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# CULTURAL BARRIERS TO THE INTERNATIONAL TRANSFER OF INFORMATION†

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**Abstract**—The recent debates on such issues as the transborder data flow or the new information order have brought to light the cultural implications of information activities. This is fortunate since information science used to consider them only as aspects of language barrier.

Information has recently been qualified as a humankind's heritage. Sharing it requires not only the international flow of information, but also its unimpeded creation and use. Considering that humankind is not limited to the inhabitants of Europe and North America, this paper discusses the various ways in which objective and subjective cultural traits affect the generation, presentation, transfer and use of information in different societies.

It emphasizes that all presently available information products and services are culture dependent, and primarily dependent upon the "northern" culture, what drastically limits their international value, but for "occidentalized" elite groups.

## 1. THE CULTURAL DIMENSION OF INFORMATION REDISCOVERED

The third recommendation of the UNISIST II conference[1] stated that "scientific and technological information, together with economic, social and cultural information, constitutes a common asset of humanity". The idea that the stock of information available throughout the world is a humankind's heritage to be equally shared has gained a wide recognition, at least in the form of the lip service one must pay to this kind of generous aspiration. At the same time, the rapid spread of information technology and the growth of the international flow of information have awakened fears of their social and cultural impacts, both in terms of internal changes and external dependency, as exemplified for instance in the Nora–Minc report[2].

Culture, which information scientists used to consider merely through their passion for linguistics or as a side factor of user behavior (often without naming it) has thus been brought to the forefront of information studies. An attempt to define both culture and information could obviously take us too far away, if anywhere. We are thus only delineating our own perspective. Information is, according to Porat[3], "data that have been organized and communicated", or, in other words, knowledge on the move. Culture is "all transmitted social knowledge", according to Kluckhon, quoted in UNESCO's *History of Mankind*[4]. Consequently, information and culture could hardly be separated, as soon as one leaves the specialized concept of the latter, as confined to folklore and fine arts, he must consider it as the man-made part of the human environment. Data are collected, organized and communicated as a consequence of needs which are created by culture and with tools which are cultural products.

The cultures of the many human groups do have a lot in common, particularly when considering their essence. From an international point of view they also have as many, if not more, differences, when considering appearances.

This leads us to the following proposition, the radical form of which is intended more as a stimulus for discussion than as established evidence. The common belief that information would be intrinsically communicable worldwide, but for the need to overcome some (few) specific cultural barriers, and some economical, technical and legal ones as well is partial and inadequate. On the contrary, we feel that information is culture specific and, consequently, is largely uncommunicable unless it has been "acculturated". As Cherry[5] pointed out "com-

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munication is essentially a social process. Sharing does not mean simply passing something, some sign, from one person to another, it implies that this sign is mutually accepted, recognized and held in common ownership or use by each person".

One usually distinguishes between two basic components of culture, material and non-material ones, or objective and subjective cultures. The objective culture includes artifacts and observable patterns of human activity. The subjective culture consists of a code of signs and meanings which shapes the individual and social perception of the universe, i.e. cognitive processes. It would not be an easy task to survey all cultural traits and their impact on information, although such an effort would be most welcome. We will mention only a few as an illustration of the diversity of cultural factors in information. Among the artifacts of objective culture: language, design and script, communication media, settlements and housing. Among behavioral patterns: family structure, group involvement, social roles, social norms, religion, institutions, politics, legal prescriptions. Among traits of the subjective culture: values, stereotypes, attitudes, motivations related to wisdom, authority, change, progress, participation, etc., i.e. the whole "Weltanschauung".

The international transfer of information requires that information is generated, then recorded and organized, and circulated through machines and mechanisms in one country. It is then needed, located, accessed, used and assimilated in another country. We shall briefly investigate the influence of cultural traits in different societies on the successive steps of this communication cycle.

In doing so we are likely, because of our particular experience and bias, to stress cultural differences between the so-called developed and less developed countries, as well as the conditions for a North–South transfer of information. It should be recalled that the same observations, though perhaps to a lesser degree, could be made in relation to other international and even intra-national transfers, as exemplified in the latter case by Cochrane and Atherton[6].

We also hope that our indications and comments will not be considered as unfair, or even racist, as unfortunately happens too often when one talks of differences between nations. Of course we probably cannot avoid culture-centric judgements, except in most ingenuous ways. Cultural traits of the less developed countries are looked on as negative only in relation to the requirements of information activities as they have been shaped by the northern culture. In other respects, one would probably feel they have much more humanity. As a matter of fact, many of these traits existed in the northern societies and still subsist to the extent the brave new world has not yet destroyed them.

