Morphological variation and population structure on the island of Korčula, Yugoslavia

A comparison of head and body morphology on the ecologically uniform island of Korčula provides a good example of the balance that occurs in microevolution between selective pressures toward homogenization and selective inertia toward heterogeneity. Thirty-eight measurements were made from a sample of 471 males and 526 females. Head variables, being more eco-stable than body variables, remain relatively more different between two distinct populations (eastern and western villages) than do the more eco-labile body variables, although both do vary significantly between east and west. The differences apply to both men and women. These east-west contrasts reflect the differential migration of Slavs to the island over the past three centuries, with a new wave of immigrants settling mainly in the east and introducing a new gene pool to the pre-existing Slavic hybrid population which had settled the island in the sixth to the eighth centuries. In addition to the predominant east-west differences in morphology, we also find significant variation between all villages in both head and body variables. We conclude that this is an indication of the considerable reproductive isolation that has persisted between all villages until the post-World War II period.

Introduction

A number of population studies have shown morphological characteristics to be an excellent indicator of the biological structure of human populations. This has been the case in studies carried out in many areas of the world, i.e. in Bougainville (Friedlaender, 1975); in Brazil and Venezuela (Spilman, 1973; Neel et al., 1974; Spielman & Smouse, 1976); in Chile (Rothhammer & Spielman, 1972); in Ireland (Rellefthford et al., 1980; Relethford, 1983); in Micronesia (Morton & Laloel, 1973); in New Guinea (McHenry & Giles, 1971); and in the Adriatic Islands as well (i.e. Rudan et al., 1986a, 1986b, 1987a, 1987b). Hiernaux (1963), especially, has emphasized the value of examining variation in the morphology within particular human populations since the relative influence of genetic and/or ecological factors on the development of morphological variation can be better determined through such studies. According to Hiernaux’s (1963) ideas, genetically identical (or very similar) populations living in isolated biotopes and exposed to different ecological conditions and, thus, different selective pressures, theoretically will develop differences in more eco-labile characteristics — such as body morphology and physiology — while retaining similarities in more eco-stable features — such as head morphology and dermatoglyphs. Conversely, genetically different populations experiencing the same ecological pressures will evidence more homogeneity in eco-labile characteristics than in eco-stable traits.

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Figure 1 - Position of the examined villages on the island of Korčula.

As Hiernaux's student and proteges, our research team in the Department of Anthropology, Institute for Medical Research and Occupational Health, University of Zagreb, Yugoslavia, began holistic anthropological studies of the Adriatic island populations as early as in 1972. Starting with research on Hvar (Rudan, 1972, 1975, 1982; Rudan et al., 1982a, 1982b), more recently we have expanded our investigations to several other islands, including the island of Korčula (Bennett et al., 1983; Rudan et al., 1986a; Bennett et al., 1989). Korčula is particularly well suited for such an investigation due to a combination of ecological, migration, and reproductive isolation factors. A member of the southern group of the Adriatic islands (Figure 1), the island is 46 km long and 6 km wide (on the average). Its 16,130 inhabitants live in eight villages and one town, which are located linearly across the island and are grouped into eastern and western parts. Ecologically, the island is relatively uniform, ruggedly mountainous and having a Mediterranean climate and economic way of life which is predominantly oriented toward agriculture and fishing. Each village has been considerably isolated from all the others since it was settled (Sujoldžić, 1985; Rudan et al., 1986a; Sujoldžić et al., 1987a).

Korčula has been continually inhabited since the time the Illyrians arrived in about 2000 B.C. The Illyrians constituted the primary population pool in combination with the island's ancestral non-Indo-European population, to which Greeks (about 400 B.C.), and Romans (about 100 B.C. to 600 A.D.) were added in relatively small numbers. Between the sixth and eighth centuries, Slavic (Croats) immigrants who originated in the plains of east Europe settled the island in substantial numbers. From that time on, Korčula was