LANGUAGE-IN-EDUCATION POLICY:
RELEVANCE FOR DEVELOPING NATIONS[1]

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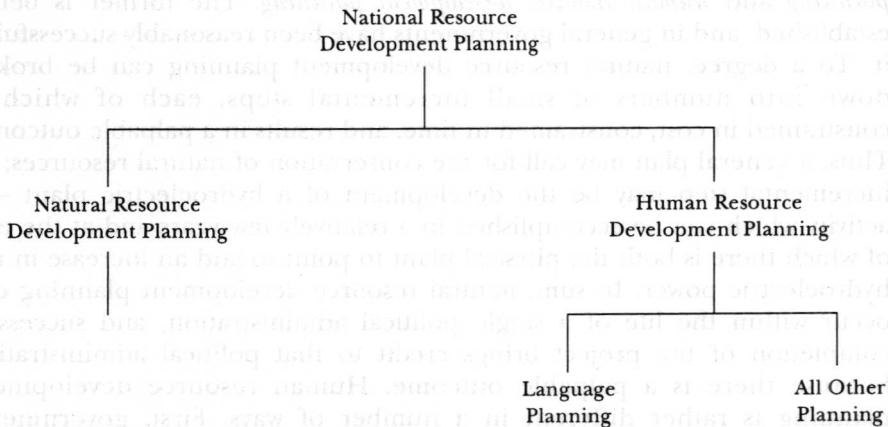University of Southern California

I shall attempt, in this paper, to discuss language-in-education planning, but I must confess I do so on the basis of considerable ignorance about the language situation in much of Latin America. Be that as it may, let me address a number of general principles; I shall leave it to you to determine whether those principles apply to the situation in various countries of Latin America, and I beg you to inform my ignorance at some point in the future.

Historically, governments have always engaged in *national resource development planning*. National resource development planning may be divided crudely into two very large sectors: *natural resource development planning* and *human resource development planning*. The former is better established, and in general governments have been reasonably successful at it. To a degree, natural resource development planning can be broken down into numbers of small incremental steps, each of which is constrained in cost, constrained in time, and results in a palpable outcome. Thus, a general plan may call for the conservation of natural resources; an incremental step may be the development of a hydroelectric plant –an activity which can be accomplished in a relatively few years and at the end of which there is both the physical plant to point to and an increase in net hydroelectric power. In sum, natural resource development planning can occur within the life of a single political administration, and successful completion of the project brings credit to that political administration because there is a palpable outcome. Human resource development planning is rather different in a number of ways. First, governments (except in totalitarian societies) do not have much experience with it, beyond, perhaps, the maintenance of a standing military. Second, any significant alteration in the availability of a human resource takes a very long time –often two or three human generations– and there is no palpable

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[1] This paper is a slightly modified version of a talk presented at the Venezuela TESOL Conference in Puerto La Cruz, Venezuela, on 29 May 1993.

product at the end of the process. It is true that in some general way life
may be better, but it is hard to provide concrete evidence that life is better
as a direct result of human resource development planning; the same
outcome might have occurred without government intervention.
Governments often apply cost/benefit analyses to national resource
development planning; in natural resource development planning, the
ledger can provide concrete evidence of benefits offsetting costs, but in
human resource development planning the benefits are hard to isolate,
hard to attach an exact numerical value to, and therefore are difficult to
offset against real costs. *Language planning* is a branch of human resource
development planning. It is, perhaps, the most fragile of human resource
development planning activities precisely because language pervades all
human activity; it is akin to sex education –everyone engages in sex to some
degree, and everyone considers him/herself an expert. By the same token,
all human beings within the normative range use human language, and
consequently many human beings consider themselves experts in most
issues relating to language use. The basic situation can be summarily
represented as in Figure 1:

Figure 1

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                        National Resource
                       Development Planning
                                |
          +---------------------+---------------------+
          |                                           |
   Natural Resource                            Human Resource
  Development Planning                        Development Planning
                                                      |
                                            +---------+---------+
                                            |                   |
                                         Language           All Other
                                         Planning            Planning
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Unfortunately, actual language planning does not proceed in such a
neat fashion. Precisely because everyone is an expert, language planning is
a constant, uncoordinated activity in every society. It occurs in the
governmental sector, in the quasi-governmental sector, and in a variety of
non-governmental sectors. Figure 2 attempts to represent the range of in-
formal language planning activities ongoing in any society.

Figure 2

UNPLANNED LANGUAGE PLANNING

Governmental Sector	Quasi-Governmental Sector	Non-Governmental Sector
Foreign affairs	Language agencies	Banks
Communication	Multinational corporations	Churches
Commerce	Post	Retail businesses
Tourism	Insurance industry	Minority community
Military	Medical services	Hotels
Education	Legal services	Restaurants
Immigration	Motor vehicles control	Sporting activities
Judiciary	Language institutes	Publishing industry
Public service	Transport agencies	Entertainment

These are merely token examples; each of the lists could be drawn out much further. It is impossible within the constraints of this paper to describe each of the types listed in great detail, though some examples and some generalizations can be developed.

