V U L N E R A B L E S O V E R E I G N T Y

A cybernetic essay in political sciences.

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A B S T R A C T

This thesis, entitled Vulnerable Sovereignty: A cybernetic essay in political science, attempts to investigate an area usually related to the sphere of military or national defence. Nevertheless sovereignty as conceived in this study enables the analysis to be set in a broader context using the cybernetic concept of information as a key explanatory element.

It is clear that there are a variety of criteria and even ideological viewpoints used in the political sciences and there may be some readers who do not agree with some judgments employed in this work.

The thesis is organized into five chapters: in the first, the concept of information is analysed, beginning with its etymological origin and its relationship to cybernetics, system theory, computation, and, finally, its importance as a new factor of power.

The second chapter attempts to establish the relationship between international entities which control information and the occurrence of economic problems such as 'the energy crisis'. The introduction of the theme "Energy

crisis: threshold for a war" is used to investigate this relationship, to explain the main sources of this crisis and to assess the role of transnational corporations as manipulators of information in this situation.

Chapter III,"Underdevelopment: the real crisis", analyses,within the framework of the underdevelopment and dependency theory, the historical and economic aspects of Latin-American dependence. Here the relationship between the process of underdevelopment and technology is discussed in detail. This analysis is fundamental in order to understand not only the technological dependence of the Latin American states but to assess the implications of this condition for their sovereignty.

In chapter IV the problem of the vulnerability of the sovereignty of technologically dependent countries is discussed. A general concept of sovereignty, in the context of the international political system, is introduced in this chapter in order to analyse the links between transnational corporations and the trilogy: sovereignty, information and technology. This analysis is conducted from two points of view: first, within the context of the international political system; this will be referred to as TNCs within the international political system. Second,within the specific context of technologically dependent states. The economic and political vulnerability of some underdeveloped countries, established as a function of the deterioration of their

sovereignty, is shown in this chapter to be closely linked to the leakage of political and economic information. This leakage of information is explained as a consequence of the participation of foreign technology which is outside the control of the local interests in dependent economies.

Finally, in chapter V some cybernetic alternatives are presented, the theme of war briefly mentioned in chapter II, is reconsidered in order to explain two decision levels which are treated as alternative approaches to the problems discussed throughout the work. These two decision levels are described here under the headings of "The peacetime alternative" and "The wartime alternative".

The decisions at the first level(The peacetime alternative) require the analysis of the following questions:

1.- Can a valid measure of the access of the information(data)implicit in the productive processof a country be formulated?

In this section a method of measuring the information produced by the 64 industrial activities which, according to the United Nations International Classification Standard (ISICC) can be identified within the economy of any country, is suggested.

The country studied is Venezuela: a full list of the 580 transnational corporations operating in its 64 industrial categories has been elaborated and is included

in annex N°27.

2.- Which changes should be considered in a strategic plan of access and control of information?

In this section it is argued that no strategy of development for those underdeveloped countries which have resources would be successful if a strategy of control of information is not planned and executed first. However, the execution of such a strategy requires changes, and these do not occur either continuously or spontaneously, rather they are discrete and induced and could be measured and controlled.

3.- How could a control of a goods and services information system help a nation to deal with destabilizing activities?

In this section the possibility of developing a cybernetic mechanism capable of producing suitable information with respect to the production system is reviewed. This mechanism would provide the user with vital information whenever the relative stability of the output of goods and services from a firm or industry was disturbed and threatened to become intentionally unstable.

The decisions invoked at the second level,(The wartime alternative) require the analysis of two questions:

1.- Could the idea of war be considered in the formulation of a strategy of development?

This section, "The cybernetic preparedness to survive" discusses the implications of technological dependence in the light of the strategic relations between

the world super-powers. International war between the super-powers would surely collapse the economy of any technologically dependent country because it would effectively cut off access to vital technology. But by severing the links of technological dependence the underdeveloped country would be forced to initiate independent development in order to subsist. Hence this section examines whether or not those underdeveloped countries which have resources can initiate such independent development during peace time instead of waiting for war as a historical alternative.

2.- Could the scheme of an 'economic closed system' stand as alternative for transformation and development in some Latin-American countries?

This last section starts from the theoretical assumption that when a politically independent country (analysed as a system) does not possess sufficient resources it has to become an open system in order to survive; if it fails to obtain resources from the external world, it is then inevitably obliged to exchange sovereignty for the resources which it does not possess. However, if the assumption is changed, that is, the underdeveloped country possesses resources then it is possible to develop closed transformations. By guaranteeing an increment in sovereignty to levels compatible with the development options, this could allow the selected model, whatever might be its ideological basis, to be actually converted into a realisable alternative.

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C H A P T E R I

1.- Information: A new factor of power?

> When I control the actions of another person, I communicate a message to him, and although this message is in the imperative mood, the technique of communication does not differ from that of a message of fact. Furthermore, if my control is to be effective I must take cognizance of any messages from him which may indicate that the order is understood and has been obeyed.
>
> Norbert Wiener 1950(1)

1.1.- What does information mean?

Because of the importance of the term "information", in the context of this study, I will try to explain it and define it in a broad context, which, starting from its etymological origin, should permit us finally to locate it clearly in the specific area of our interest.

The word information comes from the Latin "informationem", which as the accusative of "informatio" signifies a representation, a sketch, a conception, an idea of something(2).

Information, considered in ancient French and medieval English as "enformacion", in fact is a word formed by two vocables:"inform" and "ation".(3)

Inform, which in the transitive and intransitive forms of the verb means "notify", "teach" comes from the Latin "informare" which means "give form to something","model".

"Action" a suffix which denotes action,process, state or condition, derives from the Latin "ationem".

Nevertheless, the more general definition conceives of information as "the action and effect of informing". The majority of dictionaries consulted agree in this definition as the first meaning.

For the Oxford English Dictionary(4), information is the action of informing, forming or moulding the mind or the character, it is training, instruction, teaching, and the communication of knowledge.

Depending on the area of study, the meaning of the word varies. In the sphere of religious philosophy(5) it constitutes the action of informing, of giving a form. "L'homme est l'information supreme et comme la vivante synthèse des

forces créatrices du globe", writes D. Stern in "Essai sur la Liberté" Page 9.

From the point of view of Jurisprudence and according to Oxford(4), Emil Litre(5), the Royal Academy of Spanish Language(6),and Le Robert(7), information is related to the juridical verification of a case. "the assembly of the facts which tend to establish the proof of an offence and to describe the offenders", "the action of informing, accusing or making charges against a person in a court or a magistrate"(4). "Instructions on which one proceeds to the search or the definition of a crime or misdemeanour". It is the instruction or complaint which proceeds to the investigation or registration of a crime or a default(5).

Another traditional meaning of the word , in the field of social communication, press, radio, TV etc., cites information as the action of informing or communicating knowledge or news on some fact or occurrence, the action of telling what happened. In this sense there can be political, economic, sporting, financial and scientific information etc.(4).

State information, or opinions transmitted by the means of communications and coming from institutions such as firms, political parties, ministries, organisations etc., also are incluđed within this classification(7).

In Biochemistry, on the other hand, information has a very special significance. The British scientific weekly "Nature" includes in its edition N°4357(8) a work by J.D. Watson and F.H.Crick on the genetic implications of deoxyribonucleic acid in the structure of cells, pointing out that in one molecule there are many possible permutations, and the precise sequence of its bases obeys a code which carries the genetical information.

In 1958, another article in the "Spectator"(9), indicated that complex molecules carry genetic information from one generation to the next. And in 1971 E.M.Dowben(10) pointed out that the genetic information transmitted is

determined by the composition of the amino acids of all the proteins synthesised by each cell.

In the field of mathematics, information is defined as the quantity which represents the degree of choice exercised in selecting or individual formation of a symbol, sequence, message,etc., within a number of possibilities,and this is expressed logarithmically in terms of the statistical probabilities of ocurrence of the symbol or elements of the message(10).

As we can see, the term "information" possesses a wide range of meaning which make difficult any classification of concepts denoted by the various uses of such a term.

However, an interesting distinction is pointed out by C.M.Elstob(12), he coined two new words: Physical-information (p-information) and Semantic-information(s-information).

> "Physical-information",he said,"is what is dealt with in technical information theory as developed by Shannon and others. Studies of physical-information concern(at an agreed level of resolution) questions about the amount of form(pattern, or potential distinction) contained within a specified domain. It also concerns the preservation of form as it undergoes transformation and transmission. p-information flow exists(i.e. there is a channel for p-information)wherever correlation exists".

According to Dr.Elstob, we cannot consider Semantic-information without any concern for p-information because always meaning and significance are conveyed by p-information carriers. So although we could say that theoretically all information should be actually p-information, the interesting thing from Elstob's view is that p-information, in the way he defines it, does not make any sense for its users if there is no transmission of meaning.

> "Information,as used in the everyday sense, he said, is much closer to s-information in its meaning than p-information. We are, of course, s-information users

and it is the transmission of meaning that concerns us in our interactions with one another and the world about us".

From this point of view, the concept of information that the reader will find in this work should be considered as semantic-information. Only in points 1.2(Information and computation: informatics) and 5.1.3(Goods and services information system) can it be treated mainly as physical-information.

Apart from the two areas of meaning associated with the word information (s. and p.) already mentioned, other writers have distinguished a third area called "Pragmatic information".

This third meaning concerns how information relates to the behaviour of information users -their actions, beliefs, aptitudes, plans etc. This will be particularly important when analysing the behaviour of the people involved in decision making processes.

It is well know that human beings have a quite limited capacity to process data in order to extract information relevant to their interests and actions. Individuals in management and decision making positions have to face the problem of how to obtain pragmatically usefull information which is both reliable and comprehensible. This implies the need for a robust and flexible information filtering system, to work in conjunction with a sophisticated data gathering system,so that decision makers at all levels have access to

data that informs their actions and control responsibilities without overloading them with meaningless data irrelevant to their particular functions.

The design and implementation of such a pragmatic information system or cybernetic information system presents many problems which are as yet not completely solved. S.Beer has frequently drawn attention to the need for such information systems. Beer's work in Chile(1.23) involved an attempt to provide a pragmatically effective information system for the monitoring and control of economic behaviour and it introduced many useful ideas.

It is recognized that an effective "Goods and services supply information system" has to be designed in accordance with the above principles. The particular design problems that will have to be overcome are not discussed further in this work, but it should be stressed that a pragmatically effective information system is essential if a nation is to gain control in terms of sovereignty.

1.2.- Cybernetics and information

The term Cybernetics, coming from the Greek word "κῦβερν-αω"(13) which meansto govern,conduct,which in Latin is guberno, gubernavi, gubernatum, and "κυβερνήτης" which means pilot, government and which in Latin is guber(14).

This word, which still is in use by the Greeks to denominate the man who steered a boat, would have in that language a sound which in English script could be "Kybernet".

The suffix "ics" is used to form names of arts and sciences. Formally this suffix is nothing but the plural of suffix "ic". It was formed in imitation of Greek "-ικά" which comes from "ικος" used to form names of arts and sciences in Greek(15).

This suffix was taken by Norbert Wiener, 1894-1964(16)together with the vocable "Kybernet" to denote the theory which he formulated and which later wouled be called "Cybernetics".