## 2. THE GENERATION OF INFORMATION AS A CULTURAL PHENOMENON

Literacy and education are commonly considered the major factors for the production of scientific and technical information, as well as other kinds of information. King *et al.*[7] found an high correlation between the number of scientists and engineers, on the one hand, and the production of scientific and technical books, on the other. However, the information output, at least measured by documents, of persons with similar education and profession, but working in different cultural areas, is by no means similar, as Monge[8] showed in studying Latin American agronomists.

The generation of information lies at the intersection of many cultural influences. The more dynamic or changing, and the more complex a society, the more information it has to produce in order for its various segments to cooperate. Conversely, the more simple and stable a society, the less information it requires. But change and complexity, as displayed by the more "advanced" societies, are relatively recent phenomena which have not yet radically affected cognitive styles shaped by millennia of "prehistoric thinking", as we once advocated[9].

Objective drives toward the production of information could well be balanced by subjective ones, in particular the value system in relation to knowledge vs other forms of authority, such as age or social consensus and by religious beliefs. The accumulation of knowledge in almost all societies has been reserved to an elite, often not distinguished from the priests. All forms of elaborated knowledge, Eve's apple, the scribe's tablet or the grillot's tale pertain to the domain of God and the Devil, and have to be protected from the intrusion of the naive common man.

Kotei[10] has also emphasized that "most developing societies are still much an "agora, or

outdoor people and not individualists preferring the seclusion of the home or reference library where they can indulge in the internal monologue of reading". Large families and deep community involvment lead to the use of an important share of free time for social activities, which is otherwise used for information generation and use in individualist cultures. Housing patterns, with a large number of persons living together, a great deal of outdoor activity, and minimal equipment, are not particularly conductive to information generation in most parts of the world. Likewise scattered, low density and largely rural communities are likely to generate less information than are groups which are more dense, diversified and spatially concentrated. The limited exposure to different people and activities and the direct and natural control/access over most needed information keep the propensity to create and use new information to a minimum.

Some linguistic aspects of the cultural barriers to information have long been in evidence in particular the relative advantage of groups having a major communication language as their mother tongue, whose works become more widely accessible. Languages with a smaller audience tend to isolate their respective users. However, this advantage might even be restricted to the English speaking group, if authors from the other major linguistic areas (e.g. Arabic, French, Spanish), have to publish in English in order to be known internationally, as suggested by the work of Sandoval[11]. The language problem is nevertheless much more complex. In many countries, particularly in Africa, people do not have any language, to the extent they use different ones in their family, educational, professional and social activities (for instance local Arabic, classical Arabic, local French and classical French in North Africa). More often than not, this language mix, particularly during the early years, tends to weaken the language structure and control of individuals to the point that they do not feel comfortable in writing a paper. (By the way, the invasion of audio–visual communication seems to have the same destructive effect in the industrialized countries.) Furthermore, the languages of the less technologically advanced countries do not offer the kind of vocabulary that would be needed for professional communication, this being exacerbated by the fact that higher education is currently received in foreign languages. The common speech is thus often a mixture of two or more languages. It might well be also that, even if there is a lingua franca, the fact that many different languages are currently used in a given country limits not only the prospective effect of a message, but also the propensity to communicate, at least in writing.

There is of course a much stronger obstacle to the generation of information, analphabetism, which prevents a large number of human beings, (a majority in some countries) from producing written information or elaborating information in a suitable form. It also prevents literates from writing, particularly in small countries, where the elites can communicate with other means as a result of the limited size and geographical concentration of this group. Although education is progressing notably in all parts of the world, the number of people completing higher education, and even primary education, is still low. Many factors contribute to educational losses, a number of which have a cultural ground, basically the conflict between the contents and requirements of education and the traditions. This leads to a reduced potential for the generation of information. The population size of many less developed countries aggravates this drawback as a population of a few millions could not produce the number of specialists which would stimulate studies and exchange in a given discipline. In addition, under present conditions of institutional development professionals in these countries have to take on a number of general tasks which would normally be dealt with by support personnel.

It is also worth emphasizing that many traditional societies confine the woman to "her traditional role of mother and spouse", to quote a recent pontifical statement, which left out the third basic attribute of housekeeping slave, probably because its obvious lack of metaphysical brightness. This leads to the sterilization of roughly 30–50 per cent of the information generation potential, another form of abortion which should deserve more careful attention.