Governmental Sector: In most cases, it is clear how each agency[2] or system is engaged in language planning; for example, the *foreign affairs* agency must deliberately train individuals to serve in foreign posts and consequently to speak a variety of languages. (The United States government, for example, maintains the Foreign Service Institute [FSI] specifically for the purpose of teaching language and culture to foreign service officers.) The *communications* agency decides what language(s) may be used, for example, in the broadcast industry and provides guidelines on the frequency and distribution of broadcasting among languages other than the *de jure* national (or *de facto* official) language(s). The *commerce* agency provides guidelines on international trade. The *tourism* agency oversees the flow of tourists into a polity and encourages the tourist industry either to cater, or not to cater, to speakers of other languages by providing or withholding incentives. The *military* agency may be involved in cooperative training exercises with other nations, may purchase military hardware from, or sell military hardware to, polities speaking other languages, and/or may recruit speakers of minority languages to serve in the military forces. The *education* agency determines which language(s) will and will not be taught, to whom they will be taught, by whom they will be taught, how they will be taught, the point of onset of instruction, the duration of instruction, the intensity

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[2] Hereafter *agency* is to be understood in the broadest sense and not as equivalent to a particular government department.

of instruction, and the outcomes of instruction (by defining assessment instruments). The *immigration* agency determines language qualifications for entry into the polity and for the attainment of citizenship. The *judiciary* (subsuming the courts, but also the police and prisons agencies) determines what language(s) may be used in the legal system, the extent of translation/interpretation permitted, the language(s) in which judicial records are kept, the qualifications of judicial (and police and prisons) staff, and the linguistic rights of accused (and convicted) persons. The *public service* determines in what language(s) government will interact with the populace and in what language(s) social services will be delivered. Much of the activity described in the various agencies is actually locked in statutes. Each of these agencies may have its own independent policy –indeed, its own independent schools– without reference to other agencies and with only casual attention to national human resource development needs in the broader sense.

The Quasi-Governmental Sector: it is not quite as clear in the quasi-governmental sector the extent to which various organizations are engaged in language planning activities, but a great deal of unplanned planning goes on in this sector as well. For example, *language agencies* like the English-Speaking Union, the British Council, the Goethe Institutes, and the Alliance Française are engaged in the dissemination of their respective languages with varying degrees of governmental support and incentive (e.g., the fact that the Duke of Edinburgh is the patron of the English-Speaking Union may be regarded as a powerful incentive). Agencies not formally designated as language disseminators (e.g., New Zealand Voluntary Services Abroad, the U.S. Peace Corps, and other foreign aid agencies) may also be engaged in similar types of language dissemination. *Multinational corporations* (often operating like government, sometimes superseding government at the local level, thus included in the quasi-governmental rather than in the non-governmental sector) commonly have internal language policies which prescribe what language(s) may be used in corporate headquarters versus what language(s) may be used in national branches –i.e., in what language(s) proficiency is rewarded. The *postal service,* for example, by virtue of belonging to the International Postal Convention, participates in an international agreement about the script in which mail may be addressed; the convention stipulates that, for international delivery, mail must be addressed in Roman letters and Arabic numerals. The *insurance industry* not only determines in what language(s) contracts may be written, but by specifying the language of contracts inadvertently specifies the set of conditions that can be insured. (Medical insurance policies, for example, not only define in language what conditions may be covered but define in language the exclusion of "pre-existing" conditions.) The national *medical services* (e.g., hospitals, clinics, etc., and the organizations that train practitioners) define in what language(s) health care may be delivered and, again inadvertently, by

doing so specify the allowable descriptions of physical conditions and the expected nature of reaction to pain.[3] The *legal services* follow the practices of the governmental judicial sector and thereby define the language(s) in which justice may be enjoyed. The *motor vehicles control agency* (and therefore the sector involved in the trade in motor vehicles) determines the language(s) in which one may qualify for the right to own and operate a motor vehicle. *Language Institutes* –well established in many countries in Europe and elsewhere[4]– help actually to define the language; they are often responsible for the publication of periodic "official" dictionaries, they rule on matters of grammar (and in some cases produce "official" grammars), they determine the rules by which new lexicon may be admitted into the language and the rules of pronunciation that shall be applied to lexical borrowings, and in some instances they strive to preserve the purity of the language for which they are responsible. The *transport agencies* determine in what languages one may move about the country; thus, in some countries, bilingual or multilingual signing is provided in all modes of transport. Again, these various organizations develop their policies without reference to the educational policies of the nation, and commonly without reference to the governmental sector or to each other.

Non-Governmental Sector: In this area it is not at all transparent that organizations promulgate language policies; indeed, inquiries in this sector often meet with surprise since these organizations do not recognize that they have language policies, though actual practice suggests that they do. *Banks,* for example, often employ bilingual tellers who interact with the banking public. Research in Los Angeles shows that banks employ tellers bilingual in languages of communities the banks believe have money to invest; banks ignore the languages of communities which they believe not to utilize banks or to be sufficiently depressed no to use banking services at all. *Churches* have historically played a key role in language policy matters. The involvements of, for example, Roman Catholic churches and Protestant churches are quite different. For a very long period of time, the Roman Catholic church supported the use of Latin. In colonial areas –for example in Francophone Africa (or in Latin America)– the Roman Catholic church not only promulgated Catholicism but also promoted the use of French (or Spanish), in part because it was largely responsible for the education sector. The Protestant churches, based on their belief that

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[3] Research in *doctor/patient communication,* for example, demonstrates that individuals respond to pain culturally and express the response linguistically, while physicians interpret linguistic responses to pain culturally; thus, when physician and patient represent different cultural perceptions, serious misunderstandings may arise.

