Responsiblities of Human Sciences Towards Disappearing Human Ecosystems

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HUMAN ECOSYSTEMS

The human ecosystem puts together all the life conditions of a given population: geographic location in a particular time, socio-political structure, economical production and territorial management, communication systems and culture. Any approach or study of a human ecosystem has to refer to the hyper complexity of the existing relationships between all the elements of the system (direction and wheight) which permit the bio-mental adaptation of the group and therefore its survival.

Any adaptation obtained via such a complexity appears very fragile. We assume rapid and total disappearance of some historical human ecosystems but also now, in our societies, we can observe very rapid and irreversible mutations of traditional human structures which appeared unalterable for a long time as, for example, mutation of the rural societies in Europe.

Such a fragility is much more evident in human ecosystems existing at the limits of biological or socio-cultural adaptability. This is evident for populations surviving under extreme climatic conditions of coldness, aridity, altitude, or existing under severe isolation due to their social dependence, their race, their caste, or also under the constraints of 'archaïc' food production such as fishing, hunting, gathering or nomadic pastoral breeding.

Until 'pacification' or 'colonisation' did not swept them from our planet, such ecosystems had remained far from any process of modernisation and from the drastic techno-cultural changes of the last century. The existence and future of these people and of their 'marginal' ecosystems are now under control of our present democracies or other more autocratic powers, and they'll remain under control until they will be conscious of their responsibility and accept to manage an adequate development for these populations.

We shall illustrate this marginality and fragility through the example of the Tuaregs, nomadic herders of the Sahara desert.

TUAREG TERRITORIALITY

We shall limit our presentation of the Tuaregs' complex ecosystem to the problem of their territorial control, the most sensitive parameter for their adaptation i.e. the survival of a pastoral nomadic production in the most severe desert of the world. Sahara's aridity covers 7 to 8 millions Km^2 where mean rainfall are less than 150mm per year, evaporation more than 6m per year and daily as well as annual temperature differences exceeds 60 °C at ground level (with some abiotic areas where mean rainfall are less than 25mm!).

The Tuaregs live in a large central part of the Sahara, around 2 million Km^2 (4 to 5 times the size of France, 50 times that of Switzerland!) where climatic conditions are slightly better because of some mountains' altitude and of annual rains in the south, the Sahel. Most of their migrations occur between isohetes 50mm and 150mm. The total population, around 8 million people, is divided into four confederations of tribes. The striking size of the area in relation to the poor demography, a molecular humanity as R.Capot-Rey wrote (1953), is the essential for their pastoral production, given the fact that rainfall are totally hazardous in time and place (every 3 or 4 years, in any place). Herders in the Sahara have to 'run on the back of earth' (Hawad-Claudot, 1999) ; life in the Sahara is where water is and their survival equation is a very simple one: water=pasture=milk . Territory and space are more important than many other adaptative responses developed by Tuaregs, such as choice of very sober animals (goats and camels), fast moving, perfect identification of tracks and wells, use of local plants (Gast, 2000), North and South exchange of food with surrounding populations and also some original bio-physiological regulations.

Obviously, a perfect knowledge of the field is necessary and acquired via memory by Tuareg children throughout a purely oral transmission of itineraries, limits of tribe territory, treking and camping places, and possible locations of pastures. Education to management must be perfect and is comparable to religious worship, in order to avoid any error to ensure pastoral production.

Such an education and strict behaviour has built around the Tuaregs a real screen against informations and influences from outside. In this severe environment, territory turns to be a foreign-proof system,

whose limits have been permanently controlled and protected by expert warriors; only black slaves and food could permeate it.

As a consequence and despite of the geographical dispersion of tribes, Tuareg culture and brotherhood have reached a large homogeneity, whose cement is the common berber langage: Kel Tamahaq or Kel Tamachek (Bourgeot, 1995).

