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BETWEEN THE OLD AND THE NEW WORLD

GIOVANNI BERLINGUER

Prof. of Occupational Health, Rome University

(address: Via di San Giacomo 4, 00187 Roma)

1. The celebration of the coming fifth centenary of the Discovery of America is stimulating - on both sides of the Atlantic - research and analysis in many fields, including health, disease, medical culture.

An international Congress on The Great Maritime Discoveries and World Health is being held in Lisbon (10-13 September, 1990), a meeting on the same theme will probably be held in Italy during the Colombiadi (Columbus celebrations) in 1992, and other conferences and lectures are being prepared in North and South America.

There are two main differences in the approach of these events over those which prevailed one century ago. One is that many scholars now no longer put health and disease as a separate field worth only of specialised studies, but consider them as an important factor of history. The other is the concept of Mutual Discovery or Mutuo Descubrimiento, which corrects the eurocentric bias of the past, and opens the way to a better understanding of the reciprocal contributions of the peoples living in the Old and in the New World.

From the scientific point of view, new knowledge and techniques, such as the analysis of the DNA of humans and of pathogens, may be able to clarify, in the near future, when and how peoples migrated, what were their diseases and how these were transmitted. The studies of paleopathology have made impressive progress in recent years.

No me parece bien, hay demasiada animación para hablar de descubrimiento recíproco. La noción de descubrir implica una actitud activa, que no existió del lado americano, ni del europeo.

Finally, the study of what happened in the past, when exchanges began between two worlds which had been isolated for a long time, has become vital to us today, as we are living in a period of very intensive international exchanges of peoples, of informations and of diseases.

The aim of my paper is simply to enumerate the problems, like compiling an index, hoping that more experienced colleagues will comment, correct and integrate this preliminary approach.

2. Before the Mutual Discovery, a deep differentiation had taken place between the Old and the New World in relation to health and disease. But the hypothesis that Amerindian communities were not deeply affected by diseases (1) is contradicted by written and oral traditions, by paleopathological findings, by the fact that nowhere in the American continent, nor in the world, are the so-called "primitive communities" actually as healthy as some wishful thinkers would like them to be.

correcto

It is agreed that the common origin and development of the human race underwent an interruption which is now dated in between 15 and 40 thousand years ago. The separation of the different continents from Pangea may be considered relatively recent, compared with the story of living organisms. The migration of nomads from Siberia through the Bering Straits was also recent, compared with the evolution of Homo sapiens sapiens.

But the length of both processes was at any rate sufficient to create, both from the biological and pathological point of view, a gap between the Atlantic and Pacific ocean.

Environmental conditions, food, the presence or absence of biological agents and vectors of communicable diseases, historical events, social organization as well as medical culture and practice have isolated two or more quite different pathocenosis.

The concept of pathocenosis was introduced by M.D. Grmek (2) to describe the whole pathological conditions which exist in a given population in a given period. In the Old World, the interchange of diseases between Europe and Asia had not been frequent, but it was continuous. According to McNeill, an integration of the virus reservoirs took place in the civilized areas of Eurasia from 500 B.C. to 1200 A.D., while a completely different pathocenosis had developed on the American continent where, for instance, smallpox, measles, grippe, and eventually malaria and yellow fever were unknown. Therefore their transmission was highly devastating.

3. Two issues which remain controversial in this field are the size of pre-Columbian populations in the Americas, which is evaluated from only a few to over one hundred million (3), and the origin of some diseases, particularly syphilis. Did Columbus's men introduce the disease to Europe on their return

home, or was it already present as a chronic infection and confused by doctors with leprosy or other diseases, but had new developments after 1492, both from the genetic and epidemiological points of view ? Future investigations may clarify the two questions.