[4] E.g., the French (Language) Academy, the Italian Language Academy, the Spanish Language Academy, the Mexican Language Academy, the Japanese Language Academy, the Arabic Language Academy, the Dewan Bahasa Dan Pustaka in Malaysia, etc.

personal access to the Gospels was important, have not only been responsible for the dissemination of English but have also played a key role in the spread of general literacy, in the provision of writing systems for a great number of languages which did not previously have them, and in the translation of the Gospels into a great number of languages.[5] *Retail businesses* determine in what language(s) goods may be purchased. Minority shopkeepers tend to cater for clients whose language(s) they share, while shopkeepers from the dominant community do not make it easy for speakers of other languages to patronize their shops. *Minority communities* themselves often develop a variety of mechanisms to protect and promulgate the language(s) of the community, operating "Saturday Schools," and providing a variety of social services in the community language(s). *Hotels* determine the clientele to which they will cater; given the rise in Japanese tourism around the Pacific Basin, for example, many hotels in various parts of the Basin have employed native Japanese speakers to enhance their share of the tourist market. They have not catered to tourists speaking other languages to anything like the same degree. Personal experience suggests, for example, that tourist hotels in the Philippines cater for English-speaking and Japanese-speaking tourists and essentially ignore German-speaking and French-speaking tourists, though their numbers are not significantly lower than those of the other two groups, perhaps on the mistaken assumption that all Europeans will be likely to speak English and most Asians will at least be able to read Japanese. *Restaurants* promulgate not only ethnic cuisines but the language(s) that go with them. French restaurants, for example, often provide menus exclusively in French, apparently assuming that anyone interested in fine food will be able to read menus in French; Chinese restaurants, on the other hand, will normally provide bilingual menus in Chinese (for the sake of the restaurant staff) and in the dominant language of the community they serve (assuming that few non-Chinese can read Chinese characters). *Sporting activities,* particularly the increasing number of international sporting activities, tend to be rather restrictive about language. When the Olympic Games were held in Los Angeles, the local Olympic Organizing Committee refused offers to try to organize a cadre of multilinguals to serve international guests at various venues and, instead, insisted that the official languages of the Games were only English and French. The *publishing industry* determines in what language(s) newspapers, magazines, books, and other printed materials will be made available. While their decisions are often dictated by economic considerations (market size), those decisions can have the most salutary effect on languages in which texts are published and the most chilling effect on languages which are not

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[5] E.g., the activities of the Summer Institute of Linguistics, a function of the Wycliff Bible Translators.

used.[6] The *entertainment industry,* by the same token, determines what language(s) will be used in cinema, radio, and television.[7] Again, the point is that each of these categories of players create their *de facto* policies without reference to what any other set of players may be doing, without reference to the activities of governmental agencies, and without reference to the education sector. They frequently do so without any awareness that they are engaging in language policy determination.

This lengthy discussion suggests that language policies are developed in every sector of any society, that they are unrelated to language practices in other sectors of the same society, and that the language situation in most countries is characterized more by chaotic disorder than by any sense of intelligent human resource development planning. The major purpose for the development of a National Languages Policy is to bring some modicum of order into this existing chaos, to permit the more effective and efficient utilization of existing resources, and to permit intelligent human resource development to occur. In many countries various agencies have propounded language policies, and in some instances the same agency has propounded different policies simultaneously.

The charge is sometimes made that language planning is a form of social engineering. Certainly, it can be. When language plans are imposed from the top down without an adequate data base to inform decisions, that comes dangerously close to social engineering. But language planning works best when it is a bottom-up activity. It is critical to discover not only who speaks what to whom under what circumstances to what end but to discover how the participants feel about what they speak and about the language(s) they are obliged to use to accomplish their objectives. When language planning constitutes a sensitive activity, making decisions on the basis of carefully collected data, it cannot be construed as social engineering; rather, it becomes part of an intelligent social policy which, among other matters, seeks to protect all citizens against discrimination and to insure the linguistic rights of all citizens.