Most of the time Tuareg herders live in small family groups, sometimes formed only by parents with their three or four children. This isolation makes any type of contact very valuable : any news, visit, meeting or festival is strongly retained in the memory. Large family communication conforms to precise traditional rules but is very relaxed and simple between husband and wife, due to the large autonomy of Tuareg women, free, respected, and precious in a limited mating net of cousins. Given their position, a good relationship exists between generations with a balanced knowledge of maternal and paternal genealogical links.

Such conditions of life confer to the Tuareg herders, since prehistoric times, a very special perspective of their outer limits and foreign neighbours. The need of a large territory is totally anchored in the Tuareg mind because it is totally linked to their survival in the hazardous climate of the Sahara; such a territorial permanent control can also explain the socio-cultural structures of these tribes, herding in limited areas but organised in large confederations, with leaders maintaining traditions and behaviour of all social groups and families, including black slaves who perform most of the pastoral hard work.

The first Europeans visiting central Sahara tended to compare and assimilate the Tuareg social structure to the European aristocratic and feudal one…but is such a comparison possible when geographical and living conditions are so different?

Actually, for Tuaregs space and territory have no real political meaning but are more a part of their cosmology. Any change in such a sensitive part of their mental structure can generate suffering and revolt as happened during the last decades.

Tuaregs' relationships with outside areas and foreign people have changed a lot since the first step of colonisation in 1902, when the French Army took military control of the whole Sahara region. At that time French officers admired the 'blue warriors' and protected their culture and pastoral nomadisation. The most important changes began in 1950 with oil-related activities and in 1960 with the creation of the young African states at the periphery of the Sahara. New borders parceled out the Tuareg territory, reduced the pastoral migrations and pushed the tribes to sedentarisation and sometimes to urban migration. Moreover, and more importantly, new laws on freedom for slaves, surnames and papers, compulsory education and on prohibition of weapons in Algeria appeared. Within a few years, misunderstanding and unhappiness turned to an open rebellion especially in the southern Tuareg confederations, where at the same time severe droughts (in 1970-73 and 1984-86) killed 80% of the cattle. Families or entire tribes had to move to towns and collapse into a deprived population needing economical assistance and healthcare.

In a short time, life for the Tuareg had turned into an earthquake for their territorial vision and their fragile ecosystem.

AN EDUCATION TO MODERNITY

This example of Tuareg territoriality clearly proves how complex is herding in an extreme arid climate ; the study of other components of the Tuareg ecosystem, such as social hierarchy or parenthood, confirms it. Biological and cultural anthropology, psychology and economics have demonstrated that 'marginal' or 'archaïc' populations display the same complexity in their ecosystems than the one in our 'advanced' ones. On this basis we can assume that there is no simple and out of stress management to grant these populations with a sustainable development, and if not to save their traditional way of life, at least to integrate them correctly in our modern world.

In order to reach this aim we have to invent an information and education for a modernity whose authors and actors are to be defined.

Such a pedagogy of techno-cultural adaptation needs two main components: a perfect knowledge of the human group considered and good political decision making. Concerning the knowledge of populations, it appears that Life and Human Sciences participation should be most valuable. As is evident, studies on way of life, actual evolution, health, original mental structure, comunication, need lengtly and interdiscipinary field works as we mentioned in a recent paper (Lefevre-Witier - 99): 'it seems that sometimes only bio-cultural anthropology can explore their particular way of thinking, their behaviour, their hopes and projects'.

Despite the consciousness of many research teams, their proposal to initiate an education or development into the populations under study is impossible because of the lack of crossed information or of interest from the political or administrative decision-makers. There is usually very little exchange

and cooperation between this two sides in supporting a 'marginal' ecosystem or suffering population; only the Non Governmental Organisations sometimes bring about mediation.

Two examples from our own research studies can illustrate this situation:

1) After many years of biological fieldwork in the Sahara, a multidisciplinary investigation was planned in 1976 on the Tuareg of Ahaggar (Algeria). The objectives were precisely health, development and adaptation of these camel and goat herders after they became Algerian in 1962. For five years results have been collected by Algerian and French teams without any interest from the local and national authorities. Not one of the many thesis or scientific presentation has been discussed or used to manage a temporary or sustainable project by Algeria or to finance targeted cooperation by France.