Finally, it should be kept in mind that today's production of information is largely a corporate activity. While the industrialized countries maintain comparatively efficient institutions, which have been strengthened over a long history, the same level of sophistication could hardly be achieved in the younger institutions of the less developed countries, particularly the government bureaucracy. Other cultural factors, like personal links in place of a regular hierarchy (though it may exist on organizational charts) or the aversion to objective or

factual evaluation (since what has been done could not be considered irrespective of who did it) a proper generation of information by corporate entities.

## 3. INFORMATION PRODUCTS ARE CULTURAL PRODUCTS

With the exception of a few deviations caused by totalitarian ideologies, most human beings acquire by education, if not by a judgement of common sense, a feeling for the universality of knowledge and information. There has been some debate, recently reactivated, about the universal validity of information, but the argument was centered upon the objectivity of individuals or organizations which are collecting and transmitting, thus filtering, information. There seems to be no doubt about the existence of universally accessible and useable information. We consider that such an assumption is only true if the informant and the informed are both aware of their respective cultural codes and conditions. The production of information materials is deeply interwoven with cultural patterns as to the elements of knowledge which need to be transferred, the organization of information, its physical presentation and the quantity of information to be produced.

In a traditional society, with little or no spatial, social and occupational mobility, most knowledge is a stable acquirement of the individual and the group, both being inseparable, which the young learn, so to speak, naturally. Knowledge is embodied in the historical and present life in its totality, and could not be separated from it, should this have any meaningful ground. Thus a limited number of information items have to be created in order to maintain the group's knowledge, while a small amount of knowledge about the external world needs to be acquired. In a diverging society on the contrary, by this we mean a society whose structure is undergoing a more or less rapid and complete transformation under the pressure of internal and/or external forces, the acquired knowledge covers only a small part of the environment and consequently a large number of information items has to be created in order to maintain tentatively the individual's and group's control.

The way knowledge and information are organized further depends on the particularities of objective and subjective culture. In societies where the natural and the supranatural are not fully distinguished, attributes of causality cannot be articulated outside of metaphysical truth. For instance, meteorological events, like a long awaited rain, can not be explained or related without God's intervention. Eventually a wide range of subjects has to be incorporated into the established metaphysical discourse. All kinds of ideology may play the same organizing, or distorting role, even knowledge in "pure" science, as demonstrated by a simple comparison between different classifications[12]. But many other motivations and values such as self-assertiveness, aggressiveness, possessive pride, exclusive faith for quantified facts, and linear perception of "progress" also shape information materials, as Jungk[13] showed in his beautiful plea for creative imagination. Objective culture, by means of religious, social, political, legal or corporate norms, likewise organizes information, so that, for instance, pop music becomes a social disorder, statistics on the production of tomatoes a defense secret, unemployed people job seekers, a given cosmetic dangerous or safe for human health whether the concurrent or the company will first claim the patent.

Language is also deeply influential on the organization of information by its grammatical rules which make it more or less easy to present some subjects in a clear and articulated manner. Vocabulary also allows a greater or lesser number of concepts and objects to be more or less precisely represented. The influence of language far exceeds such formal aspects. It has also a dialectical relationship with the structure of thinking which shapes as much as it is shaped by language. We should realize that the European segregation of language from thinking is very unnatural for other cultures which use integrative languages. This would call for a long discussion but we may attempt to illustrate the point with two examples. In a survey of the attitude toward money among young Africans, a frequent answer to the question What is money like? was "Money is like my father". One of our African students once argued that making two distinct groups of descriptors for irrigation techniques and ground water was inept since "It is all water". By the way, this pattern of distribution and ordering according to a single discriminant criterion, generally based upon a genus-species or whole-part type of relationship, typical of European languages, is one of the fundaments of information systems.

The physical presentation of information is bound to the limited number of communication

media which are available in a given culture. For most cultures these are simply speech, music and a few objects. Reading material is dependent not only on the spread of literacy, but also on the availability of a proper medium, that is to say paper, which permits a massive written communication. Anyone having worked for instance in Africa knows that a piece of paper is not an easily found commodity; a few months ago it was announced that a shortage of paper was likely to interrupt the publication of Ghanean newspapers. The particular scripts used in some cultures, such as Arabic or Chinese, not only make writing and reading difficult even for a well educated person, but also cause significant trouble in using modern information processing machines which are the product of the technology of different cultures.