It seems to be the case, then, that any sustained interest in a National Languages Policy often develops out of an awareness that language education is not adequately provided for, that the language situation is essentially not well understood, that an element of chaos exists in the various sectors that deal with language, and that language rights –indeed, the very existence of some languages– are threatened by the failure to deal systematically with language matters. These concerns are often, to some degree, offset by residual racism in the society, and by the disturbing

[6] In Hong Kong, a non-standard form of written Chinese –based on Cantonese– is widely maintained through the incredibly extensive sales of comic books published in that variety, despite the concerns of the PRC government (which will resume control over Hong Kong in 1997 and which has repeatedly stressed the importance of standard Mandarin in both speech and writing).
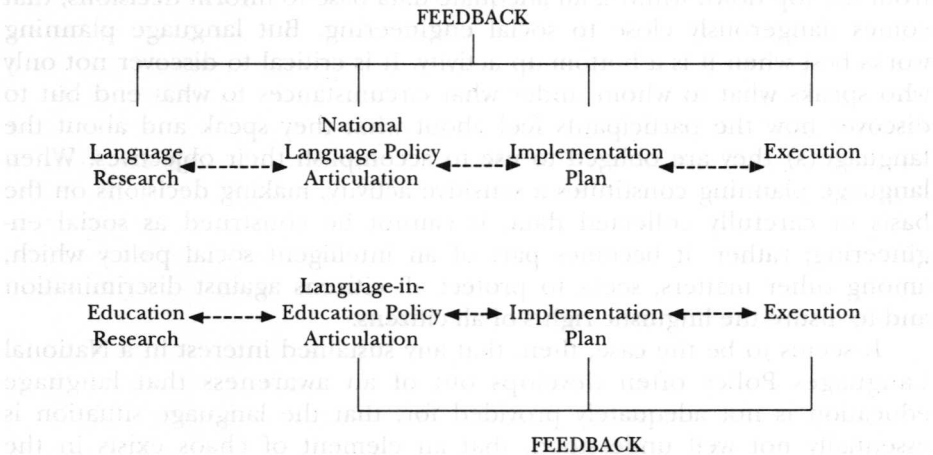
[7] In the Philippines, for example, the dissemination of Pilipino (Tagalog) has been significantly enhanced by the use of that language in a very active cinema industry.

absence of real data regarding the language situation. These offsetting considerations mitigate against the development of the governmental will to deal with the matter. The absence of the will to solve the problem is often compounded by the economic situation. Because the government does not perceive the importance of the problem, it seems unwilling to invest limited resources in the solution of the problem.

But a National Languages Policy is, by definition, a *national* issue and not solely the concern of the Ministry of Education or of any other single agency. The professional literature in language policy development frequently recommends a sequence of events demonstrated to produce effective outcomes, as in Figure 3. As this figure implies, policy articulation at every level must be based on research evidence which defines the scope of the problem and the sites for action. More importantly, however, the model suggests that language-in-education policy articulation flows from (does not precede) the implementation of the National Policy.

Figure 3

LANGUAGE POLICY DEVELOPMENT MODEL

FEEDBACK

National Language Research	Language Policy Articulation	Implementation Plan	Execution

| Language-in-Education Research | Language-in-Education Policy Articulation | Implementation Plan | Execution |

FEEDBACK

In my ignorance, I have the impression that the basic kind of research necessary to the articulation of a National Language Policy or to a Language-in-education Policy has yet to be undertaken in most polities in Latin America.

In order to conduct necessary research, to make the results of that research available to the public, and to insure objectivity by keeping the entire process at arm's length from government, it is essential that something like a *national languages and literacy institute* be created. Such an institute should be independent of all agencies of government, should be

amply funded to permit it to undertake the necessary research, and should be free of policy development; an institute of this sort is advisory –it collects and interprets data and on that basis it advises government. It is NOT a policy making body. Such an Institute should have a small *national advisory board* representing the Institute itself, the national research sector, the minority community sector, the business sector, and the education/ government sector. Such an Institute can, incidentally, also develop mechanisms to seek support for its activities from various charitable foundations and boards.

If a National Languages Policy is indeed to be national in scope, the activities of the Institute must be able to reach into a wide range of other organizations and agencies. Clearly, the guidelines derived from a National Languages Policy will have an effect on such other bodies as the immigration service, the foreign affairs agency, the post, the mint, etc.; the Institute must be able to facilitate guidelines-implementation across these various agencies. In this context, it may be desirable to create a standing inter-agency committee within government to monitor developments in the various agencies and to bring the expert knowledge of the Institute to bear on needs in the several agencies. By the same token, a National Languages Policy will have an effect outside government, and the Institute should have close relationships with multinational corporations, churches, service organizations, minority communities, health-service deliverers, translators and interpreters, etc. In due time, it may also be desirable to establish a non-governmental standing committee to cement such relationships and to bring the expert knowledge of the Institute to bear on language issues across society. In both cases, service on these committees should be perceived as an honor.

The existence of an institute and of a National Languages Policy in turn creates a need for a careful media plan, not only to inform the public of developments in language policy, but also to begin the process of attitude modification, to raise public consciousness of language issues, and to develop a climate in which all citizens come to view multilingualism as a natural and desirable condition. National Language Policies can be *symbolic* or *substantive*; most are in fact symbolic, but, at some point, it becomes necessary to articulate a substantive National Languages Policy based on research evidence and accompanied by appropriate implementation plans for governmental sectors and appropriate guidelines for non-governmental sectors. As already noted, a languages policy is likely to extend beyond the life of any given political administration, so policy articulation must be non-partisan and must involve the co-operation of all factions within the government. It is advisable to understand in advance precisely how much time and effort may reasonably be allocated to this exercise and when this phase of the exercise may be considered concluded. It is, however, important to understand that a National Languages Policy is not a static document; rather it must be seen as a dynamic document which defines a temporary condition subject to change as circumstances change. It is, by

definition, adaptable to the changing needs of the nation and to the
changing linguistic environment in which the nation must function. Thus,
it is important to define not only when the present phase of the exercise
may be considered concluded but also when the next phase of the exercise
should be initiated. It is important, as well, to have a clear understanding of
the meaning of the concept *bilingualism* –an individual phenomenon
which lies at the heart of communal multilingualism. *Bilingualism* is not a
point; rather it is a continuum with monolingualism in one language at one
extreme and monolingualism in the other language at the other extreme.