Syphilis was probably the only important disease exported from the New World, but the discussion on its origin suffers the same bias that appears whenever common sense and historical research have to face sexually transmitted diseases. A similar controversy has now arisen on the origin of AIDS, and represents one of the "parallèles curieux entre l'expansion de la syphilis au début des temps modernes et l'épidémie actuel du SIDA: la transmission par l'acte sexuel, le passage du germe de la mère au fœtus, l'impact sur le moeurs, la fermeture des bains publiques et des lieux dits de débauche, les réaction de rejet social et, dans une certain mesure, la gravité du mal" (4). Also another book on the history of AIDS underlines how frequently the spread of epidemics is associated with undemonstrated responsibilities: "The Jews were blamed for the Black Death in Europe, the Irish were blamed for cholera in New York, and the Italians were accused of introducing polio into Brooklyn" (5).

For other diseases, the conditions were different. I try to summarize.

Some of them, transmitted man-to-man, like smallpox and measles, had a sudden and widespread diffusion in the New World.

Others, which are transmitted by arthropods like malaria and yellow fever, had a slow and differentiated distribution in the new continent, due to the necessary adaptation of life cycle and of the vectors. As for malaria, it is likely that Plasmodium vivax and malariae already existed, while "the introduction Plasmodium falc post-Columbian times. It would have been difficult for this short-lived parasite to reach America in pre-historic times, particularly during the last glaciation" (6). As for yellow fever, the first epidemic seems to have occurred in 1648 in Yucatàn and in Cuba, when Aedes aegypti, which had probably been brought in the water reservoirs of the ships coming from Africa, found its proper environment and multiplied enough to reach the necessary critical density.

Finally, the case of trypanosomiasis proves that, in spite of intense human migrations, endemic diseases may remain isolated when the life cycle of the parasites cannot be reproduced because of the absence of vectors. The flagellate Trypanosoma gambiense and rhodesiense, which cause the sleeping sickness, are transmitted from man to man through the bites of Glossina (tse-tse) flies, while Trypanosoma cruzi, agent of the Chagas' disease, is transmitted by introduction into the wound made by its "bite" of infected feces of a bug (like Panstrongylus megistus in Brasil, Triatoma sordida in Argentina, Rhodnius prolixus in Central America and Triatoma sanguisuga in the United States). However, Chagas' disease is confined to the Western hemisphere, and the sleeping sickness is limited to the tse-tse

fly belt of Central Africa. The latter is of considerable antiquity (epidemics were described by Arab writers of the XIV century, long before European explorations), and probably its presence "limited the invasion of Islam from the North, Portuguese and Boer immigration from the South" (7).

This may be a case of the significant influence of diseases on historical events. Also the deep difference between the colonization of Africa and the Americas by Europeans may have a similar explanation, to be obviously added to the geographical, military and cultural. The peoples of the pre-Colombian Americas had no immunity towards the viruses imported from Europe, and therefore diseases widely contributed to their extermination, along with the cruel violence first described by Las Casas (8). In Africa the indigenous peoples had some immunity towards them, and had acquired a stronger immunity towards many local diseases. This made an easy and ubiquitous settlement impossible for Europeans, until the discovery of the agents and life cycles of these diseases, and the introduction of preventive measures, could protect the settlers. Consequently, the Europeans never substituted, as it happened in the New World, the original populations.

4. The expression Mutual Discovery is very appropriate when related to what happened with the exchange of food and drug production and consumption, after 1492, on both sides of the Atlantic sea, as well as in Asia and other areas of the world.

Many European crops (and also animals) were gradually exported to the Americas, first because the crews were more accustomed to their traditional food, then to feed the settlers and finally the local populations. In certain cases, this "biological expansion of Europe" was negative, for instance when infesting plants were transferred over the ocean (9); but also advantages can be widely documented.

More sudden and deep changes took place on the other side, in the agriculture of Eurasia and Africa, with the introduction of maize, potato, tomato, peanut, manioc and other plants, rich and easy to grow. This was one of the main reasons for the improvement of the living standard and the increase of the European population in the XVI century. In the British Isles, for instance, the number of inhabitants doubled from 1541 to 1656, with an annual increase rate of 0,6% (10).

