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Studies on Biodemography in Portugal

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1. When the European Anthropological Association Council voted the realization of its fifth Congress in Lisbon, which will take place from the 28th of September till the 4th of October, it was decided to integrate also in the Congress's schedule the realization of this Pre-Congress on Biodemography, which is now beginning and it will take place here in the building of the Museu e Laboratório Antropológico, an institute attached to the Faculdade de Ciências e Tecnologia da Universidade de Coimbra, during three days.

In fact, in the last congresses, not only of E.A.A. but also of other associations of anthropological investigation, the studies on biodemography have been coming to occupy an increasingly important place.

Although the first attempts of biodemographic studies started more than a century ago namely the ones about the effects of inbreeding on human populations, the truth is that by that time (1856) those studies lacked a suitable genetic basis, which had only become possible later when Mendel's laws were found the early years of this century. That's why the first attempts of biodemographic studies were inconclusive (Valls, 1982).

In the last thirty years the effects of inbreeding on the incidence of recessive characters were specially well studied. We must point out in this field a study led by Newton Freire-Maia about deaf-and-dumbs in Brazilian populations, where it was found a positive correlation between the appearance of this anomaly and the degree of inbred of parents (1957).

Biodemography was applied in a first stage, to the study of biological effects of inbreeding in human populations. It was more an applied biodemography whose investigators were mainly physicians or human genetics professors, who aimed to explain, and if possible avoid, the occurrence of transmitted anomalies. With that purpose they studied in every single case the inbreeding coefficient (coef. of Wright) from which the mean consanguinity rate of general population was calculated. Since the investigators Sutter and Goux (1964) have proved that that coefficient could be replaced by the percentage of inbred marriages, set out a new methodology: the use of parish registers, for the occurrence of marriages amongst close relatives (consanguinity).

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neous) implies a dispensation, referred in those registers, which specify the consanguinity degree for which the dispensation is requested. In this way the biodemography investigators found a practical and reasonably safe method to study the inbred in a certain population. More than the inventorying of pathologic anomalies, the outlook now is the biological characterization of a population, although in this case as well as in other ones, the biodemographic investigations have also an important function to the exclusively medical investigation.

This methodology have allowed in this last decades to start biodemographic studies in a systematic way in several countries, including Portugal.

2. The biodemographic studies in Portugal are quite recent. The fact that we still are in an incipient phase in this subject, doesn't allow us to point out conclusion, related with the general population of a country. But the studies done by representative sampling already show some parcial conclusions, although temporary, and even support some punctual comparisons with populations from other countries.

We can say that first published studies appeared in the seventies (Machado Cruz, 1972 and Machado Cruz, 1973) as well as the elaboration and the divulgation of the main operative concepts (Almeida, 1972; Machado Cruz, 1976) followed by some applications to general population (C. Brandão, 1980: populations of Espinho). The first population to deserve the preference of systematic studies were the islanders: that was the case of Madeira's population (Machado Cruz et al, 1983) and the studies now being carried out among several populations of different islands of Açores.

From the experience of the Instituto de Antropologia da Universidade do Porto and from the theoretical assumptions resulting both from the study of extreme case of inbreeding — the incest (Rodrigues de Areia, 1980) — and the socio-cultural context where the inbreeding develops (Rodrigues de Areia, 1981), a group of investigators from the Instituto de Antropologia da Universidade de Coimbra started a series of punctual studies about small populations from a predominantly rural environment. In a first stage, it was a series of small studies connected with the teaching of the General Anthropology subject (A. Abade, 1983 and 1985; P. Gama, 1983; J. Bicker, 1984; Rodrigues de Areia, 1983 and 1985; T. Fernandes, 1985.).

The inter-disciplinary approach of the biologists to biodemographic methodology and the one of the historical demography specialists, recently developed by a group of investigators supported by the Fundação Calouste Gulbenkian, contributed a lot to the wide opening of perspectives and critical enrichment of those studies. Two of the workshops carried out by the Fundação Calouste Gulbenkian were particularly important to this enrichment:

- Social Organization of Reproduction (1983)
- Family Forms and Demographic Patterns in the Western Mediterranean (1984), both including the presence of investigators from the Instituto de Antropologia da Universidade de Coimbra.

3. By extending the experience of former studies on the population from central Portugal, mainly anthropometric study of the students (Neto *et al*, 1973, Morais e Rocha, 1973) and a recently done gathering of informations concerning the cultural diversity of those populations, the Instituto de Antropologia has elaborated an investigation project now being carried out in its thirth year, and which in a way justifies the realization of this Pre-Congress in Coimbra. It is the project «Biodemographic Study on the Central Portugal Population», schemed in 1983 and in that some year, approved by our national organization to the subsidizing of scientific investigation — Instituto Nacional de Investigação Científica — (Project number 83/CEN/10).