Figure 4

THE BILINGUAL CLINE

L1 Monolingual   Genuine Bilingual   L2 Monolingual

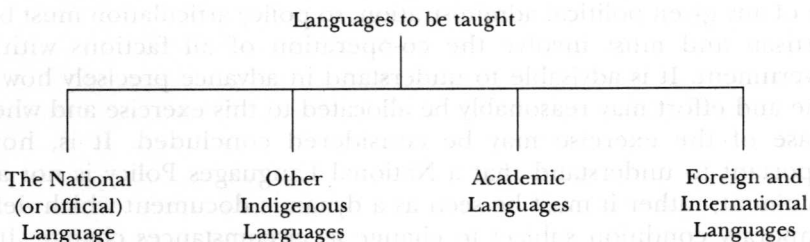◄──── X ─────────────────│──────────────────►
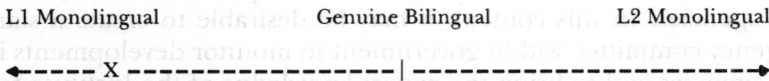
An individual who has had a modicum of schooling in another
language [X] is not very far along the bilingual continuum. It takes
substantial time to move an individual far enough along the continuum to
be a productive bilingual [l]. In sum, a National Languages Policy must
define what languages should be learned by whom for what purpose to
what degree of proficiency.

A Language-in-education Policy, subsidiary to a National Languages
Policy, attempts to address specifically the need to teach certain languages
through the formal educational system. The definition of which languages
are to be taught is a function of a National Languages Policy. In general,
four categories of language need to be considered, as noted in Figure 5.

Figure 5

CLASSES OF LANGUAGES IN
LANGUAGE-IN-EDUCATION PLANNING

Languages to be taught

The National	Other	Academic	Foreign and
(or official)	Indigenous	Languages	International
Language	Languages		Languages

The National language in Latin America is, largely, Spanish. A large number of Indian languages are spoken across the polities of Latin America. In addition, there are populations of other language speakers –German in Brazil and Argentina, Russian in Venezuela, etc. In the academic sector, languages like Classical Latin, Classical Greek, Classical Hebrew, Classical Arabic, Sanskrit, Old Church Slavonic, Old High German, etc., must be included in any rational language-in-education plan. The needs of international trade require that other foreign languages also be taught –e.g., French, Italian, German, Russian, Japanese, Mandarin. In the contemporary world, English exercises a hegemony of vast proportions, and it must be considered in the list of international languages to be taught. Let me take a moment to discuss that hegemony of English.

It is probably the case that most of the world shares in common an ability to function bilingually and an appreciation for bilingualism. If one scans the human population at large, it would appear that bilingualism –indeed, multilingualism– is the natural human condition, and that monolingualism is an aberrant state. But the natural bilingualism/ multilingualism of the human population is periodically infringed by the rise of a monolingual power. To some extent, that was the case of the great former colonialist empires –the Greeks, the Romans, the Normans, the Arabs, the Spaniards, and the French. Leaving aside the political and economic issues for a moment, the fact is that great segments of the world's population were dominated by single languages at various times in the past and that native speakers of those single languages –largely through unconscious language planning– attempted to impose their languages on the groups they came to dominate.

The case of English is unique –indeed, each of the cases I have named was marked by particular features, great military prowess in the case of the Romans, Islam in the case of the Arabs– for several peculiar reasons:

- it is the most recent case;
- it is the most extensive case;
- it is a case which arose largely by accident;
- it is a case that has been marked by economic rather than by military expansion, and
- it is a case in which only certain domains and registers have come to be dominated.

The ubiquity of English is an historical accident based on several coincidences. One of those coincidences lies in the fact that the English, living on a small island, were a seafaring people and that, particularly in the 18th and 19th centuries, they succeeded in spreading their influence around the world. A second of those accidents is that the English people adopted different manifestations of Protestantism earlier in their national history; this is important because the Protestant groups hold, as a matter of

faith, the idea that personal salvation can be accomplished through direct access to the Gospels, which in turn implies that the Gospels must be made available to everybody and that everybody must be able to read them. Thus, one cannot ignore the importance in the spread of English of the missionary efforts of British, and later of North American, Protestant churches.[8] The notion of religious literacy is responsible for the fact that the settlers along the northeast coast of North America were perhaps the most literate colonizing population in history; among their first official acts, after basic survival was assured, was the establishment of schools for the entire population and the universal dissemination of religious literacy no only among themselves but among the Native Americans with whom they came in contact.[9]

But these phenomena are quite literally historical, having occurred in the more or less distant past; a more recent set of coincidences centers around the period immediately following World War II. Because Britain and the United States (and Australia, Canada, and New Zealand –all dominantly English-speaking) were among the countries on the victorious side of the war, they were in a position to impose their will on the post-war settlement and on the globalism that emerged at the end of the war. That globalism coincided with the development of the first international data bases and with the arrival of the computer age. Simultaneously, there was an important change in the nature of science and technology. These several issues will be explored in some detail.