The change in agriculture and food habits also had some drawbacks. In certain cases, the new crops almost entirely replaced the old ones and became very vulnerable to parasites: we may recall the famine which reduced the Irish population from 8 to 5 million in the years 1845-1847, due to the destruction of potatoes by Doryphora (Colorado beetle).

Another case is the spread of pellagra in Asturias in the XVIII century (where it was recognized by Gaspar Casal and named Mal de la rosa) and in the Po Valley in the XIX century. This disease was recognized (in 1938) as being caused by the absence of PP vitamin, which is lacking in the maize. When the poor but balanced diet of the Spanish and Italian peasants was substituted

by maize and only maize, the disease exploded, and was initially attributed to genetic or infectious factors, or to the adulteration of the food (11). Its lethality was high. More than half of the patients of the mental hospitals in Italy suffered from the psychiatric syndrome of pellagra. It may be interesting to note that this disease probably did not exist in the areas where the maize originated and was domesticated, because the Amerindios prepared it properly, and integrated the diet with beans and other food; it can be moreover noted that pellagra in Italy decreased and almost disappeared between the end of the XIX and the beginning of the XX century, when the peasants conquered higher wages, better living and working conditions and a more varied diet. Meanwhile, the scientists were still discussing its aetiology.

5. Drug addiction, however its evaluation from the anthropological point of view may be, is a phenomenon present almost in all present and past human societies. It is commonly recognized that the effects are more harmful when drugs alien to the local traditions are imported and widely used.

Some of the drugs now widespread in the USA and Europe come from the Amerindian habits. Coca was produced and used in Peru, Bolivia and other areas many centuries before the Incas empire. It seems that when Spain occupied the region "el cultivo estaba limitado y su empleo entre la gente comùn era prohibido,

castigándose a los infractores. Su uso sólo estaba permitido al Inca y clases superiores con ocasión de grandes festividades y en las ceremonias religiosas"; but afterwards "las áreas de cultivo, que eran reducidas en la época incaica, se extendieron considerablemente después de la conquista y que el comercio de la coca se convirtió en negocio muy lucrativo" (12). This was the beginning of one of the most profitable and lethal trades of today.

Smoking tobacco was common in the intertropical and subtropical regions of the Americas. It was then widely cultivated by the Spanish in Santo Domingo, by the Portuguese in Brasil and by the British in Virginia, for export throughout Europe. Charles I of England made it a state monopoly, and finally in the XX century the production of tobacco has become a multinational industry.

Tobacco is now considered by the World Health Organization as the main single avoidable cause of death on an international scale. The WHO journal states that "the major concern about tobacco use in the world today is the increase in developing countries. While tobacco markets are decreasing in the West at a rate of one per cent annum, smoking is increasing in developing countries at an average of two per cent annum...The experts predict that smoking diseases will appear in developing countries before communicable diseases and malnutrition have been controlled, and thus the gap between rich and poor countries will widen further", also because "money that could be used to buy

food for the whole family is diverted to a product with no nutritional value whatsoever" (13). In Asia, the pressure to increase tobacco smoking was even defined "a new opium war".

Other drugs, like opium (heroin) and hashish came from Asia, and reached the American continent through Europe, or directly across the Pacific. Finally alcohol. It has been made from different crops, and used in many past and present societies. It was sometimes associated with deliberate actions to weaken the local populations, as in the white penetration in Northern America against the Indians. It has now become, mainly as liqueurs, an industry which exports all over the world.

6. We may see, through the examples of diseases, of nutrition and of drug-addiction (I will consider under point 7 the interaction of medical cultures), that during the last five centuries an intense exchange of life and death styles has taken place. Most of the transformations happened, particularly in relation to health and disease, not as planned effects, but as unforeseen consequences of economical, political and cultural trends and events.