The array of available communication artifacts is not a free resource. Their usability and understandability is dictated by cultural codes. The late Dr Y. Sammani, at that time secretary general of the National Research Council of Sudan, once said during UNESCO conference: "You have the computer, but don't forget we have the tam-tam". However, the tam-tam is often the King's voice and the King's power lies in God's grace. Oral communication, whose real influence in the industrialized countries has been overshadowed by the Gutenbergian civilization, is still prevalent in the less developed countries, because, as the Bedouin says: "How can you trust what somebody you don't know has written in a book?" In other words, the message is cosubstantial with the communicator. Modern communication media are rapidly expanding in all countries, but they tend to be used, at least initially, according to the established cultural patterns. This is exemplified by the use of public radio broadcasting for the communication of personal messages in Africa, even for government messages, caused not only by the unreliability of other channels, but also by the necessity for the King's voice to be heard, one way or another. These media pass later on through a phase of adaptation or rejection either of the medium or of its usage. For example a telex, or even a telephone, is acquired as a status symbol, but its use is severely restricted and eventually reserved to the director, as we experienced in a number of different countries. In a study of the use of public telephones in three Asian countries, it was found that the proportion of talks with relatives and friends compared to business or emergency calls varied with occupational and cultural characteristics of the populations[14].

As a matter of fact, the quantity of information produced by a given society is function of its level of development, as it is commonly understood, that is to say, the number of potential users. This figure is linked with the gross size of the population, its ethno-linguistic homogeneity, the diversification of economic and social functions; the level of education and the individual revenue available for information consumption. The resulting effect of these factors is that there is an insufficient demand for most forms of information products in a majority of the less developed countries, at least for those products which rely upon modern technology for their production.

A look at the world's output of information products shows that it is almost exclusively concentrated in the most industrialized countries. For scientific and technical information, although the data base generally used for this analysis is far from comprehensive even if it could be considered as reasonably significant, it appears that the OECD countries account for some 80 per cent and the CMEA countries for 13 per cent[15]. A similar concentration could be observed for nonscientific literature, business information, news, radio and TV programmes, general interest periodicals, data bases, etc. It can further be argued, as Ristic[16] did in the case of scientific research, that the developed countries, by power of their monopolistic position, dictate the trend and subordinate, consciously or not, the production of knowledge and information to their interests. A UNESCO study[17] estimated that only 3 per cent of research and development activities are devoted to the specific problems of the less developed countries. Moreover this information is expressed in a few languages, which are not the natural languages of most people in the less developed countries, and for the largest share, in English. The relevance of the world's store of information for the less developed countries is thus questionable in terms of content, organisation and presentation, since it is by and for the specific community of the privileged Northerners. Its effectiveness is also drastically reduced by the deficiency of the control of and access to domestic information in the less developed countries, where "ignorance of the effect of the global influences on national development allows for a host of political and economic mistakes and misrepresentations" as Ventura[18] emphasized.

## 4. TRANSFER MECHANISMS AND PROCESSES ARE CULTURE DEPENDENT

The distribution of information relies upon a complex of institutions and procedures which have been established in the industrialized countries and is more and more extensively using advanced technologies, also created in these countries. The cultural distance is adding to the geographical distance in order to make it more difficult for the less developed countries to access this information.

Information products are increasingly considered, especially by their producers, as a commodity. In the meantime monetary exchanges are a recent, limited and unnatural phenomenon in many less developed countries. The marketing and distribution of information products and services in the less developed countries remain marginal, and, to our knowledge, little effort has been made to design products which could suit local requirements. Payment procedures, whether imposed by the vendor or by local regulations add to the complexity of the information trade. Such a trade is in itself a contradiction to the voluntary and free exchange and sharing of information as a fundament of social life in traditional civilizations.

An effective acquisition procedure requires proper planning of the activities for which information is needed, evaluation of the use of information, rational selection with due regard to the needs of the community as a whole, availability and disposability of funds, including hard currencies. These requirements are hardly met in the less developed countries for many reasons, not the least of which are forms of power perversion, by which, said Ventura[18] "the privileged few have become so incestuous that they breed mediocrity and are incapable of expeditious singular activities and therefore respond sluggishly and with imprecision". (Many similar signs of collective imbecility can be discovered within the technostructure of the industrialized countries, though its impact may be balanced by their size and diversification.) To give a few examples, the director of a government engineering firm will keep subscriptions to several foreign newspapers for each head of service at the same time that he cuts all subscriptions to technical journals. In many countries, it is not possible to pay for a subscription before one has received the material, while, in another place, if one buys a document using four coupons, one has to justify the receipt of a piece of material for each single coupon. In addition to immaturity of the institutions, many of these administrative and financial burdens are basically caused by the lack of confidence in the subordinates, which is a primitive attitude rooted in the belief that a person is fully involved in his/her activities, even if they are delegated.