The word cybernetics, in the Greek sense of the expression, was employed by Plato 400 years before the Christian era, and in modern times appeared for the first time in published form in 1884, in an essay on the Philosophy of Science written by Ampère(17).

Nevetheless it was not until after 1948, with the appearance of the book "Cybernetics: or Gontrol and Communication in the Animal and the Machine" by Norbert Wiener (16),that cybernetics began to acquire its value and significance as a contemporary science.

> "When I wrote the first edition of Cybernetics some thirteen years ego, I did it under some serious handicaps which had the effect of piling up unfortunate typographical errors, together

with a few errors of content. Now I believe the time has come to reconsider cybernetics, not merely as a program to be carry out at some period in the future, but as an existing science".

So said Norbert Wiener in the Preface to the second edition of his book in 1961.(16).

During the last 34 years, this new science has been transformed into an important instrument of analysis for the investigation of many phenomena, and has developed its own language and concepts, properties which allow it to treat many other disciplines in order to explain, in functional terms, the behaviour of the object of its study.

Norbert Wiener defined cybernetics as "The science of control and communication in the animal and in the machine". Other definitions have been produced since this one. Neville Moray(18) for example, after pointing out that cybernetics is the study of the functioning of all classes of systems, defines it as "The Science of Applied Logic".

The Russian scientist I.B.Novik(19) elaborates what he calls an operational definition for this new science. He said that cybernetics is

"The science which analyses, in a functional way, the processes of direction and optimisation of complex dynamic systems in which information plays an essential part".

I have chosen these three definitions, considering that they represent the essential content of the points of view which I will try to outline in this work. That is to say, I believe that cybernetics is the science of applied logic, as set out by Neville Moray in his definition, and intend to apply this logic to the cybernetic analysis of the role of information in the phenomenom of the vulnerability of technologically dependent economies.

Also important for our analysis will be the definitions given by Wiener and Novik, above all if we consider

the significance which both of them assign to information.

Wiener pointed out that "The role of information and the technique of measuring and transmitting information constitute a whole discipline for the engineer, for the physiologist, for the psychologist, and for the sociologist"(16)

We already know from Wiener that information is something which can be measured in relation to its role. When we observe a phenomenom, we can determine its occurrence in terms of a numerical quantity, or numerical sequence; the gradual increase in the temperature registered by a thermometer in a given period, or the meteorological weather data, taken daily during a fixed lapse of time, can be represented as a continuous numerical series.

When we observe something, we can work out a plan, map or model which reflects its behaviour in terms of time and sequence. What happens, discrete or continuous, to this thing or phenomenom, according to Wiener, constitutes information which can be measured.

Wiener established the formula" $\int_{-\infty}^{\infty} [\log_2 f_1(x)] f_1(x) dx$" in order to measure the amount of information. This formula, which later was used in the so-called Theory of Communication (20), enables one to establish the minimum effort and cost required to transmit a message independently of the value, importance and consequences of the information transmitted.

According to Elstob's distinction between physical-information and semantic-information(12), which we quoted in point 1.1 of this chapter, we could include the appreciation of information given by Wiener within the physical-information, and it is in this that we can note the difference in relation to the appreciation of information given by Novik.

For Novik,"The successful development of methods of measuring information has relegated to a lower plane the qualitative analysis of the content of the information"(19)

Novik pointed out that there is a difference between the formal communication of information, which is measurable,

quantifiable, etc., (p-information) and the meaningful communication of information. The latter not only should be quantifiable (p-information), but also represent in itself a meaning and significance(s-information), which corresponds to the reality which produces it.

In other words, I.B.Novik, making use of the hypothesis of "reflex property" established by V.I.Lenin in his book "Materialism and Empiriocriticism"(21),concluded that information is the reflection of the material.

Given that the interest of this work does not reside in demonstration of ideal or formal characteristics, but rather in practical uses of the study of information,the mathematical and philosophical aspects of its measurability and essence will not be treated in detail.

From now on, what interests us is:

1.- That information can be quantifiable = Wiener
2.- That information inherently possesses significance and meaning which corresponds to the reality which produces it = Novik
3.- That information plays an essential role in explaining the behaviour of any system.

These aspects will be considered again in the analysis of chapters IV and V.

Cybernetics has,until now, had a greater welcome among the so-called exact sciences than among the social sciences. Biology, medicine, physics, engineering have made up some of the fundamental fields of orientation of this science.

The works of W.Ross Ashby(22), Stafford Beer(23), Neville Moray(18), Frank H.George(24), Gordon Pask(25),I.B. Novik(19), Jacques Guillaumaud(26) and Norbert Wiener himself in this areas demonstrate such an orientation.

In the study of the regulation of economic processes one may distinguish the works of the Polish economists Oscar Lange(27) and Henryk Greniewski(28), the Rumanian Manea

Manescu as well as the already quoted Stafford Beer.

In our case, we intend to locate and analyse the three aspects previously indicated within the ambit of the politico-technological relationships which are established between developed and underdeveloped economic systems.

1.3.- System Theory and information

We could not talk about General System Theory without any reference to Ludwig von Bertalanffy(30). He himself claims to be the first to introduce the idea of a General System Theory.

System theory is frequently identified with cybernetics and control theory. This is incorrect,said Bertalanffy:

> "Cybernetics is a theory of control systems based on communication(transfer of information) between system and environment and within the system and control(feedback) of the system's function in regard to environment. The model is of wide application but should not be identified with system theory in general".

To deal with the methodological problems of systems theory, Bertalanffy points out that there are many approaches. Among the more important are:Classical system theory, Computerization and simulation, Compartment theory, Set theory, Graph theory, Net theory, Information theory, Theory of automata, Game theory, Decision theory, Queuing theory and Cybernetics theory.

But the so-called Hierarchic order theory, seems to be one of the mainstays of general system theory. According to this hierarchic order theory, we can see the universe as a tremendous hierarchy, from elementary particles to atomic nuclei, to atoms, molecules, to cells, organisms etc. to supra-individual organizations.

So we could say that the universe is composed of parts, elements or organizations. Hence if we ask what does a system mean, the answer should be, in the broadest sense of the expression:any of such parts, elements, organizations

or even the universe itself.

This consideration leads to the idea that if any entity can be considered as a system, then it seems legitimate to ask for a theory which can be useful, not for systems of a special kind, but for systems in general.And that is the aim of general system theory as Bertalanffy postulates:

> "General system theory is a general science of wholeness...Its subject matter is formulation of principles that are valid for system in general,whatever the nature of their component elements and the relations or 'forces' between them".

There are correspondences in the principles that govern the behaviour of entities that are, intrinsically, widely different. These correspondences are possible because of structural similarities or isomorphisms showed by such entities. There are, for example, isomorphisms between biological systems like animal communities and human societies.

However, Bertalanffy himself emphasizes the danger that general system theory may end up as meaningless analogies.

> "This danger indeed exists , he said, for example, it is a widespread idea to look at the state or the nation as an organism on a superordinate level. Such a theory, however, would constitute the foundation for a totalitarian state, within which the human individual appears like an insignificant cell in an organism or an unimportant worker in a beehive"

We are not going to argue in depth about this matter. However, we must say that we disagree with Bertalanffy's statement. First of all because the reader should understand that when we analyse the nation as a system, we have to use analogies. And secondly because in the same way as we believe in freedom, we believe in control as the only way to guarantee freedom, control not upon man but upon his information.

With this brief introduction in mind, we will consider some further aspects of system theory and cybernetics relevant to our current interests.

Depending on the relationship or interaction which any system maintains with its environment we may speak of open or closed systems and that is important from the point of view of the survival of the system.

Living organisms are essentially open systems(i.e. they necessarily exchange matter,energy and information with their environment), and it was precisely from the study of this type of systems, in the field of biology, which permitted the formulation of a principle called "Homeostasis".

In biology, homeostasis is the phenomenon closely connected with the maintenance of balance in the living organism, and specifically with the process of thermoregulation in warm blooded animals.This process may be taken as a convenient example of homeostasis:

Cooling or warming of the blood stimulates certain centres in the brain which "turn on" heat-producing(or cooling) mechanisms of the body.This action leads to bring blood temperature to a standard of normal temperature and the body temperature is monitored and adjusted in this way. Similar homeostatic mechanisms exist in the body for maintaining the constancy of a great number of physiochemical variables.

Ross Ashby in chapter X of his book "An Introduction to Cybernetics"(22) gives a wide analysis on regulation in biological systems, "Regulation and control" he said, "is the central theme of cybernetics". Ashby points out how the concepts of regulation, information and survival are intimately tied together."...all the organism's exteriorly-directed activities, its higher activities are all similarly regulatory, i.e. homeostatic" he said.

Apart from the biological point of view, the principle of homeostasis, or regulation, is very wide in its applications,covering as it does most of the activities in

physiology, sociology, economics and many of the activities in almost every branch of science and life.

The principle of homeostasis is fundamental to the survival of many systems. According to Ashby(22,p197):

> "...the concepts of survival and stability can be brought into an exact relationship: and facts and theorems about either can be used with the other,provided the exactness is sustained".

The better the homeostasis, the better the system's chance of survival. So, we could say that the perfect homeostasis would be one that, in spite of disturbances, maintained the system's stability.

One of Ashby's greatest achievements was to develop ways of measuring the amount or degree of homeostasis. His law of requisite variety allowed a precise statement of the theoretical maximum level of regulation that a given system could achieve.

> "In general",said Ashby,"an essential feature of the good regulator(homeostat) is that it blocks the flow of variety from disturbances to essential variables".

By essential variables he meant those variables whose condition characterises what defines survival for an organism or social system. Ashby distinguishes two ways of blocking the flow of variety. The first way is to interpose something that acts as a simple passive block to the disturbances. The second form is what he called "the defence by skilled counter-action" that is, he explains:

> "...the defence that gets information about the disturbances to come, prepares for its arrival, and then meets the disturbance, which may be complex and mobile, with a defence that is equally complex and mobile".

According to Ashby, where the law of requisite variety,in its quantitative form,develops its power is when

we come to consider a very large system. For example, Ashby ask himself, "by how much can a dictator control a country? It is commonly said that Hitler's control over Germany was total. So far as his power of regulation was concerned, the law says that his control amounted to just 1 man-power, and no more".

Regulation and control are,on the other hand, intimately related. "The achievement of control may depend necessarily on the achievement of regulation",said Ashby.

Ashby's views will be analysed further in chapter V of this work; homeostasis and control should be one of the main aims of the cybernetic alternatives pointed out in that chapter.

The other cybernetician who gives a very interesting definition of homeostasis is Stafford Beer. He said in "Platform for Change"(p.426):

> "Homeostasis is the tendency of a complex system to run towards an equilibrial state. This happens because the many parts of the complex system absorb each other's capacity to disrupt the whole. Now, the ultimately stable state to which a viable system may run(that state where its entropy is unity) is finally rigid and we call that death".

However, if we want the survival of the system,then, according to Beer,there will be the absolute necessity of an extra concept of equilibrium. An equilibrium that is not fixed, but on the move.

In order to explain this concept, Beer makes use of Ashby's notion of "physiological limit"(22)(11/11 p.209). Beer said:

> "It is necessary for a viable system to keep moving its stable point, but it cannot afford to move it so far or so fast that the system itself is blown apart. It must keep its degree and its rate of change within a tolerance fixed by its own physiology".