Only in certain cases was there a deliberate will to help (sanitation, vaccinations, therapy), or to destroy (spread of communicable diseases). Often the sudden change of working and living conditions had positive or negative influences on morbidity and mortality, but this was not immediately understood,

and cultural stereotypes made it difficult to identify the real processes. For instance, the high mortality caused to Amerindios by European viruses was sometimes considered a confirmation of their racial inferiority.

A key factor in transformation was the change in working conditions, mainly in the Americas, where new activities, technologies and social relations were introduced, upsetting long established traditions. In the first impact, Las Casas and other witnesses state that many workers died from fatigue and hunger in the gold and other mines. In the following centuries, it is difficult to make an objective and comprehensive balance of the advantages and disadvantages brought by the introduction of intensive agriculture and of modern industry. Facts are sometimes overwhelmed by opinions.

New problems have arisen with particular evidence in the second half of this century. One is the export of hazardous or harmful products, wastes and industries towards underdeveloped and more "permissible" countries. The volume and variety of this export has grown parallel to restrictions, introduced in the developed world under pressure of workers and citizens, and by force of new rules established through national legislation or through international agreements (14).

The other main problem is the destruction or impoverishment of the natural resources, particularly of the tropical and equatorial forests, which guarantee not only the jobs and the habitat of certain populations, but the equilibrium of the whole biosphere.

7. The contacts between the two (and more) civilizations after 1492 had a deep influence on the ways diseases were, and are, considered, prevented and treated.

Some of the remedies which have been commonly used in therapy all over the world belong to the pre-Columbian tradition, created by "poblaciones vivientes en la foresta tropical húmeda o en los altiplanos semiáridos del trópico, que, con extrema ingeniosidad, han sabido encontrar en su ambiente todos los medios necesarios para su sobrevivencia" (15). I may object only to the word todos, because many of their diseases had no cure before the advent of scientific medicine.

The best known, and probably the most important remedy exported from the New World was quinine. The story of the Countess of Chincon, wife of the Viceroy to Peru, recovered by a powder made from a miraculous tree bark, was questioned as "a manufactured myth, exploded 40 years ago". It seems that "the Countess never suffered malaria in Lima, never distributed the bark in Peru, and died of some different malady before she could return to Spain" (16). The role of quinine, whatever be the story, has been very important in all continents. On the other side, many more drugs, vaccines, technologies, preventive and therapeutic models have been discovered, produced and exported by the industrialised countries, particularly in the XIX and XX centuries.

The integration was, and is, not always easy and successful. The medical and health cultures, including even the very concept of disease, had very separate developments before 1492, and in the centuries that followed the economic, social and cultural conditions have remained quite different, in spite of intense and now simultaneous communications. Gradually, the European-USA model has become nevertheless almost exclusive, due to its positive results and the economical and political influences behind it. This has cancelled many original ideas and experiences of the original American tradition (17), which only recently have been re-evaluated. The World Health Organization, for instance, published a book which covers also the area which is called (how appropriate is the expression in this case ?) the traditional medicine of Latin America (18).

The same process of forced unification concerns the health professions and institutions, including education, curricula, hierarchy, power, systems of social security and health care. These models, which have contributed to rising living standards and to the increase of life expectancy, are now being discussed inside developed countries for their cost, their human impact and their effectiveness, problems which have greater and sometimes dramatic dimensions when economic and cultural conditions do not allow any misuse of financial and human resources.

8. We may say that, in the last five centuries, two consecutive changes occurred.

One was the transition from separation to communication, which began in 1492. The other was the passage from communication to global interdependence, which was clearly perceived during World War II and had its climax in the second half of the XX century.

en extinción

From the point of view of health, in the first period many progresses made in Europe have been possible through the subtraction of natural and human resources from the colonies. At the same time, the discoveries in the field of aetiology, of prevention and of therapy have been beneficial to all peoples. It may be interesting to note that many of these discoveries were made, between the end of the XIX and the beginning of the XX century, by military physicians (19): for instance the parasite Plasmodium was recognized in 1881 as the agent of malaria by Laveran in Algeria, and the role of Aedes aegypti in the transmission of the yellow fever, advocated by the Cuban Carlos J. Finlay (20), was demonstrated by critically conducted experiments by the US Army Commission in the year 1900. Even if the main intention was to protect the colonial armies, the benefits were afterwards made universal.

