become available over the past decade or so shows that while Neolithic farmers expanded in a dynamic fashion, their lifeways were frequently subject to high risk and low resilience. Greater globalisation of food crops and increased exchange and commercialisation of foods were associated with more resilient agropastoral systems in the Bronze Age. This paper will explore the implications of these findings for the farming/language dispersal hypothesis, analysing the spread of Austronesian, Indo-European and Japonic as case studies.