Finally Beer suggests:

"Revolutions,violent or not, do blow societies apart because they deliberately take the inherited system outside its physiological limits".

Another principle intimatelly linked with system theory and cybernetics is that of "Entropy". Conventional physics gave the first basis for the study of closed systems, i.e., systems which are considered to be isolated from their environment, and it was in the field of physical chemistry, and particularly in thermodynamics, where the concept of "entropy" was first employed.

The second principle of thermodynamics states that in a closed system, a certain quantity, called entropy, must increase to a maximum, and eventually the process comes to a stop at a state of equilibrium.

This principle of thermodynamics can be formulated in different ways. It can be said, for example, that entropy in a closed system could be considered as a measure of probability and that the state of equilibrium then, is the state in which the parts which interact in the system reach their most probable distribution.

The most probable distribution of the velocities of molecules in a mixture of gases is a state of complete disorder. If we imagine a closed space in which we maintain two gases separate, the first with fast molecules, that is, a high temperature on the right side, and the second with slow molecules and low temperature at the left, when these gases are mixed the final distribution of their molecules is highly uncertain, therefore, we can say that their most probable distribution is that of maximum disorder or maximum entropy.

For Beer(23,p.28), entropy began life as a subtle measurement of energy flow.

"In fact",he said, "the second principle was

> popularised in the nineteen-thirties as demonstrating that the universe is 'running down'. If heat always flows from hotter to cooler bodies, and never the other way round, then(since everything is ultimately in contact with everything else) all heat will eventually even out".

As energy inexorably flows in one direction and order is continually destroyed, entropy, as a measurement of energy flow, is always positive, but Beer suggests that its opposite or negative entropy which he calls "negentropy" is precisely information.

> "...although entropy inexorably tends to increase",said Beer, "that tendency is barred by injections of information. Every complex system is held in being at the balance of its entropy and negentropy".

The breakdown of that balance into what we call "The Continental American System"(chapter IV) by virtue of a international war, and its impact on Latin American reality is what we will analyse in point 5.2.1(The cybernetic preparedness to survive)(chapter V).

1.4.- Information and computation: informatics

First we shall consider the origin of the term "Informatics". According to an article published by the French daily Le Monde(31) the author of the word "informatics" was the Frenchman Philippe Dreyfus who, in 1962, suppressed the suffix -ion of information and replaced it by the suffix -ique which in French denote something relative to, and which, like -ics (remember the etymological definition which we gave for the word cybernetics) in English also is used to denote "something relative to" and in this way to create names for the arts and sciences.

So that in this way "informatique" in French, "informatics" in English, and "informatica" in Spanish, constitutes, according to Dreyfus' version, a useful noun for the designation of the treatment of information.

In 1967, the Academic Francaise(32) accepted the term informatics and defined it as the science of the rational treatment by automatic machines of information, considered as a support for knowledge and of the communications within the domains of technology, economics and sociology(Science du traitement rationnel, notamment par machines automatiques, de l'information consideree comme le support des connaissances et des communications dans les domaines technique, economique et social).

In 1975 the Intergovernmental Bureau for Informatics (IBI), an organisation created under ECOSOC UNESCO(33), defined it as "Informatics is the systematic rational application of information to economic, social and political problems(34).

The concept of informatics has been evolving and acquiring a much broader significance than that originally

established, but always tending to relate information with the technology directed to its processing. A definition of this type, also provided by the IBI is:

> "Informatics is the discipline which studies the phenomenon of information, information systems, and the elaboration, transmission and utilisation of information, principally, although not necessarily, with the aid of computers and telecommunications systems as instruments, for the benefit of humanity."

This last definition demonstrates the inseparable relationship which presently exists between information and the technology directed to its processing. This technology, for which the Third World countries are totally and absolutely dependent(35) constitutes the industry with greatest thrust and development in the industrialised capitalist world.

The so-called Third Industrial Revolution or the Silicon Revolution, is an evident fact, and the strategic power acquired by whoever controls the development and commercial exploitation of this industry is unquestionable.

The biggest transnational corporations who operate in the computer industry are all mainly from United States, among then, IBM with a sales volume of 23 thousand million dollars in 1979, more than 325,000 workers, and with a research budget of US$ 1,000 millions, maintains an indisputable leadership in the industry, controlling 65% of the world market in computers(see annex 1).

The important and also strategic industry of integrated circuit production is also mainly controlled by the United States. Firms such as Texas Instruments, Motorola, Mostek, Intel, AMD, National Semiconductors, Rockwell, AMI, and Fairchild are all U.S. parent companies dedicated to the manufacture of these devices. Nevertheless, Japanese corporations such as Hitachi, Nippon Electric, Toshiba, Oki, Fujitsu, and Mitsubishi are vigourously breaking into the

market for "silicon chips"(see annex 2).

The silicon chip constitutes the basic component for the manufacture of microprocessors and these, in their turn, are converted into the devices which are keys to the functioning not only of computers, but also of any other information and control machinery, in the broadest sense of the word.

From electronic watches, sewing machines, washing machines, TV games, typewriters, automobile ignition systems, microwave ovens, etc., to the most complex analogue-digital computing systems used in the control of industrial processes, including robot, space travel and communications systems, microprocessors with this type of semiconductor are used.

Theoretically, the use of the silicon chip is virtually limitless, as we could deduce from what Jack Kilby (inventor of the integrated circuit) said:

> "In fact, digital circuits are even replacing mechanical parts like gears and pinions -as in the modern digital electronic watches(36).

Whilst some natural resources such as oil, iron, copper etc are finite and their prices go on rising, silicon chips ,whose principal ingredient is, essentially, sand,(an almost infinite resource if we consider the quantity of this material used in each chip) show prices which are,at present definitely falling.

In the field of computation, the price, for example, of the components required to produce an assembly for the central memory, with a capacity of 1 megabyte(which is equivalent to a million characters) was US$ 32,000 in 1974; three years later it fell to US$ 7,000 ; now in 1981, its price is US$ 2,000 and, by 1984, it is estimated that it will be reduced to around US$ 500.

But the fantastic development of the assembles designed for storage of information do not end with the drastic reduction in prices of the silicon chip, but in the

increase in the capacity of each chip to store characters (at present, this capacity reaches, for RAM type semiconductors, 64K per chip,each K represents 1024 bits or two-state positions of memory). If we look forward to 1990, the situation could present even more spectacular changes.

Apart from the increase in chip capacity to 128K and 256K which has already been announced by some Japanese and US companies, Texas Instruments and Intel, both United States firms, have developed what promises to be a major new data and storage technology of the future: the "bubble memory". This type of memory can hold up to four megabytes of data(four million bits of information).

According to Intel Magnetics General Manager, Dick Clover, the company is putting into development and production a four megabyte bubble memory device that will be introduced some time during the second half of 1982(see reference 1.01).

This new device would be able to replace those already advanced and powerful means of bulk storage information, such as the small disc, the tape and the magnetic drum.

In any case, to give us an idea of what the posibilities of information storage with the new data storage devices already in existence means, it should be enough to suppose that all the personal information of the population of any Latin American country, that is the data on each individual, concerning his educational background as well as his political and financial activity, could be stored using a system which would require a space no larger than that used to build any village church.

This circumstance, without doubt, creates risks from the point of view of vulnerability of information.But what constitutes the main danger in this concentration of information is not the existence of devices which permit it to be stored in smaller spaces, but rather,if you like, the existence of other devices which permit it to be accessed and transmitted in smaller lengths of time.

In 1964, my professor of Economic Theory Manuel Rodriguez Mena, pointed out in the course of a lecture: "...whoever controls the means of communications controls the power", I was then 22 years old, and even though I did not understand in depth the significance of the statement, the expression remained ringing in my ears.

In 1982 the control of the means of communications means the control of information, and as we point out in this work, information constituted the essential element of contemporary power.

But what gives this significance to information is its possibility of its being used in making decisions and this is precisely what is possible as a result of the "marriage" between computing and communications(38).

This technological marriage, which in the United States is called "Compunications" and which the French have christened with the name "Telematique", has been converted into the most serious menace to individual privacy of the inhabitants of the developed world. The reason is very simple -the so-called "data banks" with registers of information for each citizen, are not a futuristic supposition nor a work of science fiction, they are a reality in the offices and home affairs ministries of these countries.

The privacy of personal information is based essentially on the notion of dignity and integrity of the individual and his relationship with the information about him(39).

This notion of privacy derives from the assumption that all information with respect to one person constitutes a property which belongs to the individual to which it refers, or who originates it, and who has the right to communicate it to third parties or retain it for himself.

Some countries such as Sweden, the United States, France, Austria and Norway, have legislated in this respect and formulated laws which permit or guarantee the right of

any citizen to see his own file of information and to change it when he considers it to be wrong.

One of these laws, the "Data Act" of Sweden, established in 1973, expresses in Section N°10: "On the request of an individual on the register, the official responsible for maintaining the register should, as quickly as possible, inform him about the information concerning him which has been registered"

This law, which is considered of the greatest interest in this chapter, has been included in this work under annex N°3.

In other countries such as West Germany, and England, there already exist organised movements which are bringing pressure so that similar laws are promulgated.

In England, the National Council for Civil Liberties, has for many years been fighting against what it calls "the real English disease"(40) a soubriquet which it uses to indicate the classic tendency of the British Government to give more importance to its privilege to hide than the right of the citizen to know.

Nevertheless, the most serious threat which, to our eyes, informatics is generating is not in relation to the invasion of individual privacy, but rather in relation to what in this way of thinking, would be termed "national privacy".

The deterioration in this privacy and its impact on national sovereignty, is extensively discussed in chapter IV of this work; at this point we only refer to the preoccupation which, on this aspect, also exist even in the developed countries.

"La Telematique" or the relation between computation and communications has reached such a state of development that the government of some countries have begun to preoccupy themselves with what could be the necessity of restraining the flow of information by teleprocessing means.

The methods which some countries have adopted on what is beginning to be called "Transborder data flow"(41) or what would be the transnational or transfrontier flow of data, is directed specifically at the control of transnational companies which own computer systems with communications systems capable of transmitting or receiving information to or from their head offices.

But the absence of uniformity in the criteria with respect to the laws governing the control of the so called "data havens" has created a confusion about what type of information ought to be restricted.

Up to the present, three different international organisations, the Council of Europe, the Organisation for Economic Cooperation and Development(OECD), and the European Economic Community(EEC) are working together trying to harmonise the different laws.

For some countries, control means more than individual privacy, it means the safeguarding of political and economic information which could weaken the integrity or sovereignty of the nation.

In June 1978, the Swedish government published a study carried out by a commitee of the Ministry of Defence to which had been entrusted the task of investigating the vulnerability of the computerised society(42). The title of this work, in Swedish, is "Adboch samhallets sarbarhet" and the name of the commitee is "Sarbarhetskommitten"(SARK). One of its most important conclusions was that:

> "...the vulnerability is due to various factors the principal of which, in the opinion of SARK are the dependency upon foreign technological resources, the geographic concentration of the computer systems, the dependence on the people who develop and operate the systems, and the risk associated with the content of certain types of files" and finally they point out

"various forms of external attack are possible or feasible, thanks to these vulnerability factors".

