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Book Review

Ancient Genes and Minority Languages in Italy. Book Review: *Gli Italiani che non conosciamo. Lingue, DNA e percorsi delle comunità storiche minoritarie*, eds. by G. Destro Bisol et al., Istituto Italiano di Antropologia—Edicions de l'Alguer: Roma, Italy; Alghero (Sassari), Italy, 2023; ISBN: 9788899504717

Alberto Castaldini *

Faculty of Greek-Catholic Theology, Babeş-Bolyai University of Cluj-Napoca, 400347 Cluj-Napoca, Romania

* Corresponding author. E-mail: alberto.castaldini@gmail.com (A.C.)

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The Italian peninsula has been characterized along the millennia by human migrations and settlements that have determined a complex ethno-historical profile both on the cultural and genetic levels. The most recent population genetics research confirms this varied anthropological scenario, which constitutes a privileged context between the Mediterranean basin and continental Europe. The centuries-long presence of minority language communities on the territory from the Alps to Sicily fits into this framework.

A volume coordinated by Giovanni Destro Bisol, associate professor of anthropology and human biodiversity at La Sapienza University in Rome, analyzes linguistic minorities in Italy also from a genetic point of view, with the aim of examining the effect of environmental, social and cultural factors on the genetic structure of human populations. In coordinating the book, Destro Bisol was assisted by two linguists, Erica Autelli and Marco Caria, and an anthropologist, Marco Capocasa, as well as a team of experts who, in specific chapters, presented the minority realities from a historical, social and linguistic point of view, placing them in an overall and articulated framework.

These are the main minority groups analyzed: the German-speaking and French-speaking communities in the Alpine arc, the Franco-Provençal groups in northern and southern Italy, the Slavic minorities in northeastern and southern Italy, the Ladins and Friulians of the Reto-Romance group in the north of the country, the Albanian and Greek minorities in southern Italy and Sicily, the Sardinians with the Catalan and Ligurian minorities in Sardinia, and the Romaní (Indo-Aryan-speaking) communities historically present in the Italian peninsula.

In the absence of written records, genes and languages can be important sources of information about human groups, because the transmission of hereditary biological material contained in DNA together with verbal communication reveal to us many aspects of the history of our species, starting from the Paleolithic to the medieval and modern ages. The result is a new sight, more homogeneous but at the same time more complex (Destro Bisol, p. 9).

Destro Bisol notes that it is very difficult to determine when Homo sapiens sapiens began using verbal communication as it can be described in the present day, although it is speculated that the use of spoken language may have developed between 100,000 and 60,000 years ago. Throughout the history of humankind, an estimated 100,000 languages have existed. Currently, most of the world's population speaks less than 5 percent of the existing idioms, and the most widely spoken language is Chinese in its variants. Differently, the vehicular language par excellence is English, used by nearly one billion people. The ability to communicate through the language is a fact that has shaped human beings, as it has developed their cognitive and symbolic processes, and, consequently, has affected individual and social evolution. Feelings, emotions, sharing of meanings, and understanding among members of the same species have in this way fostered the processes of adaptation and integration, and, above all, that drive for cooperation that has proved decisive to the success of Homo sapiens sapiens within the framework of evolution (Destro Bisol, pp. 40–42).

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One of the main questions is whether there are links between DNA and languages. There is not a "language gene", whose genetic basis is very complex, nor is there a specific group of genes that is sufficient to perform this function. Instead, the environment possesses a fundamental relevance. At the same time, it is possible to identify some "semantic" similarities between DNA and languages. In fact, Destro Bisol writes that, like languages, "hereditary material also possesses its own code, that is, a set of rules that allow the communication and translation of the information itself. [...] In order to attribute complete meaning to individual sentences in a discourse, it is essential to understand how they connect with others within paragraphs. Even individual chains of amino acids take on biological meaning when they are embedded in larger structures, the proteins" (Destro Bisol, pp. 42–43).