Searching for and retrieving information requires a full awareness of the problem to be solved, which does not necessarily exist, and is seldom passed to the intermediary by a "chief" who, by definition, is omniscient and omnipotent, who is ordering and not asking questions, nor supposed to act him/herself on such trivial matters. This task also requires a fair knowledge of the subject, which is acquired by education and experience. Thus, in a number of less developed countries, a limited number of persons, if any, is likely to be in a position to handle properly most of the information resources. Other limiting constraints are the familiarity with the organization of a particular information resource and the full command of the language in which it has been produced. Once again, this last requirement is not a simple matter of language proficiency, but an ability to think in the structure of a different language.

Today's retrieval and dissemination of information is, on the other hand, implemented with the help of a number of machines which are far more complex and demanding, in terms of skills and maintenance, than is the tam-tam. The number, and above all operational capacity or readiness of the machines contributing to information activities is in the less developed countries far below what now exist in the industrialized countries under normal conditions. A relatively long cohabitation with machines has introduced in the northern cultures a feeling for their requirements which does not yet exist in societies where they have been more recently introduced. A few years ago there were more computers than national programmers in an African country where we happened to work, and computers are currently installed in places where the electric power distribution is rather hazardous. To some extent, it is a matter of common sense that telecommunication infrastructures or information processing equipment could not deserve priority in a country where everything, including the essential, is lacking. A steady "mechanical" operation of such services as the telephone, mail, ground transport or computer center is not something one expects in a traditional society, or a society which has

not been used to such a regularity. If it works, it is wonderful, if not, there is no wonder. On the other hand, the resistance to charge cannot be underestimated. We often experienced very agressive reactions of rejection when our trainees in the less developed countries realized that they would have to behave, in their opinion, "like a machine" in order to use the machine properly. For a long time computer printouts, disregarding their real quality, were often rated illegible without even a look.

## 5. INFORMATION NEEDS, USE AND ASSIMILATION AS CULTURAL PHENOMENA

Most of the cultural traits we mentioned earlier, particularly in relation to the generation of information, also apply at this opposite end of the communication cycle. We will then only add a few comments.

Mchombu[19] has perceptively noted that it took about 15 years for information systems copied from those of the most advanced countries to reach 1 per cent of the population of a typical less developed country. He sees the main reason for their inability to reach the remaining 99 per cent within a tolerable delay in the fact that these systems have neglected the very nature of the less developed countries which lies in poverty. It is well known that the less developed countries are marked by a duality manifested by social, territorial and technological antagonisms between a sector running on the wave of "progress" and a majority sector struggling for bare survival. Fonseca[20] saw another radical opposition between an all-powerful bureaucracy and the rest of the community left in the darkness, thus preventing participation, coherence and completeness in the development process, starting with the proper use of information. He also emphasized that dependency, as manifested by the fact that most of the materials are worked out elsewhere, was inhibiting the creative capacity of people and leading to academism, frustration or alienation.

"An outstanding character of under-developed countries is their astonishing lack of knowledge, knowledge about themselves, their friends, their enemies and their social, technological and ecological environments" Ventura pointed out[21]. He added that more often than not a wealth of information was available but unorganized and left dormant. Besides specific forms of authority and power, and the ineffectiveness of too recent and alien institutions, subjective cultural traits play a complex role in this inhibition. The less developed countries have been involved in a process of material, or materialist, change which is in many respect in contradiction with their fundamental values and perceptions as Schumacher[22] beautifully demonstrated in attempting a Buddhist analysis of economy.