Nevertheless,the preoccupation shown by some governments, and the means that have been adopted in this respect seem to be insufficient .

"I use a network of computers with access points in 26 countries, including a public telephone box in Peru. How can any authority for protection of data hope to tackle what I am doing with my data and where I am doing it?" said the data processing manager of a TNC during an exhibition of equipment to Members of Parliament in London(43).

Since 1876, when A.G. Bell invented the telephone, telecommunications has achieved a vertiginous rate of development. With more than 400 million telephones installed in the world, the international telephone network constitutes not only the biggest automatic system in existence, but the best available means for the transmission of information.

Apart from voice,which was originally considered by Bell as the only transmission element, the telephone network, in combination with other means, permits the transmission of alphanumeric, graphical information, moving pictures, and even television programs(see annex N° 4)

New services, always within the basic combination of telephone-computation, are found in operation.Telecopying, teletex, electronic mail system, viewdata, mobile radio, digital transmission, video telephone and video-conferencing are systems already in operation.

Telecopying, for example, could enable a TNC to transmit via satellite, from any part of the world, to New York or Washington, the complete text of the information contained in a page or drawing in only 15 seconds(44).

The electronic mail system, also known in the

United States as the electronic message system, also utilises the telephone network to provide this type of service. Each suscriber possesses a video terminal connected to this network and with access to a central computer. In the computer each user has the use of an area of memory, which becomes a kind of post box, in which are stored the messages which he sends, or are sent to him.

Another revolutionary system for the transmission of information goes under the generic term "viewdata". This system, originating in England, was put into operation in March 1980, under the name of Prestel and under the official control of the British Post Office(Ministry of Communications) later in 1982 under the new state institution:British Telecom(45)

Viewdata involves the use of the telephone network, the subscribers' private television sets, and a central computer. The system permits each user to make use of his own television(in reality a normal television but with a special device incorporated) to access a computer in which is encoded a data bank with more than 250 thousand pages of information.

The 250 thousand pages are continually updated, so that almost any information which is normally obtained from the printed press can be visualised alphanumerically, or by graphics on the screen of the television set.

This system, which promises to convert itself into one of the biggest mechanisms for bulk storage of data ever conceived, and which, without doubt, represents the realisation of the dreams of any writer of science fiction, induces also the same questions with respect to the control of information and power which we formulated in the opening discussion of this work.

It is enough to suppose that, during the next 5 or 10 years, it will be possible to obtain, not only the devices for operating with viewdata, but also the accessories and the memory which would be needed to turn a television set into a intelligent terminal, or into a microcomputer to which

also can be coupled some peripherals such as a printer, discs, tapes etc.

By making use of this the viewer, rather than being a passive spectator, becomes an active participant, capable of interacting with what could be the data base of the central computer; he could seek information, but also could respond to certain types of questionnaires or decide on purchases or reservations.

Faced with these circumstances,the government which controls a data base of this type will have at its disposal the most rapid, complete and precise mechanism for feed-back ever found in the political history of mankind; it could measure the impact of its decisions, the rejection of policies or the trend in the demand for goods and services.

From all that has been said, it is clear that the integration of the processing and transmission of information in a closed system of communications is a reality. Unfortunately for those who do not control the technology implicit in such a process, this reality is converted into a terrifying perspective on which we must reflect and analyse as one more element in the context of the study of technological dependence.

1.5.- Control of information: the real power

In the modern world, the relevant role of information for decision-making has created a new system of evaluating and structuring the factors which generate power; today it is not the ownership of natural resources, or of capital which confers power on their possessors, but in this new order the great organisations, and among them, the governments of the most developed nations have witnessed the collapse of these factors when they are not associated with the new resource: information.

These nations and organisations have understood not only the present-day value of information, but above all, its influence in the destinity of peoples. They know that the success of decisions adopted by their rulers does not depend upon capacity or experience in the management of resources, not the quantity or quality of the same, but fundamentally, the truth and coverage of the information of the reality in which they take their decisions.

If power, as a fundamental element of development, was determined by the holding of capital, the member countries of OPEC would for some time not only have been developed nations but world powers, if we take into consideration only the quantity of their natural resources. In the Latin American region, one of this countries, Venezuela, has received during the past 10 years injections of capital which, taken together, exceed the sum of that invested by the United States in the celebrated Marshall Plan for the reconstruction of Europe(46).

The essential nature of power can be defined as the interaction between two beings one of which is capable of affecting the behaviour of the other.

This interaction creates a certain type of negotiation in which the particular potentialities of both parties are displayed, with respect to the capacity of each one to modify the behaviour of the other.

On the other hand, for any interaction of this type, we may say that it assumes the status of a system with a specific objective. The type of relationship established will depend on the particular characteristics of the system and its objetives but in any case, and in accordance with the theory of cybernetics it will often be possible to identify one part as controller and the other as that which is controlled.

Let us suppose a system in which government "A" seeks from government "B" the dismantling of nuclear missile base, but during the negotiation, indirect relationship (diplomacy) fail, and "B" refuses to accept the demands of "A".

"A" has recourse to direct action and establishes a military blockade on "B". "B" then dismantles the bases, accepting "A's" conditions.

For this system in particular, we could say that "A" controlled "B", and finally the objective was achieved. But as we can see, the power of "A", in this case over "B", was only demonstrated after the interaction between them

Thus, if power is not something abstract, and is only demonstrable by means of confrontation, that is to say power of something with respect to something, we could ask ourselve: What induced "A" to confront "B" in the way they did(military blockade) and demand the dismantling of the bases?

We believe that fundamentally the information which "A" possessed about "B", and in effect the power of "A" with respect to "B", began to develop much earlier than the production of the interactive(confrontation) system we have indicated.

In other words, we may assume that "A" had been

"accumulating power" relative to "B" when it was accumulating information about "B".

This leads us to think that power, in the form which we have conceived it, certainly can be accumulated, when what is actually accumulated is information.

So that when in general terms we think of power of a man over other men and over natural things, we suppose that this power may be a function of the knowledge which he possesses of each thing and each man, but only in the moment in which they confront each other.

Nevertheless in the matter of international politics and decisions which affect the security or sovereignty of a State, the information which is possessed about the supposed opponent has always signified advantages(power) for its possessor. What has changed now is not the conception of information as an instrument of power, but the modern possibility(and particularly since 1950) of its manipulation as a function of decision-making, and it is in this situation, within the context of technology oriented towards information processing, which enables us to point to information as a new factor of power.

Hence informatics, analysed as the discipline of information processes, and supported by the growing technological expansion of the electronic industry, acquires therefore a political and strategic content in this process.

The industrialised countries, and particularly the United States, have developed the informatics until it has been converted into what could be a menacing instrument, insofar as the capture and concentration of information relating to the political, economic and military reality of developing nations is concerned.

The technological capacity of the United States in the capture and processing of this information by employing sophisticated systems of computing, which include extensive international teleprocessing networks with communications

via satellite, places its leaders and planners in a situation of alarming advantage over the governments of the developing countries. They not only do not dispose of complete and truthful information but also find themselves confronted by the threat which signifies the limitation of the expansion, in their own territories, of non-national interests of an opponent whose strategy of action is unknown.

This circumstance, without doubt, creates a circle of decision in which the best possibilities of success will always be in favour of the director or strategist who has access and control over this technology and who, in consequence, obtains a better information base.

For the Latin American case, the quantity and quality of political, military and economic information produced in those countries during the last 30 years, which is being processed and stored in the great data banks of the United States, constitutes the fundamental basis on which the organs of decision and political strategy of that country operate, to confront the politico-economic dynamics of Latin American reality and in this way maintain the stability of the system.

In this order of ideas, the analysis of the politico-economic system of the Western World which can be made in the light of cybernetic theory, would imply the study of a system whose integral parts would be all the countries which interact within the capitalist production mode. These form an interstate system with particular characteristics of political, military and economic relationships established between the decision centres of the dominant economies and between the economies which are dependent.

As a result of the changes originated in the dependent economies, the control centres of the dominant economies have to be capable of reacting by means of the decision-making process. These decisions ought to be adopted at a speed which is compatible with that at which such changes

take place, because if this is not the case, there exists the danger of an increase in the instability of the system, giving rise to the possibility of its deterioration or destruction.

The speed of decision-taking depends on the form of the feed-back processes which can transmit information about current circumstances.

In what we may term the "Continental American System(see chapter IV)-United States and Latin America-,the quantity of information which this process allots to the United States is now so vast that only by making use of the modern techniques of storage and processing of information such as data bases,already mentioned, which permits the simultaneous interrelation of archives of information, and its access in real time(47), can the centres of political decision-making of that country make adequate use of it and extract from it the data needed for their decisions.

In accordance with the indications in the book by Thomas Frank(48)in the State Department of the U.S. government there exist around 150 million archived documents of which 35 millions had already been classified by 1974.

The United States invests great sums of money in systems for classification and concentration of information. According to the publication cited, a study commissioned by the General Accounting Office (GAO) estimated that the Department of State and Defence, the Atomic Energy Commission, and the National Aeronautical and Space Administration(NASA) invested alltogether around 200 million dollars each year solely in concentration of information.

The Foreign Operations and Government Information Subcommittee, a subcommittee of the Committee for Operations of the House of Representatives of the United States, points out, in referring to the political and legal controversy which has broken out in relation to the classification of information: "They affect the most excruciatingly difficult

decisions on which our defence and foreign policy strategies are based"(49).

Having summarised the outline of the relationship of multidirectional interaction between system and subsystem, or linkage between the directing system and the directed,we will attempt to amplify it and describe it with the aid of the model which we present in chapter IV; for the moment let us leave open the question of the concrete process of communication of information which is established between the parts of a geopolitical system, such as we have indicated, and of how a war situation could perturb the mechanisms of collection, processing, and use of this information on the part of the dominant economy.

Within the scheme of operations of what we shall call the Continental American System, the United States establishes its own mechanisms for auto-regulation or feed-back from the basis of that system(dependent economies).

This feedback or auto-regulation is made through political, economic or warlike actions, capable of generating sufficient negative entropy to guarantee the maintenance of the equilibrium of the system. These actions consist of decisions taken in centres(Department of State, Pentagon, Department of Defence etc.) where they converge and concentrate the data from information communicated by other parts of the system. All this is adjusted by a process of creating a hierarchy and individualisation of each information element of the diverse political communities which comprise the system, guaranteeing in this way a substantial reduction in the probabilistic or random character of the results of their decisions.

Between the centre which controls and the periphery of the system there exist various channels of communication through which circulate the economic and political feedback from the countries of Latin America to this centre.

One of these channels consists of the TNCs, which act as intermediate subsystems capable of producing information on certain sectors.

Together with the electronic computers, in accordance with cybernetic theory, an extremely important part in the improvement of this process will depend on the evaluation of the information processed. This permit the determination of a strategy adequate to meet the objectives of the leadership. This will also include the elaboration of a programme of politico-economic action which safeguards, in the last resort, the interests of the TNCs in the face of the decisions of the local governments of the dependent economies.

It becomes evident that the information received by the great centres of the world economy, with respect to the global analysis of social, political and economic reality of the developing countries, is better in both quantitative and qualitative terms than that which can be received by the governments of these countries themselves, since they only receive partial information of the reality. This allows the decisions adopted by these governments in defence of their national interests to be easily neutralised by those who possess a better information base.