2) Another five years field work in Mexico on modernisation and health evolution of Indian rural communities of the Sierra Madre carried out by Franco-Mexican researchers and founded by the two countries was totally ignored, despite systematic information on the results at local and national levels. A slight hope for a cooperative action appeared when the Governor of the State decided to associate us to his own field contacts with communities and inform us about a huge project for rural development in the area we were working on, a project in which we never ultimately have really joined.

An international colloquium organised in Mexico in 1993 for a synthesis of French-Mexican results from this multidisciplinary research as a basis to avoid large urban migration of rural indians was dropped without any clear explanation.

Certainly, we have to thank governments and decision-makers for the authorizations they granted to carry on research into such populations but we have also to deplore that information from Human Sciences, and thus responsibility, are not taken into account at the time and under circumstances when they could help social development.

Actually most of the knowledge on disappearing human ecosystems collected by Life and Human Sciences is not used, despite the cost of researches, the quality of the results and the seriousness and consciousness of the research teams. Such a failure to use researchers' data and have a confrontation with them not only means a strong handicap for the decision-makers who cannot evaluate the exact suffering of their 'marginal' populations and the right time when they should be helped, but it is also certainly responsible in part for the appearance of furies, revolts and armed rebellions that a clever and efficient education could prevent.

If we must accept, in terms of Man's evolution, that many 'marginal' or 'archaïc' ecosystems are condemned, the 'advanced' societies have at least to save the inhabitants concerned through an adequate management of their future, in order to escort them with dignity towards a modernisation they cannot escape.

In such a view, preliminary studies and development projects should be controlled and coordinated by an International Committee for Disappearing Human Ecosystems as a guide for the members of Governments, of Research Departments and Non govenmental organisations or any others institution involved.

CONCLUSION

It is evident that Life and Human sciences could play a key role in the evolution of human ecosystems and especially of the most suffering and abandonned ones. However, in spite of their knowledge and awareness of existing problems, Life and Human sciences are too often held at bay from by many decision-makers. We are sure that a good integration of all available information, a globalisation of conciousness at different levels of study and action would allow for a better understanding of the terrible waste of human values suffered by these populations when they loose such a precious autonomy obtained after millenial battles against severe environmental constraints.

Let us mention two sentences which could summarise clearly our presentation:

One from Edmond Bernus (1990), a saharian cultural anthropologist, ' In the loss of their strategies, the nomadic Tuaregs have been forced to accept a waste of their cultural values, of their particular genius, of their pastoral competences as the basis of their civilisation.'

The other from Subcommandante Marcos (2001) , the famous leader of the Zapatista movement, "Within ourselves, we carry great expectations to be freed by fighting For one word: dignity".

KEYWORDS Ecosystem. Fragile. Tuareg. Indian

ABSTRACT Human ecosystems are complex and fragile and more fragile under particular constraints as extreme bio-climatic conditions, geographical isolation, or socio-economical exclusion, which marginalises them. Many of such 'marginal' ecosystems have been maintained far from modernisation during the last century. One exemple of such a population is provided by the Tuareg, herders of the Sahara desert in Africa, for whom territory and space condition

totally their adaptation and survival. Given the recent local political events their life has turned 'into an earthquake'. How to grant Tuareg herders, and many other suffering ecosystems, with a sustainable development ? How to avoir their revolts, their migrations to urban centers and even their simple total disparition ? It appears that the responsibility for developing the "marginal" ecosystems depends mainly on the quality of the knowledge that has been accumulated on their environment, their structures and conditions of life and also that has been communicated to the decision-takers in charge of their future. Despite the many research work in Life and Human Sciences existing a large failure of use of these materials can be observed which enlarges the lack of a preventive information and education towards a balanced evolution saving values and dignity of these people.

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