On the other hand, there is a great deal of native information which is not recorded, or even considered, and left aside despite its tremendous potential. Knowledge has to be warranted by academics, and the real knowledge people have accumulated by living and doing, generation after generation, often in terrible conditions, is only regarded with contempt. As an African friend told us: "They come and show a film to my father on the way he has to grow potatoes, what we are doing for centuries and what they never tried". This knowledge is not only related to the true socio-economic conditions which are the ground for any activity to develop, but also to true technical know-how and know-why, for instance in relation to the conservation of soil and water, or to cultural practices. It has further the advantage of being a total, comprehensive knowledge, while the academic one is closely specialized, and for this reason, inoperative. There are today technical means to overcome the drawbacks offered by the unrecorded nature of this knowledge, but it seems that the proper attidues seldom exist among the common men and women who are used to expect initiative to come from the top, as well as among the leaders who reject their ancestral ties for the sake of modernity or fear of deep social changes which may affect their power.

At the same time, there is plentiful, modern, and often foreign information which can only be inaccurately selected and is in most cases not adopted for lack of connection with the real world in which it is supposed to be applied. For instance, we happened to know of a project of artificial insemination which was blocked by the witchdoctors who said that the calves so procreated were bastards and would call all maledictions upon themselves and their owners.

In the line of appropriate technology, the concept of "appropriate information" has recently emerged. According to Saracevic[23], appropriate information should be problem-oriented, self-contained, directly applicable, scaled for local use (small farms and enterprises), able to

reach the disadvantaged and communicable through traditional channels. He further added that no information product or services at the moment comply with these requirements. We may add that the communicability of such information lies as well in its adaptation to cultural patterns, which have to be defined at the micro-regional level within each particular country with regard to its form, content, language and medium.

However, appropriate or not, information will be used only if there is an incentive to do so for the many potential users, individual or collective. Basically the incentive lies in the fact that, if one is transforming more quickly and efficiently one's condition, one will be rewarded by being better off. Such an opening does not generally exist in the less developed countries. The "have" and the "have-not" are still largely closed groups and the means by which one is likely to be better off have seldom to deal with performance. On the other hand, most national and international efforts in order to improve the use of information, as in other areas of national development, have been specialized efforts, limited to the small range of (elsewhere) established information techniques and institutions, while all other technical, economic, social and cultural areas were left aside. It would be wise to reconsider such analytical and operational oversimplifications.

## 6. AS A CONCLUSION

We owe apologies to the reader for the incompleteness and subjectivity of this paper. In recent years a growing concern for cultural issues in relation to information seems to have emerged in the literature and debates, but generally as a side factor, if not an alibi, and not as a central issue nor in a comprehensive way. We were tempted by a thorough discussion, at the risk of being superficial at this stage, hoping it may contribute to sustain interest to further and deeper investigations.

We tried to show that the cultural barrier to the international transfer of information was not a simple problem which could be solved by compelling everyone to learn English, although this would probably be helpful. On the contrary, information is a complex cultural product and the barriers are multiple and strong. The bulk of internationally available information, on the other hand, tied as it is in the cultural and technological matrix of the northern world, can hardly be stranger to most human beings than the firearms of the "conquistadores" were for the Indians or cause a lesser cultural shock. For this deadly danger to be overcome in the interest of both North and South parts of this planet, or what is still left of it, several actions need to be taken.

First, as I. de Sola Pool and many other contributors to a recent conference on "information societies"[24] emphasized, we need to devote a great deal of research to the understanding of the cultural factors involved in the various steps of the communication cycle. Otherwise information technology may well have, as Porat[25] warned, the same devastating effects as industrial technology, if not worse.

Secondly, both information technology and the stock of available information materials need to be adapted to the specific conditions of the less developed countries. This obviously requires more human, financial and imaginative effort than the producers of information goods and services and the co-operation agencies have demonstrated in the past. But perhaps it also requires less cultural imperialism or innocence. After all, if other goods and services can be economically adapted, why not information? Acculturation of information sources could be directed toward the products and services themselves and also toward the emitters and receivers, if for instance they have both a sufficient exposure to the partner's culture and mechanisms for their permanent interaction are secured during all the communication cycle.

Thirdly, and more strikingly, the less developed countries have to invent indigeneous information products and activities which would allow them to take full advantage of the coming information age, to benefit from their own information and knowledge in whatever form it may now exist, and to be in a position to participate in the international exchange of information on an equal footing. In order to do so, they have to reverse the established stream of technology transfer, and, starting from their own needs, traditions, material conditions and cultural patterns, make the fullest possible use of the existing tools, wherever they come from, in order to devise effective mechanisms for the sharing and use of knowledge, disregarding the institutional, and eventually technical, gadgetry the more advanced countries have generated, how fashionable it looks at first glance.

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