Finally, in the system of relations which has been indicated, the control obeys the directions of the great centres of capitalist power and more specifically the so-called "Trilateral World"(United States, Western Europe and Japan) in whose working commissions the president of EXXON sits alongside the presidents of IBM, of FIAT, of Federal Union of German Industry, of the Compagnie Financiere Holding, together with Royal Dutch Shell, the German Banking Federation, the Chairman of Barclays Bank International, the president of Mitsubishi, of Nippon Steel, of the Bank of Tokyo, and the president of the Toyota Motor Company.

Between this Trilateral World and the periphery,

a technological umbilical cord joins the parts into a whole and it is by this means that power finally is demostrated and by which governments are given oxygen or asphyxsiated, economies collapse or become destabilised, and anti-development is fed.

REFERENCES AND BIBLIOGRAPHY CHAPTER I

1.- Information: a new factor of power?

1.01.- Wiener, Norbert — "The Human Use of Human Beings" Eyre and Spottis Woode. London 1954.p.16

1.02.- Lewis,C.T. & Short, C. — "A Latin Dictionary" Oxford University Press. London, 1969.p.948.

1.03.- Klein, Ernes. — "A Comprehensive Etymological Dictionary of the English Language". Elsevier Publishing Company. London, 1969.p.793

1.04.- Oxford U.Press — "Oxford English Dictionary" Oxford University Press. London, 1961.p.274.

1.05.- Littre, Emile — "Dictionnaire de la Langue Francaise" Gallimard Hachette. Paris, 1969.p.975.

1.06.- Spanish Academy of Lenguage — "Diccionario de la Real Academia de la Lengua Espanola. Madrid, 1971.

1.07.- Robert, Paul — "Le Robert Dictionnaire Alphabetique et Analogique de la Langue Francaise". Societe du Nouveau Littre. Paris, 1969.p.736.

1.08.- Watson, J, & Crick, F. "General Implications of the Structure of of Deoxyribonucleic Acid" Article published in "Nature"Vol.171 London,30th May 1953.p.964.

1.09.-Spectator Spectator" London,4th July 1958.p.22

1.10.- Dowben, R.M. "Cel Biol" Vol.97. London,1971.

1.11.- Oxford U.Press "A Supplement to the Oxford English Dictionary". Oxford University Press. London, 1976.p.300.

1.12.- Elstob,C.Mike "Information Meaning & Knowledge" Brunel University Cybernetics Department. Londo, 1981.

1.13.- Lidell,H. & Scott, R. "A Greek-English Lexicon" Oxford University Press. London, 1968.p.1004.

1.14.- Lewis, C. & Short, C. "A Latin Dictionary" Oxford University Press. London, 1969.p.831.

1.15.- Klein, Ernes. "A Comprehensive Etymological Dictionary of the English Language". Elsevier Publishing Company. London, 1966.p.793.

1.16.- Wiener, Norbert. "Cybernetics: or Control and Communication in the Animal and the Machine" Massachusetts Institute of Technology. Massachusetts,USA.1948.

1.17.- Young, John. "La Cibernetica".Original title: "Cybernetics".Translation:Nestor Miguez. Monte Avila Editores. Caracas, 1969.

1.18.- Moray, Neville. "Cibernetica".Original title: "Cybernetics".Translation:Mendizabal,T. Editorial Herder S.A. Barcelona,Espana, 1967.p.12 and 17.

1.19.- Novik, I. & Kasakovsev, V. "Cibernetica Ciencia y Practica" Translated from Russian to Spanish by D.Reuter Krull.Editorial Lotauro Buenos Aires,1967.p.15

1.20.- Jackson, W. (editor) "Communication Theory" Butterworth Scientific Publications. London,1953.

1.21.- Lenin, V.I. "Materialismo y Empiriocriticismo". Berlin,1952.Included in the works of Novik & Kasakovsev.Quoted book.

1.22.- Ashby, W. Ross. "An Introduction to Cybernetics". Methuen & Co.Ltd. London,1979.

1.23.- Beer, Stafford. "Platform for Change". John Wiley & Sons Ltd. London,1975.

1.24.-George, Frank H. "The Brain as a Computer" Pergamon Press Ltd. London,1973.

1.25.- Pask, Gordon. "An Approach to Cybernetics" Hutchinson. London,1961.

1.26.- Guillaumaud, J. "Cibernetica y Logica Dialectica" Original title:Cybernetique et materialisme dialectique.Translation:Suarez,Marcial.Editorial Castilla. Madrid,1971.

1.27.- Lange, Oskar. "Introduccion a la Economia Cybernetica".Original title:"Wstep do Cybernetyki Ekonomicznej".Translation from Polish to Spanish: de Kurticz,Mercedes. Siglo Veintiuno Editores.Madrid,1969.

1.28.- Greniewski, H. "Modeles Economiques".Translated from Polish by Recherches Internationales, N°29.Editions de la Novelle Critique. Paris,1962.

1.29.- Manescu, Manea. "Economic Cybernetics" Abacus Press. London,1980.

1.30.- Bertalanffy,L. "General System Theory" Allen Lane Penguin Press. London,1971.

1.31.-Dreyfus,Philippe. "Le Monde".French newspaper.Article published on 8th January 1970.p.13 Paris,1970.

1.32.-Editions de Trevise. Dupre Encyclopedie du bon Francais dans L'usage Contemporain. Editions de Trevise.Paris,1973.

1.33.-IBI "La Informatica y los Dirigentes Politicos".Serie Marron DGI-03. Roma,Agosto 1975.p.5

1.34.- IBI "Introduccion a la Informatica" Serie Marron DG1-01.p.2 Roma,1975.

1.35.- Marina,Manuel. La Dependencia Tecnologica en los Sistemas de Computacion"UCV.Facultad de Economia.Trabajo de ascenso en el escalafon docente.Caracas,1973.

1.36.- Texas Instruments. "Understanding Digital Electronics" Book with a foreword by Jack Kilby. and published by Texas Instruments Learning Centre.Dallas,Texas,1978.

1.37.- Kehone,Louise -California- "Why bubble memories fell from grace" Financial Times.London,16.06.81 (see reference 1.01 chapter I)

1.38.- Nora,Simon & Minc, Alain. "L'informatisation de la societe" La Documentation francaise. Paris,1978.p.17.

1.39.- Canadian Government "Privacy & Computers" Report written by members of the Federal Department of Communications and of Justice. Ottawa, 1972.

1.40.- Michael,James "The Politics of Secrecy":The case for a freedom of information law. Published by the National Council for Civil Libierties.London,1979.

1.41.- Computer Weekly Term frequently used by the Computer Weekly magazine.

1.42.- Swedish Government "The Vulnerability of the Computerized Society."Translation onto English by John Hogg.Original title:"ADB Och samhallets sabarhet".Report published by the Swedish Government in Jun 1978.

1.43.-Johnston,Rory "Do computers really threaten our privacy?"
The Times.p.23.London,26.3.80

1.44.-Arndt,G.Lang,M. & Unterberger, H. "Modern Communication Services"
Physics in Technology.Vol.10 N°4
London,July 1979.

1.45.- British Telecom "Prestel".Viewdata.
Financial Times Survey.
London,24.3.80

1.46.- Vernon, Raymond. "Sovereignty at Bay,The multinational spread of U.S. enterprises".
Longman Group Ltd.
London,1971.p.87.

1.47.- Date,C.J. "An Introduction to Database Systems"
Addison-wesley Publishing Co.
London, 1977.

1.48.- Franck,Thomas & Weisband, E. "Secrecy and Foreign Policy".
Oxford University Press.
London,1974.

1.49.- Moorhead,William "Operation and Reform of the Classification System in the United States".Included in Secrecy and Foreign Policy.Quoted book.p.89.

Financial Times.London 16-06-81

Why bubble memories fell from grace

BY LOUISE KEHOE IN CALIFORNIA

Bubble memories are faster than discs and inherently more reliable than the mechanical systems used to operate disc drives. They are extremely rugged and can withstand harsh environments where there are temperature extremes, changes in air pressure and humidity, poor air quality, vibration and shock or a high risk of power loss.

Other storage devices can fail easily or require high maintenance in these environments. Like disc stores, they are non-volatile which means that they do not lose their memory contents when the power is turned off. This gives them an advantage over the widely used dynamic RAMS.

They also have a much higher data capacity then semiconductor memories, with the current generation of magnetic bubbles holding up to one megabit of data as compared to the 64K bits held in a RAM.

Semiconductor makers have become the major producers of bubble memories because the fabrication of these devices is in many ways similar to that of semiconductor chips. The principles of operation of the magnetic bubble memory (MBM) are, however, quite different.

The "bubbles" of MBMs are small islands of reversed magnetisation in a sea of uniform magnetisation of the opposite polarity. They are formed within a thin, single-cystal film of synthetic garnet, in the presence of a magnetic field.

The bubbles are only a few microns in diameter and can be moved by the creation of a magnetic gradient across the garnet field. Viewed under a microscope with polarised light, the bubbles look like fluid circular areas—hence the name.

A pair of coils surrounding the bubble chip produces a rotating magnetic field which can be used to control the movement of the bubbles along tracks that are formed using standard photolithographic methods. The bubbles can be controlled to perform memory functions. The presence of a bubble at a particular location corresponds to a binary "I," and the absence of a bubble corresponds to a binary "O."

By contrast, the comparable functions are preformed in semiconductor memories by switching transistors on and off.

The functional elements of a semiconductor memory are larger than bubbles, and in the case of RAMs, when the power is turned off the elements can change state thus losing the data stored in them.

Given all the advantages of bubble memories, why have they not been an instant success? Several factors have held them back, according to industry experts. First, they have proved more difficult to make than had been expected. This has meant that products have been slow to reach the market.

The most widely held view is that falling prices of competitive technologies such as mini-floppy discs have made bubbles an expensive alternative. At today's prices, bubble memories are about five times more costly than floppy disc memories for the same amount of storage capacity.

Low cost has made floppy discs very popular in personal computer applications where bubble memories had been projected as having a large volume use.

At National Semiconductor, one of the semiconductor firms that has put a major development effort into bubble memories, Pierre Lamond, technical director, has a different theory as to why bubble memories have not become as popular as expected.

"Until recently nobody had a good set of support circuits—drivers, readers and controllers that make it easy to build a bubble memory into a system," he said.

"That restrained the market." Recently, however, National has introduced a five chip set that supports its 256K bubble memory and its soon to be announced one megabit bubble memory.

"The second problem," said Lamond, "has been the lack of standardisation. In bubble memories, Rockwell, Intel, National and Texas have all been building parts with different designs."

This has meant that users cannot find a second source for a bubble memory part. Lamond says that National has taken a step towards solving this problem by signing a second source agreement with Motorola. He feels that this will help the market to develop.

"For National, bubble memories have been a multi-million dollar investment," said Lamond.

"They are not profitable yet," he concedes, but he expects them to be so within a year.

Intel is even more bullish about the future of bubble memories. Although Intel entered the market later than its competitors, the company jumped straight into the deep end by announcing a one megabit bubble memory—four times larger than any other available at the time.