Throughout most of human history, science has advanced at a slow and stately pace. Science was, for a very long period of time, largely the province of skilled amateurs, and technological change was essentially independent of the progress of science. Most scientific innovations were a matter of accident –witness the invention of the steam engine which was at the heart of the first industrial revolution. As a consequence of the deliberate pace of scientific conceptualization and technological innovation, most human beings were for centuries able to live full, useful, and happy lives without being much bothered by changes in technology and without being much aware of science at all. But in the latter stages of the first industrial revolution, science and technology became linked together. Industrialists recognized that they needed to harness science in the service of technology; as a consequence of that recognition, a new class of professional scientists came into existence, and industry began to support science as a normal and natural function of the enhancement of

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[8] Catholic churches also engaged in missionary activity, but their ritual did not require literate participation, and their role as language disseminators was quite different, as noted previously. While Islam also engaged in missionary activity, Koranic literacy constitutes a somewhat different problem –one which will not be discussed here.

[9] While I recognize the complexity of the term *literacy*, it is not possible to discuss that here either.

profit. Industrialists began not only to support science with rhetoric but even to invest in basic science research, and subsequently (though considerably later) in scientific information. At present, for example, the pharmaceutical industry invests almost as much money in information management as it does in advertising, and as a consequence the turn-around time between scientific discovery and technological innovation has decreased from decades to days.[10] Furthermore, a new relationship also developed between industry and the academy, because for the first time industry was prepared to pay for basic scientific research conducted in entities which have gradually come to be known as "research universities." And in the most recent period, government has also become involved in the support of science, indirectly influencing the directions of research because of the large sums of money that government is able to invest in basic university-sited research.[11]

In the first part of the present century, the world language of science was German, but as the century progressed and Germany turned its scientific endeavor to weaponry and as it perverted its great scientific tradition with pseudo-science, English began to play a greater role in scientific development, in technological innovation, and in science information. There are some "laws" in science information; the more a group is involved in scientific innovation, the more it is likely to need science information (because the practice of science is cumulative, every innovation in science depending on the existence of prior science), and the more a group uses science information, the more it is likely to contribute to the existing pool of science information. Further, those groups who most use science information and who most frequently contribute to the pool of such information are likely to capture the global information networks for their own purposes.

At the end of World War II, the United States (essentially an English-speaking community) was the only major industrial power to emerge from the war with its scientific and educational infrastructures completely intact. For a complex variety of reasons, the U.S. scientific and educational establishments became extraordinarily productive –industry, stimulated by the war effort, needed after the war to develop new products and new markets for its products; the U.S. assumed an official view of itself as

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[10] The turn-around time from the first scientific breakthroughs in the transmission of sound through the air and the subsequent availability of commercial television was something on the order of 150 years; at the moment, there are documented cases of scientific data searches conducted electronically in a matter of hours leading to technological innovations occurring literally days later.

[11] E.g., the famous "Manhattan Project" which produced the atomic bomb may be the most dramatic case, but the governments of the United States, Great Britain, the Soviet Union, China, Japan, Australia, and other states have interposed themselves into the directions of scientific research by defining the kinds of research they believed central to the national interest and therefore eligible for funding.

helping the rest of the world to recover from the effects of the war (e.g., the "Marshall Plan"), and the U.S. had in place vast scientific enterprises, spurred initially by military necessity, but now ready to undertake peace– time objectives. Further, because the U.S. educational infrastructure was fully in place, the U.S. education sector became a magnet for students, particularly from the third world. This phenomenon had the greatest implications for the emergence of new nations out of the collapse of the old colonial empires. It also had great implications for the U.S. itself. Over the nearly fifty years since the end of the war, it has educated literally millions of the third world's youth. It has also enriched itself not only through the retention of the best minds but through the invention of a new "export" commodity (education) which has brought billions of dollars in new money into the U.S. economy. These students were attracted particularly to science and engineering studies, and other nations were anxious to have their youth study in the U.S. so that those young people might return with scientific knowledge to help these nations –especially new nations– to modernize. These students have supported research not only through their tuition dollars but perhaps more importantly through their willingness to serve as cheap research labor. The cold war and Sputnik provided additional stimulus to the already extensive scientific activities of the U.S. educational and industrial sectors, and government invested even more heavily in basic research in order to maintain the national place in the cold-war competition.