DNA and languages are described by the authors as "witnesses" preserving the trace of migrations, mixing, changes and adaptation to new contexts. Therefore, the interweaving of genetic and linguistic data offers a vision where biological and cultural data are associated. Unlike DNA, which makes it possible to investigate and hypothesize events even older than 230,000 years, that is, before the appearance of individuals of our species in East Africa, the linguistic datum provides a frame to examine phenomena that are more recent and subjected to faster variation than the genetic diversity accumulated over many generations (Destro Bisol, Autelli, Caria, p. 45). In this perspective, the genetic datum is offset by the linguistic one, whose changes—such as genetic mutations—occur over time and sometimes, significantly, from one generation to the next for political, cultural and social reasons (such as, for example, migration phenomena). Changes can be phonetic, semantic or syntactic due to the needs of the environment in which human groups interact by acquiring certain behaviors. As in the case of genetic mutation, languages also adapt to the increased fitness of their users: for example, to foster a greater sense of belonging by the members of a community especially if it is a minority compared to a larger context. While DNA mutations are causal and then eventually consolidated, in the case of languages there may be invention driven by necessity. And while the former are characterized by vertical transmission (from parents to children), the latter can also occur horizontally, among peers or from teacher to pupils. The change in this case will be more rapid (Destro Bisol, Autelli, Caria, pp. 48–49).

Homo sapiens sapiens more than H. erectus and Neanderthal has demonstrated an ability to move, adapt and colonize new territories that has decreed its evolutionary success. Migration and isolation, geographical distance and linguistic variety, naturally lend themselves to a joint investigation, which began at least three decades ago [1]. It is no coincidence that minority communities more isolated after the initial migration phenomenon, will have less opportunity for biological and cultural contact, revealing, both genetically and linguistically, conservative aspects, thus differentiating themselves from surrounding populations. Also in the biological as in the cultural sphere, due to the effect of chance, we can also observe phenomena of superimposition on the original genetic structure that characterize the specificity of a profile (Destro Bisol, Autelli, Caria, p. 53).

A genetic look at ancient Italy shows that since the arrival of the first Sapiens from the Middle East 45,000–43,000 years ago, partial hybridization (now attested by 2 percent of Neanderthal hereditary material in Italians) and progressive replacement occurred with the pre-existing Neanderthal population. It was, however, toward the end of the last ice age and in the Mesolithic that the first major migratory movement northward occurred in the peninsula, bringing about the conditions for the first genetic differentiation between the north and the center of the peninsula. During the Neolithic transition starting 10,000 years ago, with the introduction of agriculture, great cultural transformations occurred along with the arrival of farmers from the Fertile Crescent, via Anatolia, who supplanted the hunter-gatherers. In the center and south of the Italian peninsula a genetic substitution thus took place.

Around 5000 B.C. in the two ends of the Italian peninsula a massive migration occurred from the Caspian and Pontus areas (steppe people) as well as from the Caucasian area (in the south). Until the first millennium B.C., technological and cultural developments took place, after which, thanks to the Italic, Etruscan, Venetian and Celtic peoples, a substratum began to emerge on which the genetic input of the following centuries—up to the modern age—was inserted and in which the minorities presented by the volume are placed. If the populations of northern Italy show a greater affinity with those of central and northern Europe (in turn influenced by the Asian nomads who came from the Black Sea and the Caspian area), in the south the proximity to the Mediterranean basin remains pronounced. A case in point is the island of Sardinia, whose genetic and linguistic history differs significantly from that of the rest of Italy (Destro Bisol, Autelli, Caria, pp. 53–56).