It has taken a unique approach to bubble memories by packaging them into a memory system which can be plugged right into a computer. The company's latest product, introduced in April, is called "plug-a-bubble" and is designed to fit into the same space as a mini floppy disc.

By 1984, the bubble memory market will have expanded by a factor of ten from its present value of around $30m, to more than $300m, Intel believes.

According to Intel Magnetics General Manager, Dick Clover, the company is putting an additional $3m into expanding its manufacturing capacity for one megabit bubble memories and into development and production of a four megabit bubble memory device that will be introduced some time during the second half of next year.

Intel is also guaranteeing customers a falling price curve for bubble memories for the next 18 months with 1982 prices falling to close to 50 per cent of today's prices.

C H A P T E R I I

2.- Energy crisis: threshold for a war?

"Nuclear weapons must be employed...to convey a decisive escalation of sufficient shock to convincingly persuade the enemy that he should make the political decision to cease the attack and withdraw. To evidence our solidarity, I am considering use in all regions employing both UK and US weapons using primarily aircraft and land-based missile systems. The initial use would be restricted to GDR,Czecholovakia, Poland, Romania, Hungary and Bulgaria".

Telex Message from General Alexander Haig, then Supreme Allied Commander Europe to the NATO Command, during the WINTEX 77.exercises.(1)

2.1.- How did the 1980's begin

The western industrialized countries are at the present seized by economic crisis and labor unrest. The rate of economic growth in the main developed economies has fallen drastically from an average of 6% per annum to 2%, 1% or even 0.5%. In some nations the present crisis reflected in their Gross National Product's index is obvious (see annex 5).

1979 was a deficit year for the Current Account balances for the United States, Japan, West Germany, England etc.(see annex N° 6).

The era of easy wealth and cheap energy has come to an end but the major oil transnational corporations are still doing big business. Inflation and the deep social differences produced by the system itself have generated a panorama of uncertainty(see annex N°7).

"America Plunges into recession" pointed out a headline of the magazine "Newsweek" on May 5th 1980(2). Yet in October 1981 David Buchan's report from Washington to the Financial Times : "Index of economic indicators takes steep plunge(3) and a month later he writes again to the Financial Times and says:"U.S. admits deepening recession"(4).

The spectacular fall in profits, in 1980,announced by such giants as General Motors, Ford, Bank of America, Du Pont, and a dozen more multimilliondollar corporations(see annex N°8) constitutes symptoms of what appears to be an economic contraction of serious consequences, both political and social, for the leading nation of the capitalist economy.

The guarantee of continuous supply of petroleum from the Arab World to the nations of the West is,from some specialists' viewpoints, in a precarious state.

The Iranian revolution early in 1979 and later the

war between Iraq and Iran in 1981 and their impact on world oil production has shaken the economies of some industrialized countries,especially Japan and West Germany. "West German industry investment will stagnate next year" writes Jonathan Carr in Bonn in the Financial Times on 10.11.81(5).

"Libya threat to halt U.S. and U.K. oil" signalled another headline in F. Times on 10th May 1980(6). Exports of Libyan crude oil to the United States(600 thousand barrels a day), represent 8% of her petroleum imports.

The predictions of improvement in the British economy as a result of the impact of the North Sea oil industry have not yet been fulfilled, and the economic recession, unemployment and social unrest obscure the future of the country which was the center of the former British Empire (6).

At the very beginning of the decade, in Afghanistan, a country bordering with Iran, Russian troops came to the aid of the recently installed revolutionary government of Premier Babrak Karmal.

The United States angrily protested and demanded the immediate withdrawal of Soviet forces from Afghan soil.

"Brezhnev rejects U.S. call for Afghan withdrawal" headlined the F. Times and the crisis absorbed the majority of the world's newspapers during the month of February 1980(8).

At the same time,a BBC 1 news broadcast(9)announced that the U.S. government(headed at that time by President Carter) had ordered the despatch of 100,000 men to the region of the Persian Gulf with the object of protecting United States' interests in the Midle East.

On 6th October 1981 another news story shook the world: the assassination of the Egyptian President Anwar Sadat Washington moved to support Hosni Mubarak, the new leader in Cairo. Weapons and military equipment were promptly delivered to Egypt. Seemingly, the Pentagon was anxious that the new President Mubarak should not change his mind about U.S.plans to use Egypt as a platform for the training and manoeuvres of

the American Rapid Deployment Force in the Middle East.

A month after, Anthony McDermott from Cairo reported for the F.Times: "U.S. airborne troops fly to Cairo for manoeuvres"(10).

The manoeuvres,which involved Egyptian forces along with troops from Sudan and Oman,included two U.S. Awacs reconnaissance aircraft which came into operation along the border with Libya just nine days after President Sadat was murdered.

Apparently the fear is based on the assumption that the highly tense situation between Libya, Sudan and Egypt could lead to an inter-Arab war involving the United States and the Soviet Union on rival Arab sides.

Meanwhile, the historical confrontation between Jews and Arabs reached one of its points of political tension when the Government of the United States decided to sell eight Awacs(Advance Warning and Control System) radar aircraft to Saudi Arabia as an aftermath of the Sadat assassination.

"The U.S. Senate decision to sell Awacs surveillance aircraft to Saudi Arabia poses a 'new and serious danger' to Israel" Mr Menahem Begin, the Prime Minister, said on 29th October 1981. He warned: "We will do what we have to do in order to overcome this threat"(11).

In 1980 Anwar Sadat signed a Peace Plan with Israel and the United States as mediator. This Plan was called the Camp David Agreements. For many Arabs such a peace treaty was a betrayal to the Arab peoples and Sadat was an unpardonable traitor, but for others the deal was the only way to reach peace between Egipt and Israel and for them, Sadat was the Peace Architect.

According to a study by the Hungarian professor Istvan Kende(12) one hundred and thirty wars have broken out since the Second World War, all of them in more than seventy underdeveloped countries, with ten million victims.

All these crises in the Arab World perhaps could be recorded by modern history as conflicts finally resolved

and, similar to those of Suez Canal in 1957, the Cuban missiles in 1962 or Israel in 1967, simply passing into the archives of contemporary history.

Even when that happens and this situation is remembered as one of the most crucial since the second World War, there exists an undeniable fact which is that the events which originated it cannot be resolved in the short term, and that the crisis in the Arab World is not an isolated phenomenon.

What "The Economist"(13) calls "The Shrinking of America" to designate the political retreat of the United States before the Arab World, possesses other ramifications which, starting from the present, could possibly increase in the near future and in the context of a major crisis.

The Iranian affair for instance, is not simply the mystic response of people impassioned by the Koranic fervour of an unhinged Ayatollah, as some western commentators try to show.

"Whatever you say, Iman -I guess you know what you are doing..." sarcastically said the caption of a cartoon which appeared in "Newsweek"(14), in which Ayatollah Khomeini was represented as immolating himself together with another figure representing the Republic of Iran.

When the people of Iran asked for Carter's head in 1980, it was not the response to a messianic call, nor was it the response to a supposed communist subversion,it was simply the reaction of a country demanding from the world the symbolical head of a system which for them has signified the greatest obstacle for their development.

Iranian oil output reached $7\frac{1}{2}$ million barrels a day, which, at US$ 20 a barrel(1979 prices), amounted to a fortune of US$ 54 thousand million a year in the times of the Shah.

These riches did not reach the people,nor did they transform the nation in terms of development -they were simply taken back by the "transnational route", and therefore against the

misery imposed from abroad now there is a country which is now confronting the industrialized capitalist world, the world which they believe is responsible for their misery- the world they accuse as responsible for their crisis.

Nevertheless, what is happening in Iran today is more than the fringe of a major crisis. It is also a manifestation of the Third World, which in a non-marxist way, indicates the existence of a more complex and conflicting process, which is the confrontation of the under-developed world and developed capitalism.

Apart from all the biblical prophecies, predicting a world military conflict in the present decade, there is one evident fact, and that is that, in the middle of the breakdown of all development theories,growth and international cooperation toward the less developed nations, the population of the Third World continues to rise, and hunger increases(see annex N°9).

An investigation carried out by John Durand(15) on population increase indicates that world population for the year 2000 will be 6,130 million inhabitants(double today's population) and of this number, 4,774 millions(78%) will be in the Third World.

Latin America, for example with a population increase rate of 2.8% per annum(one of the highest in the world) will have 638 million inhabitants by the end of this century(in just eighteen years).

The path sought for its industrialisation(as we will analyse later) was that of direct foreign investment. As a result, the creation of a single job opportunity now costs US$ 20,000(16). Who, then, will employ the gigantic working populations of Latin America at the end of the next decade?

Some of these countries, especially those which possess a high degree of technological dependence, show economic indicators which, paradoxically, place them among the most advanced nations of the Third World.

If we examine the figures for Gross National

Product from a list of 213 countries, published by "The Economist(17)", for the Latin American group Argentina, Brazil, Mexico and Venezuela appear in the group of 30 nations with the highest world production in 1974.

If,in the same publication we examine the ranking relative to standard of living, measured in terms of per capita income, we find for instance Venezuela in 1974 transformed into a paradise with a per capita income of US$ 2,048, above those of the Soviet Union, Poland and other developed countries.

And for those countries with low labour and transport costs and with doors open to foreign investment(Export platform countries) (18), and whose investments are undertaken mainly by firms in the so called "footloose" industries, such as semiconductors, transistor radios, cameras, textiles and leather goods, the indicators demonstrate "miracles",as in the case of Brazil, South Korea, Taiwan, Hong Kong, Malaysia, Singapore and Mexico.

Nevertheless, in spite of the economic growth experienced by some of these countries, there exists an irrefutable fact: living conditions for the vast majority of their people continue at subsistence level.

For some nations, on the other hand,the possession of mineral resources and, in particular, hydrocarbons, has enabled them specially since 1973 to enrol in a sort of "Third World club of the under-developed rich".

However, the increase in riches of these nations, measured in terms of income from crude oil exports, has been coincidentally linked with an extraordinary increase in the profits of the enterprises which control the world petroleum business, which in recent years not only has achieved the highest dividends in its history,.but also has made it profitable to exploit some crude oil sources from deep waters off the continental shelves which, before 1973 would have had no place in the international markets.

For 1973 the price of a barrel of oil was, on average, US$ 3.50. The production cost alone for a barrel of North Sea oil in Britain or any offshore oil is US$ 12.50 so that the profits of Shell, Esso, British Petroleum and other deep water producers and the whole significance of oil from the North Sea for Britain, paradoxically, is attributable to their "enemies", namely OPEC.

But the most significant aspect of the sudden riches of the OPEC countries is the speed of return of the so-called "petrodollars" to their place of origin.

According to the estimates of Jacques de Laroriere, the Director-General of the International Monetary Fund(19), the positive balance of payments surplus on current account of the OPEC nations, which for 1980 was estimated at 115 thousand million dollars, will fall in 1981 to US$ 87 thousand million. At the same time he predicts that the deficit in the balance of payments of the industrial countries will fall from US$ 48 thousand million to US$ 17 thousand million and for the less developed countries without oil resources, the deficit in their balance of payments will increase from US$ 68 thousand million to US$ 78 thousand million during the same period(see annex N°10).

The most widely used method for the return of these riches is through arms purchases(see annex N°11). The highest return was precisely performed on 29th October 1981 when the U.S. Senate approved a package deal to sell weapons(specially Awacs radar aircraft)to Saudi Arabia. The amount of this "century sell" was eight thousand five hundred million dollars (US$ 8,500,000,000).