At the same time, the newly created international information systems were coming on line, most of them taking advantage of recently invented electronic instrumentations. After all, the computer was, in the early 1950s, a new if somewhat ungainly toy, and its capabilities were just beginning to be understood. Under the auspices of newly emerging international governmental structures, operational rules were negotiated. English, French, and Russian were declared the official languages of science information.[12] The outcome of all of this linguistic politics was that English emerged as the language of science and technology, and consequently at the present time, according to International Federation on Documentation (FID), something like 80 to 85 per cent of all the scientific and technical information available in the world is either abstracted in, or initially published in, English. Indeed, the extent of use of English in these domains continues to expand. But the economic domination of the United States through the middle years of the century served also to expand the use of English into other domains; as a consequence, the world language of tourism, of aircraft and maritime communication, of banking, and of

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[12] Chinese was technically eligible but was not included because the state-of-the-art equipment of the time could not deal with Chinese characters, and Russian came to be used only in a limited way because Soviet science perceived a need for secrecy as a function of the cold war.

business management, as well as of science and technology, is English. As the late Peter Strevens was fond of pointing out, with complete accuracy, the great majority of the world's population now uses English as a first or alternative language, and the prior colonial areas of the British Commonwealth have to a large degree retained English in the lists of their official languages. The hegemony of English is an important issue in the contemporary world. Not only is the bulk of the material stored in the world's great information storage and retrieval networks in English, but the access dictionaries are based on an English sociology of knowledge. This fact has the most important consequences; not only does it mean that one has to understand English in order to read the great bulk of scientific information, but it also means that one has to understand the Aristotelian logic and Galilean systematization underlying the English sociology of knowledge and the English terminology of the classificatory system even in order to access the technical and scientific literature in the first place.

The English-speaking nations now hold an information cartel which makes OPEC look like child's play. There are several reasons for this condition. First, global resources of petrochemical substances decrease as they are used, but information increases as it is used; second, petrochemical substances involve vast costs for exploration, exploitation, refining, and transporting, while information involves much smaller incremental costs. Although the English-speaking nations control such a cartel, for most of the past fifty years they have not exercised its awesome power, perhaps out of lack of awareness that the cartel existed, perhaps out of altruism; but in the last fifteen years they have begun, in the name of national security and economic stability –that is, to protect patents, copyrights, and industrial processes– to exert real influence over the flow of information. The Reagan administration in the United States invented the term *technology hemorrhage* to characterize what was perceived to be the undesirable outflow of scientific information, at the same time failing to perceive that science can only exist in an environment in which information flows freely in all directions. That exercise of power over the flow of information has caused a perturbation in north/south relations and a continuing and justifiable demand for free access to information on the part of the neediest nations.[13]

This syndrome of symptoms has characterized the conditions under which English has become the most important language in human history and has created an environment in which English has become a highly

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[13] It has had little effect on east/west relations since the nations across that divide largely participate in the information networks, although some smaller states in the Eastern bloc (e.g., Hungary) were to some extent excluded from participation because their national languages are not widely spoken beyond their borders and because their access to English language instruction was severely curtailed for political reasons –a circumstance which is now rapidly changing.

valued commodity. The value placed on the ability to use English has, in turn, created a world market for teachers of English. The People's Republic of China, for example, since it has recognized a need for English in order to achieve modernization, constitutes a potential market which could easily consume the total annual production of English language teachers from Australia, Britain, Canada, New Zealand, and the United States for the foreseeable future. The problem is that such a very large expatriate teacher population could destabilize the domestic environment (as it was in danger of doing at the time of the Tiananmen Square incident). A number of countries have sought to increase their domestic production of English teachers, but the problem in this context is that locally produced English teachers may have limited knowledge of the cultural context –of the pragmatics– of English, and such teachers often promote a local non-metropolitan variety of English, potentially increasing the distance, over time, between the international variety of English primarily used in science and technology and that local variety. This phenomenon has given rise to the spread of what Kachru has called "nativized Englishes" –perfectly viable varieties, complete with literary production, but often limited in spread to the locality in which they arose. In these varieties, the local English serves a number of domains and takes on specialized functions somewhat different from those of the metropolitan variety. Indeed, this situation defines the price that English speakers have had to pay for the internationalization of their language. English is no longer the property of English speakers; rather, it belongs to English users wherever they live and without reference to the "nativeness" of their use.

I have tried here to suggest that the hegemony of English is an accident arising largely out of political adjustments at the end of World War II and the circumstance that those political adjustments coincided with the invention of the computer, that the circumstances underlying the spread of English have been economically driven,[14] and that the hegemony of English exists only in certain domains. I have elsewhere attempted to compare the spread of English through the Pacific Basin with the use of Chinese throughout the Chinese diaspora in the same geographic region. The point I tried to make is that English has come to exercise an important influence in certain communicative domains but that it has had little or no effect on the personal and group identities of vast populations who remain appropriately fixed in a cultural and ethnic orientation quite independent of English.