In this study we are looking for the inbreeding geography, using model populations from an area which has always been predominantly rural. We have decided for sample of populations which are in a large majority highlanders with a strong migratory tradition and still maintaining a high degree of rurality. We have chosen the ideal period of time — a century — for we want not only a punctual information of the inbreeding in this region of the country but a longitudinal study which may also give us a notion of the biological history of these populations.

The chosen populations represent six districts of Central Region, namely:

— Coimbra (rural area), Tábua, Marinha Grande, Gouveia, Sabugal and Vila Nova de Foz Côa.

The percentage of inbred marriages in data reffering only to year of 1900 (punctual indicator) presents the following values

Coimbra (Ceira)	29,0%
Tábua	20,0%
Marinha Grande	4,7%
Gouveia	4,5%
Sabugal	18,0%
Vila Nova de Foz Côa	12,5%

Although these data are fairly high even in national terms, we still have to consider other factors which point to a higher inbreeding, though they can't be qualified. Among them we may stress the traditionally high percentage of illegitimate children namely in the mountain populations (Vd. O'Neil, 1984)¹.

Because in the complex process of biological adaptation at human level factors of genetical order (with the transmission and changing of genes) are conditioned by socio-cultural factors (kinship patterns), it was fixed that the initial project of inbreeding quantification, would be complemented with the ethno-demographic variables, such as nubility, birth-rate and death-rate, differential fertility, social and geographical homogamy etc. It's also fixed a

¹ It doesn't look according to the known data J. M. Nazareth's generic statement, according to which the illegitimacy is bigger in the South than is the North of the Country (1985).

laboratory complementary study which will permit to elaborate a typological map from the study of some iso-enzymes and so it will establish the genetical distances between the studied sub-populations.

If the human means and materials permit it, the project will also be complemented with a set of bio-metric studies, which will outstand the articulation of somatic plasticity in time, with the biodemographic effects of inbreeding.

4. When we speak about inbreeding we normally think of isolated people or populations geographically separated by geographic, social or ideological barriers. In fact those groups were favoured by biodemography. But in an industrial society or even in a post-industrial stage, which have a big social and geographical mobility, can the study of genetic characteristics caused by this sort of isolation have any kind of purpose? Even the Church laws which forbade since the eleventh century (1060) marriages among relatives till the seventh degree (it was a way of the Pope to overcome the opposition of two different communities: the defeated Romans and victorious Germans) came two centuries later (1215) to reduce that to relatives of the fourth degree, an interdiction which was kept till the twentieth century (1918). Nowadays the Church only forbids marriages among relatives till the second degree, inclusively.

Apparently the meaning of the inbreeding effects would tend to decrease in the present society and probably in a close future the kinship degree not even be registered.

Nevertheless and on the contrary of what is commonly thought, even in the more developed industrial societies, the mechanisms which traditionally condition the choice of marriage partners didn't disappear or have been reduce expressively (Susanne, 1974). These mechanisms don't change and some times in big urban areas they even increase. In the big cities community, it is no longer the geographical isolation but other factors such as professional circle, social behaviours or ideology which tend to value and produce the same effects. So we will have to change our methodology. That's the great challenge to the biodemography investigators.

In relation to Portugal and till a recent epoch the inbreeding numbers still are very high. This happens because in the geographical and traditional social conditions, which the above mentioned central Portugal populations exemplify in a paradigmatic way, the following factors had a positive effect: a high emigration rate followed by a progressive decreasing of the infant mortality and relatively more recent also a significative reduction of the birth-rate. The assembling of these three factors have been maintaining a high rate of inbreeding. The diminishing of geographical isolation as well as the growing of urbanization are also factors which lead to a significant reduction of inbreeding. That's why we have to consider the adaptation capacity of the applied methodology in addition to the immediate objectives pointed as an integrant part of the project carried out by this institution, because some specialists of the portuguese demography have started to point out signs of a new situation in some of the demographic variables, namely the birth-rate

and fertility (Nazareth, 1985; Barata, 1885) and will certainly have important reflections in the biodemographic evolution of the portuguese population at short term.

The biodemographic science is and will keep on being a strictly anthropological study and being so it demands a new selection of methods, for neither strictly biological technics, although more sophisticated, nor the purely social analysis are enough. Today's challenge for the biodemographers is the capacity of finding a scientific way to quantify the behavior and the practice of humankind which are adaptable answers (and so they have biological reflexes) to factors of social order. The challenge is there and biodemography will certainly find the suitable answer.

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