Ethnic minorities formed by a more homogeneous human group, settled in a delimited natural and cultural context (linguistic island), constitute a privileged laboratory of inquiry to study the relationships between genes and language. At the same time, geneticists, in addition to reconstructing ancient and current DNA, can cooperate with linguists and social scientists to understand those cultural meanings that contribute to the diversity and specificity of one or more human groups within the national population. In the case of Italy, this richness is marked: there are 28 languages spoken

on the peninsula, 14 of which belong to historical minorities (excluding the contribution of more recent migrations and considering dialect varieties). This linguistic variety finds a counterpart in the genetic diversity of Italy: a datum that dates to Paleolithic gene flows, confirmed in more recent historical times to the point that genetic differences between human groups in northern and southern Italy can be compared and are even greater than those observed between populations in different European countries [2]. This peculiarity makes the study of linguistic minorities, particularly the Germanic and Ladin communities of the Alps and the linguistic minorities of Sardinia, extremely relevant to both mitochondrial DNA and Y chromosome differences (Destro Bisol, Luiselli D., De Giovanni A, et al., pp. 263–264).

A prime example is the so-called "closed farm" (geschlossener Hof) of South Tyrol. In the German-speaking communities of some valleys on the southern side of the Alps (Val Pusteria, Valle Isarco, and Val Venosta) there is a strong genetic similarity in the male component. Since the 14th century in that area, farms and agricultural properties have been passed on indivisibly to the first-born male. Non-first-born males can either remain on the farm as employees or leave the home community to marry in other villages and establish new closed farms. This practice has fostered the gene flow of Y chromosomes between villages even located in neighboring valleys but covering a large territory of the region. The South Tyrolean male "genetic landscape" therefore appears more homogeneous than in other areas of the European continent (Destro Bisol, Luiselli, De Giovanni et al., pp. 264–265). The continuity of the social and historical framework of South Tyrol, until a century ago an integral part of the Habsburg Empire, within the German-speaking and German-cultural world, facilitates the comparison in a diachronic perspective of the genetic datum with the sociocultural one. In contrast, in the case of the older German-speaking minorities on the southern side of the Alps, such as the so-called Cimbrians (Zimbern)—descendants of settlers of Bavarian-Tyrolean origin who arrived progressively during the 11th–13th centuries in the Venetian and Trentine Pre-Alps—the progressive loss of the language began—even in mountainous localities—from the second half of the 17th century. On the demographic level there was a progressive dispersion of the allogenic element, due both to exchanges with the plains and to the growing exogamic practice. In this case, historical-anthropological sources and genetic evidence could confirm ancient scenarios or open new ones (Figure 1).

Figure 1. The basic cell of the community. A Cimbrian family from the Venetian Pre-Alps in the early 1900s.

Significant what emerged from the genetic analysis of the German-speaking "sister communities" of the Eastern Alps (Sappada, Sauris, Timau), contemporary with the Cimbrian ones but settled in a more isolated alpine context. The analysis highlighted more differences than similarities from the German-speaking populations of Austria, due to the effect of chance and the limited size of the founding core, with "few diversity donors" compared to the "mother population". Added to this was the phenomenon of limited genetic exchange between the groups of the three communities, despite linguistic and cultural similarities. Yet, this "isolation among isolates" detected genetically on the social level is still expressed today by finding confirmation in a sense of distinct identity belonging to the communities by

respective members (Destro Bisol, Luiselli, De Giovanni et al., pp. 266–268). It is no coincidence that the volume devotes a large section to the voices of representatives of linguistic minorities, the theme of identity, policies to safeguard and enhance minority cultural and linguistic heritage as well as food traditions (Destro Bisol, Capocasa, pp. 285–375).

Even in these local phenomena, within the processes of populating peripheral areas, Italy therefore has several specific characteristics: cultural richness, linguistic multiplicity, genetic variety. They also, moreover, reflect the natural habitat—from the Alpine tundras to the Mediterranean islands, from the valley of the Po River and its tributaries to the arid areas—to the point that we can speak of a biocultural heterogeneity that confirms the peninsula's role as a bridge between central Europe and northern Africa, and the eastern and western coasts of the Mediterranean basin (Destro Bisol, Luiselli, De Giovanni et al., pp. 277–280).

Declaration of Competing Interest

The author declares no conflict of interest.

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