Another "transnational way" for the return of petro-dollars is through purchases of "technological packages" (analysed later) and in general manufactured goods.

The business of investment of petrodollars, as practised by the Arabs, in the markets of the developed countries themselves, is becoming a thing of the past.

In Saudi Arabia itself(see annex N°12), the difference between imports and exports for 1976 was a positive balance of US$ 5,400 millions(at the exchange rate of US$ 1 = 3.70 Saudi riyals), for 1977 it was US$ 2,130 millions, in 1978 it fell to only US$ 810 million and already for 1979 it has been converted into a deficit of US$ 3,783 millions.

The same phenomenon has happened in other OPEC countries(see in annex N°14 imports and exports for Venezuela 1973-1978).

The Organisation for Economic Cooperation and Development -OECD- predicts that there will be no world economic recovery until the second half of 1982(20). So that in one year if the international monetary system returns to a more suitable equilibrium and the world slump has ended, within the capitalist borders there will be more sufferers than before the first oil price shock of 1973; however, all of them will be in the Third World, because the western industrialised nations, having recovered, will be the great creditors of the enormous unrepayable debts which, over the last eight years have been accumulated by the non-oil less-developed countries.

The less-developed oil producers, even with all their inequalities in income distribution, would have wasted the historic opportunity of converting their wealth into development. By virtue of their economic dependence, paradoxically, they would see the exhaustion of their resources, accompanied by a deepening of their technological submission and therefore reducing the possibility of such development and increasing the prospects of an even more uncertain future.

But while all this is going on, and the energy and raw material which feed the economies of the North ironically co-exist with the hunger and misery in the countries of the South, a million dollars a minute are wasted in armaments.

This sum represents almost twice the combined Gross National Product of all the Third World's countries(21). That

is to say, a figure roughly equivalent to that which the 2,742 million inhabitants of the South barely produce to survive is what the neighbours of the North and even some underdeveloped oil producers spend on weapons industry and military activities.

A planet militarised with 100 thousand nuclear devices in the arsenals of the nuclear weapon powers without any doubt increases what Alva Myrdal(22) calls "a feeling of near despair".

Nevertheless, some politicians and strategists of a possible nuclear holocaust do not think along the same lines. In 1957, Henry A. Kissinger(23), basing himself on the so-called theory of the balance of power, which in nuclear terms could be nothing but a balance of terror, suggests that the use of nuclear arms can be limited, in other words "a limited nuclear war is possible".

Kissinger suggests a clear difference between tactical and strategic nuclear weapons, indicating that it would be viable to have a treaty between the United States and the Soviet Union to limit the theatre of operations in the eventuality of war.

According to Michael Madelbaum in his book "The Nuclear Question"(24), tactical nuclear weapons are small scale nuclear devices which can be launched from a conventional aircraft such as the B-52.They were designed, apparently, not to pulverise cities but to win battles and also,in terms of conventional forces,as a support for the artillery battalions.

However, the Kennedy government's own Secretary of Defence Robert MacNamara indicated that tactical nuclear arms would not necessarily guarantee a war within traditional limits, and in an to Congress, MacNamara stated:

> "Nuclear weapons, even in the lower kiloton range, are extremely destructive devices and hardly the preferred weapons to defend such heavily populated areas as Europe.Furthermore,

> while it does not necessarily follow that the use of tactical nuclear weapons must inevitably escalate into global war, it does present a very definite threshold, beyond which we enter a vast unknown"(25).

Later, during Nixon administration,Kissinger himself took care not to utilise tactical nuclear weapons during the Vietnam war.

Another strategist of terror, the former National Security Advisor in Carter's administration, considers it ridiculous to think of the disappearance of humankind as a consequence of a thermonuclear exchange, and in an interview with the New Yorker Magazine(26) Zbigniew Brzezinski said:

> "It's inaccurate thinking to say that the use of nuclear weapons would be the end of the human race. That's an egocentric thought... in strictly statistical terms if the United States used up all of its arsenal in the Soviet Union, and the Soviet Union used all of its against the United States it would not be the end of humanity".

Brzezinski, President J.Carter's notorious counsellor, was one of the leading strategists of the "Fiasco in Iran"(27) on 5th May, 1980. He became famous for his apocalyptic thoughts,and some North American critics have nick-named him the "mad Rasputin".

In 1977, during the NATO exercises WINTEX 77,General Alexander Haig, then Supreme Allied Commander Europe to the NATO Command, broadcast the following message:

> "Nuclear weapons must be employed...to convey a decisive escalation of sufficient shock, to convincingly persuade the enemy that he should make the political decision to cease the attack and withdraw. To evidence our solidarity, I am considering use in all regions

employing both UK and US weapons using primarily aircraft and land-based missile systems. The initial use would be restricted to GDR, Czechoslovakia, Poland, Romania Hungary and Bulgaria".(1)

Early in 1981 Haig became US Secretary of State. The same year, in October, the US President Ronald Reagan suggested:

"Nuclear war could be limited to Europe without involving the two superpower in direct confrontation"(28).

Such suggestions caused a furore in Europe and reinforced suspicions that American strategy is to rely on Europe as the battlefield in a limited nuclear war.

In November 1981 Haig was pressed by the US Senate foreign relations commitee to explain a remark by Reagan that implied that a nuclear war could be limited to Europe. He quoted established NATO doctrine relating to the warning shot contingency plan and, as an illustration,dredged up the possible option of dropping a nuclear bomb on Soviet territory for "demonstration purposes"(29).

Limited nuclear war needs tactical weapons,so the New York Times reported:

"President Reagan has decided to go ahead with the full production of the controversial neutron bomb"(30).

This new instrument of warlike terror, according to the statement of one of its creators Samuel T Cohen,in an interview with the German magazine Stern(31) is capable of eliminating instantaneously any living being within a radius of 800 metres of the explosion.

It produces an explosion which is "clean" or "humanitarian" and does not destroy material objects. Its fatal effect is produced by the emission of radiations created in microseconds, and which once emitted disperse in fractions of

seconds permitting the target area to be occupied without danger of contamination at the speed of an advancing army.

Cohen also advises:

> "It is doubtful if the weapon can be considered humanitarian, because if a person does not die immediately, because he is in an area within 1,200 metres of the epicente of the explosion, he could suffer from pain and convulsions for weeks before he dies, and those who manage to survive, would suffer from leukemia and other congenital diseases".

Rockwell International, the Aerospace Corporation of Los Angeles, Monsanto Chemical of St Louis Missouri, and the Bendix Aerospace Corporation of New York, are for the time being the fortunate direct beneficiaries of the production of this type of armament.

President Reagan says that the new bombs and artillery shells will be deployed only in the United States and that any decision to base them in Europe would be taken only after full consultation with NATO allies.

However, in 1978 when in spite of the opposition to the development of the neutron bomb by such members of the US Congress as Mark Hatfield, Richard Clark, and Edward Kennedy, the warmongers and those who affirm that the precision of this new bomb reduces the dangers of nuclear war, such as Senator Henry Jackson and the then governor of California, Ronald Reagan, won approval for their proposals, and the neutron bomb now exists.

After that decision the Pentagon invested U.S.$23m in it, and at this moment and in accordance with the plans of the Pentagon and NATO, the armies of the principal nations of western Europe already possess guided missiles fitted with neutron bomb warheads(*) as part of their tactical combat equipment.

(*)The warhead is the section of a missile containing the explosive, chemical, or incendiary charge.

The military-technological race has grown rapidly since the Second World War,and the participants would be limited to the half dozen or so industrialized countries able to support sufficient military R & D(Research and Development) activities to develop new weapons. Fundamentally such a race developed between United States and the Soviet Union.

Nuclear weapons are subdivided into several categories: besides the "Tactical" already mentioned there exists the "Theatre"(long, middle or short range), which may be bombs or missiles, carried on an aircraft or permanently sited, or moved around at sea or on land on mobile launch platforms, and finally there are the most destructive ones, the range of so-called "Strategic" weapons.

In this last category are encountered the inter-continental missiles of immense range and inconceivable destructive power, which could be launched from submarines or sited in silos and or land-based platforms. In this group fall the Pershing, the F111, the Vulcan, the Pershing II, the Cruise Missile, the Polaris and the Trident of the United States, and the SS4, the SS5, the SS20 and the Backfire bombers of the Soviet Union.

All these "strategic" nuclear weapons as well as "Theatre" and "Tactical" are described in terms of strategy of nuclear warfare using a special, arcane vocabulary which includes a long list of acronyms such as MIRV(multiple independently-targeted reentry vehicle), ICBM(inter-continental ballistic missile), ECCM(electronic counter-counter measures), MEASL(marconi-elliott avionics systems), and as the plum of them all, MAD, which one would have to be mad to use, but in this case stands for"mutual assured destruction".

In certain extreme circumstances some of these weapons, specifically those carried on the US nuclear submarine fleet(carrying 4,000 nuclear warheads) could be launched by the commanders of such submarines acting on their own.

This means that each of America's 39 nuclear

submarine commanders, is empowered to arm and fire his weapons without receiving special codes from the White House.

Confirmation of the submarines' independent capability comes from Admiral Powell Carter, communications director of strategic and theatre nuclear warfare, when in a CBS television series on America's nuclear arsenal said:

> "There is nothing on a submarine system that prevents -a launch- mechanically through some sort of interlock system..."(32)

So, if since 1957, when Henry Kissinger first laid out the Nato strategy about the possibility of a limited nuclear war(33), the probability of such war has been steadily increasing. Who, apart from the Americans could push the button to detonate the first device and initiate the "satanic feast ?".

When China's defence chief, Deng Xiaoping was asked in April 1980 by Italian pressmen in Peking if it were true that the Chinese leaders thought war was inevitable, he replied:

> "Yes, we still believe war will break out sooner or later"(34).

The leaders of China, with their expansionist ambitions, have long proclaimed war not only inevitable but even desirable for this nation of 950 million inhabitants.

> "It doesn't matter if war kills half the human race if only a third part survives", said Mao Tse Tung.

He never said which would be the third part, but one supposes that Mao hoped that it would be China. Five years after Mao's death, Peking's rulers still cling to his concept of the inevitability of war and they are preparing for such war. Deng has expressed the hope that his inevitable war should not happen for "at least 20 years".

According to Yury Kornilov and his article included in "Soviet Weekly" on 3th May 1980:

> "...twenty years is about the time the Chinese

> leaders think it will take them to carry out their four modernisations and by which they mean, primarily, to complete the militarisation of the country and then begin to carry out their great-power plans. Those plans are no secrets. Out of the 30 military conflicts in Asia since the Second World War, 19 have been provoked by China and China's territorial claims on neighbouring countries, including the Soviet Union, involve an area as large as China itself".

Nevertheless, Deng may be thinking he can cut that 20 years down with the help of some countries in the west. So the first step to deal with the idea was to make it clear that China's strategic policy is to develop a friendly relationship with the United States.

The outcome of such policy were soon evident, and on 23th June 1981 the Financial Times outlined: "How the U.S. could rearm Peking's military machine"(35).