When I talked about this topic with governmental leaders in the Philippines a decade ago, they suggested that they could simply translate all of science and technology into Tagalog. I would want to argue that such a task is virtually impossible, for a number of reasons. First, some languages

[14] This despite the fact that the U.S. has interfered militarily in the affairs of other states in the recent past –e.g., Vietnam, Panama, Iraq, Bosnia.

will require elaboration to increase their capacities to deal with a variety of scientific and technical fields. Second, the sheer bulk of existing material and the rate of information growth is so great that, were the project to be undertaken at this moment and all available resources put to it, it would take several decades just to catch up to this moment, leaving an increasing gap. Third, even if the objective were technically feasible, the cost of achieving it would be so great that most nations simply could not afford it.[15]

In the period since the end of World War II, three nations have devised successful strategies to deal with the problem. Japan, already a developed nation which had successfully waged war against the west, recognized at the end of World War II that it had to have access to scientific information to recover from the devastation of the War and to take its place among the industrialized states. The Japanese government, in the very late 1940s, established JIST –The Japanese Institute for Science and Technology– which procured the first computers in Japan, sent bibliographic experts to the west to learn the information storage systems, and offered its services to Japanese business and industry. The Japanese government committed a huge fraction of its GNP in the early years to the development of scientific and technical information management systems, directed Japanese research universities to assume certain projects deemed critical to national development, and used a variety of other strategies to achieve information access. The core of its strategy was the development of an extremely effective and efficient translating system. Its success has been apparent.

Saudi Arabia adopted a quite different strategy; it took the expedient of sending a very large segment of its technocrats to the west to learn English and to study technical and scientific subjects. It created very attractive incentives to draw back substantial numbers of those who went, and it employed those trained, returned technocrats to develop its own tertiary educational sector and to assume management of its industrial sector. It too has been markedly successful.

Taiwan represents still a third approach to the problem. Because of the relationship between itself and the United States arising out of the events of World War II, Taiwan was able to negotiate a political partnership with the United States which permitted joint citizenship. This condition has permitted Taiwanese scientists to travel regularly across the Pacific and to participate in the information storage and retrieval system of the United States. With the advent of a variety of rapid electronic communication processes, even physical travel is no longer necessary, and access can be achieved directly through those electronic systems.[16]

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[15] The same might, incidentally, be said of various attempts to replace English (or other international languages) with Esperanto.

[16] In more recent times, Israel has, to some extent, been able to emulate the successes of Taiwan in this context, although the economic development of the two states is rather different.

It is not an accident that the few states which have been able to devise means to penetrate the great science and technology information storage and retrieval networks are not poor states. Solving the information access problem is an expensive process, and only relatively wealthy states have been able to attempt solutions. The fact remains that the states most in need of scientific and technical information are precisely the poorest states –those least likely to be able to devise viable access strategies. And, as already noted, access seems to fall out along the east/west axis; the states with the least effective access capabilities tend to lie in the southern segment of the north/south polarization:

Language-in-education Policy, then, must deal with these problems, and in order to do so, it must answer a number of key questions. The questions are summarized in Figure 6. In sum, Language-in-education Policy must define the following seven broad questions:

- What segment of the population is to be taught?
- Who is to do the teaching (and how are the teachers to be trained)?
- What is to be taught (that is, what is the expected outcome)?
- How is the content to be delivered (not only method, but materials)?
- How is performance to be assessed?
- How is the total effort to be evaluated?
- How will the program be financed?

It will be noted that the decisions are integrated; they cannot be made in isolation from each other, nor can they be made in random sequence.

Figure 6

LANGUAGE-IN-EDUCATION PLANNING
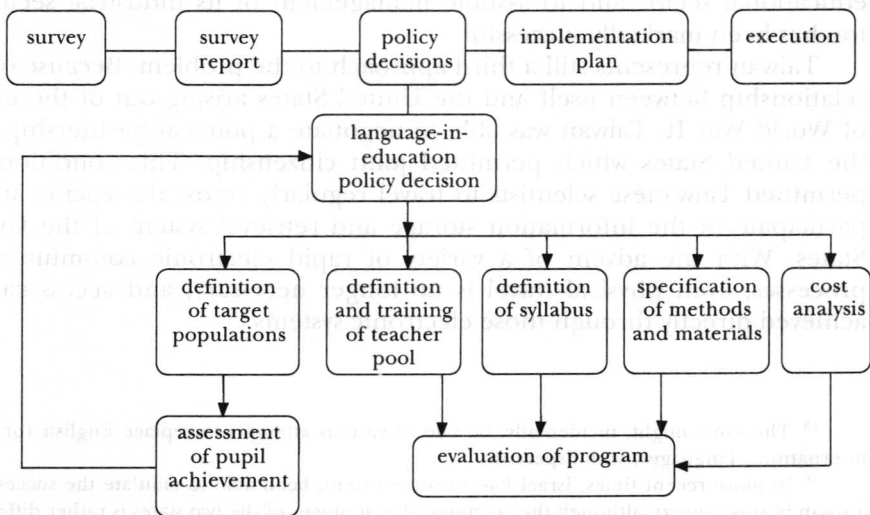
Without this sort of planning, limited resources can be foolishly expended. The dilemma facing developing nations is to achieve rational, coherent Language-in-education Policies in the face of governmental indifference, parental opposition, and fiscal deprivation.

It is not possible for an individual like myself to make concrete suggestions to practitioners in various political states. Each situation must be addressed on its own terms; each polity understood in its own context. That National Languages Policy and Language-in-education Policy cannot be ignored seems to me self-evident. How the various issues may be addressed in various places and at various times is clearly beyond the scope of this brief presentation.

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