In the present situation, a similar "export of health" continues, but at the same time a subtraction of human and natural resources proceeds, through the channels I have shown in the last paragraphs of point 6.

Other dangers, which are rarely discussed in spite of the growing world interest around the problems of bioethics, may come through the abuse of scientific and technological

possibilities. One example is the flourishing market of blood for transfusion from the South to the North (in America and in other continents), and in some cases a similar but black market of organs for transplantation. Another example, which is not new, are the tests on new drugs and vaccines, conducted where the rules on human experiments are less restrictive (21). Finally I mention the field trials of genetic engineered organisms. Costs are high, and regulations in Europe and USA are strict. Alternative test grounds are found sometimes in other parts of the world.

Two possibilities now arise, in the era of interdependence.

Either to deepen and exploit the international gap of wellbeing and health, or to work together with the aim of Health for all, as suggested by the WHO.

Dangers and hopes suggest the latter not only as ethically desirable, but also as historically necessary.

Introducing a book on the history of AIDS, Elizabeth Fee questioned "the complicated causes of the decline of history as a basic discipline of public policy" (22). The reality calls again its relevance. Fifteen years ago Emmanuel Le Roy-Ladurie, commenting the microbial unification of the world between the XVI and the following centuries, ended his paper stating that this phenomenon "gradually loses its importance, since the Modern Era, as a forge of the human destiny" (23). Everybody hopes this to be true. But Dr. Jonathan Mann, former director of the AIDS programme of the WHO, commenting the global lesson of this disease, wrote recently: "Never before in history have so many

people travelled to so many faraway places so frequently as today. International tourist arrivals have increased over 15-fold since 1950, and this does not include many undocumented travellers whose numbers can only be surmised. The sheer volume of movement of people and goods across the borders has created a qualitatively new situation, which is ideally suited to the global spread of disease....HIV may be the first virus to take advantage of this uniquely modern opportunity, but it would be a fatal error to assume it is the last"(24). Dr. Mann suggests, to face this situation, to create "a global pathogen watch to protect us all", and "to strenghten communication networks among health systems worldwide".

The same can be said on drug addiction. The UN has created a specialized Agency, and many international efforts have been undertaken, combining sometimes the projects of the producer with those of the consumer countries. But it is surprising that all the alarm and activity is concentrated on the drugs which are grown in the South and threaten the North of the world, while the dangers of tobacco and alcohol, which prevail in underdeveloped and developing countries, are ignored as world problems. One may ask: what is the way of judging and deciding? If the measure is to be the number of people who may be damaged or killed, there is no doubt that the priority would have been reversed. Or only when drug addiction is connected with criminal organizations it deserves attention, and no care,

limitation and control has to be directed towards industrial organizations which - at least from the viewpoint of health - are, even more destructive ?

We may also consider the flow of migrations (which is and will be particularly intense in two areas, the Mediterranean and the American continent) as a danger or as an opportunity. From the genetic and cultural side, it may enrich the life of the future generations. Somebody may also considered it as a risk for the health and an obstacle to the welfare of the industrialized countries. But the immigrants work, produce, are one of the factors of this welfare; and their disease, as it was documented by the II International Congress on Medicine and Migrations (25), have very rarely an exotic origin. Most of them are connected with living and working conditions, and deserve only a proper improvement of housing, food, salary, jobs and health services.

Finally, I only mention the problem of global environment, which is universally recognized as the main challenge in the era of interdependence.

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