David Buchan in Washington and Colina MacDougall in London reported:

> "The one tangible result of Mr Alexander Haig's visit to Peking last week was the U.S. decision to allow China to buy limited quantities of lethal weapons. This, plus the admission that the U.S. had set up a missile-tracking station inside China to monitor what was going on in the Soviet Union, raised the Sino-US relationship to a very different level".

So China is now spending around US$ 12,000 million a year on defence and the arms manufacturers from western countries are anxious to take adventage of such a potentially enormous market.

The warmongers and those groups in Washington and NATO which are gambling on Peking's anti-Sovietism and are seing China as a possible ally in the event of a nuclear

war with the Soviet Union might not be aware of the Chinese armed forces(4,750,000 in number,the largest in the world)(36) and their nuclear capability could be a boomerang resulting in their own destruction if they decide to play the China card.

The other country which could also push the button and gain by war would be West Germany, precisely the Germany which for some time has been promoting "Detente" between the East and the West,and which in this decade presents itself as the standard-bearer of the arms race.

Bonn was the first to support the Nato decision that the United States should station new nuclear missiles (the Cruise Missiles) in Western Europe and especially in West Germany.

The rearmament and militarisation of the country is an undeniable fact as its Defence Minister Hans Apel remarked in 1980: "We are well armed and can compare with any Nato army"(37).

According to Vladimir Katin:

> "30% of Nato's fighting air force and 50% of the ground force in Central Europe are West German and that its army consists of 500,000 well-trained soldiers. And, incidentally,the Nato nuclear planning H.Q. is staffed mainly by West German officers. There is also another entirely new dimension to Bonn's militaristic ambitions: squadrons of West German warships will soon be cruising in the Atlantic and Mediterranean, which have not seen German naval vessels since the decline of the Kriegs-marine, Hitler's naval force"(37).

As is known, Western Germany can neither produce nor have its own nuclear weapons.But this nation, which has brought the world to two world wars, already has more nuclear devices in its territory than any other West European country.

Former Nazis,who fled to Argentina and Brazil after

the Second World War have been playing,together with the German Government a special role in both Brazil and Argentina's nuclear programme. As a result of these nuclear links, West Germany now is able to manufacture nuclear weapons, if its government so decides, not in its own territory but in somewhere in Latin America,where 100,000 Germans could be wishing to rebuild the Third Reich .

37 years after the war there is again in West Germany a strong right-wing,which is pushing the country towards military expansionism. People and entire organisations exist now, just as 50 years ego,which are again demanding "German Greatness" and nurturing plans for the domination of Europe and control of the oil-producing countries.

There are people who like Alfred Dregger,a CDU leader, who proposed extending Nato's supremacy, and consequently the Bundeswehr's sphere of action to the Persian Gulf. There are also very influential leaders like Franz-Josef Strauss, a candidate in the October 1980 elections. When the Bonn government took the decision to station US missiles in German soil he said:"We praise it for doing so"(38)

These people and forces are not yet in power, but where is the guarantee that they will might not be in the near future?

Hitler's Germany in the past became Europe's first and strongest country, and now it is the strongest again. So Germany,from being a vehicle of U.S. military policies in Europe,now is probably ready to embark on a more independent course or even push the button if they can... or can't they?.

The third nation which in a short time and for reasons of expansion could plan war as an alternative would be Japan. The post-war Japanese Constitution establishes in its Article Nine:

> "The Japanese people forever renounce war as a sovereign right of the nation and the threat of the use of force as a means for resolving

international disputes....Land, sea and air forces, as well as other war potential,will never be maintained".

This renunciation of war imposed by the Allies and accepted by the people and government of Japan since 1945, also has been supported by the fear of nuclear war. Japan, the only country in the world which has physically suffered the actual consequences of a nuclear attack, would have sufficient reasons not to participate in the "hellish nuclear game".

On the 6th and 9th August 1945, Americans bombers dropped two nuclear bombs on Japanese soil, the first in the city of Hiroshima where, it is estimated, 140,000 Japanese died as a direct effect of the explosion, and the second on Nagasaki where 70,000 people were incinerated by the atomic radiation which followed the explosion.

But on the ruins of this devastated Hiroshima which once produced warships, now exists a powerful modern city, where the Mazda company produces motorcars for export, and where only an "Atomic Museum" shows the young Japanese a memento of the war.

The dynamism and working discipline of the Japanese people is oriented to industrial activity, and has permitted, as in Germany, the resurgence of a nation which today has been converted into an industrial power which vigorously competes in the traditional markets of the great Western powers, and which even in their own domestic markets has damaged such colossi as Chrysler and British Leyland, and intends to bring to their knees such giants as Ford and General Motors.

A recent news broadcast in London on BBC1(39) showed a sequence filmed in the North American city of Detroit, cradle of the world's motorcar industry, in which a workman from the automobile industry appeared "taking a hammer" to a Toyota car. In reality, it was not one but several unemployed

workmen who apparently were undergoing a sort of "mental catharsis" working off their impotence with a "sledgehammer" against their innocent competitor, Toyota.

Another interesting fact and no less entertaining occured during the funeral of Prime Minister Masayoshi Ohira of Japan. Mrs Margaret Thatcher, President Carter, Chanlellor Helmut Schmidt and the rest of the representatives of the European Economic Community attended this funeral.
Some of those who accompanied the British Prime Minister were officials belonging to British Leyland and the British Overseas Trade Ministry, they asked the japanese to be more considerate with their export of motor vehicles to that country, and said they would be very grateful if the Japanese could curb their exports to no more than a maximum share of a 10% of the British market, in order to allow the ill-treated British motor industry an opportunity for recovery.

In the midst of the flowers and the tears of the funeral the request was accepted, but later the new Prime Minister Zenko Suzuki's government took care to ignore such a "gentlemen's agreement".

For their part, the Germans suffering as the English from the same Japanese expansion in the motor car industry, threaten to impose protectionist measures to avoid the menacing competition in their market.

"Japan urged to curb car exports" headlined the Financial Times on 11th July 1980. The text of the article began by indicating that:

> "The leaders of the West German motor industry have decided to unite with the chorus of European manufacturers in demanding a restriction in exports from Japan"(40).

" The Japanese",said Herr Horst Backsmann, president of the West German Motor Industry Federation:

> "achieve a production cost per man-hour of

only 15 Marks, while our man-hour cost has risen to 25 Marks. At the same time, the number of hours worked annually by the motor industry in Germany has fallen to less than 1,600 hours per workman, compared with around 2,000 hours in Japan, and finally their annual total of days worked is 275 compared with the barely 201 days that we work in the Federal Republic. All this explains the reason for their aggressive penetration in the German market with the advantage of a production cost between 20 and 25 per cent under ours."

The Japanese aggressive penetration is going on not only in the United States as well as in German and England but in the rest of the European countries also, so in October 1981 Japan was given a clear warning that it must abandon its present "perilous" trade policies immediately or face tough EEC actions.

Herr Wilhelm Haferkamp, the EEC External Affairs Commissioner warned:.

"Selective import controls to curb cars, televisions, and machine tools may have to be imposed".

Facing up to the threats Mr Toshio Komoto, a Japanese Cabinet Minister, said on 20th November 1981:

"Overseas discontent is rising so high that we are almost on the verge of a trade war. Discontent in the U.S. and Western Europe has been causing a protectionist tendency which might deal a fatal blow to the world economy"(42).

But this trade war will be performed by the competition between such contenders as Toyota Vs General Motors or Mitsibishi Vs IBM and so on. All of them fighting for the same prize: markets.

"In 1974 Professor David H.Blake pointed out: The day may not be too distant when competition among multinational corporations from different countries will provoke political and economic involvement by the respective parent government"(43).

According to the arguments developed in chapter IV of this work(Transnational corporations within the international political system), that day, which professor Blake had referred to, is on its way or maybe it has already arrived. But its consequences for world peace could be unpredictable and therefore might lead the Japanese government to a different kind of war.

However, Japan seems to be out of the arms race and thence incapable of pursuing any war different than trade war.

The economic miracle of Japan in the past 30 years has been produced without the resources which in other countries have stemmed from the sale of armaments. Japan appears to have destroyed the theory that capitalist developed nations require an export weapon industry to maintain their economies.

Nevertheless, the boom in armaments business since 1973, and the excuse of the supposed Soviet threat in South East Asia and the Persian Gulf are changing the outlook of some Japan's leaders and pacifists.

Ikutaro Shimizu, who 10 years ago was a leading pacifist thinker, now declares that Japan needs four attack carriers, 100 destroyers and submarines, and 1,000 fighter planes for effective defence(44).

In 1980 Japan had the world's seventh largest defence budget and by 1981 it was increased by 9.7%. Tokyo cheerfully maintains the fiction that it has no army but the Government has managed to establish forces that are now 268,000 strong.

In the meantime the big industrial corporations like

Hitachi Ltd., Mitsubishi Corporation, Toyota Motor Co. and all the conglomerates which can produce the military hardware, feel that the time has arrived to increase their profit from the new business.

"The Russians are preparing an attack against Japan's northern island of Hokkaido" said some Japaneses lobbyists in 1980(44).

Nobody can imagine how Japan could carry on any type of formal rearmament in order to stop the supposed Soviet aggression, without getting involved in nuclear armament.

After 1945, the aftermath of the crushing of Europe's industrial structure helped the United States in its fast post-war economic growth.

The future belongs to technology and Japan is, beyond doubt, a "Technology-Based Nation" where high-tech corporations, with the full support of the country's strong and stable government, are entering a period of unprecedented growth. So who can stop stop the Japanese?

2.2.- Energy crisis or manipulation of information

Apparently, the foundation of the present crisis is based on the accepted wisdom of an inevitable scarcity of oil in the near future, and its unstable supply from the convulsed Arab World.

The Soviet Union advances towards the Persian Gulf, thirsting for Middle East oil,which is the offered assumption of the Pentagon's strategists as an explanation of the USSR's presence in Afghanistan.

A study by CIA, published in 1977, indicates that the production of petroleum from Soviet Western Siberia will not reach more than 5 million barrels a day by 1978.

For their part, by the time J.Carter was in charge of the White House, his energy advisers insisted on the truth of a profound shortage of energy resources in the United States.

Both statements have been strongly discredited by the evidence that not only has the production of oil in the Soviet Siberia not been exhausted, but as vouched for by Dr. David Wilson(45), Professor of Soviet Geography of Leeds University, it is found to be in expanding production,reaching production 6.3 million barrels a day by the end of 1980.

> "There is no evidence",said Professor Wilson, that Soviet oil production is going to fall in 1981, rather the reverse, it will continue increasing at a low rate, to reach 14 million barrels a day in 1985 and 15 million in 1990"

Another study published by E.I.U.Special Reports(46) demolishes the idea that the USSR will be a net importer of oil by 1985, this study shows that the Soviet Union will be exporting more of both oil and gas in 1985, and still exporting some 2.3mn b/d of oil and 13bn cu ft/day of gas in 1990.

Yet, by the end of 1980, and according to the Economist Intelligence Unit's "World Outlook 1981"(47), the Soviet Union was producing 12 million barrels a day and 42.8 billion cubic feet a day of gas.

In relation to the supposed energy crisis in the United States, the recent book of Anthony C.Sutton(48) is sufficiently explicit.

Sutton warns that the Carter administration itself, responding to or manipulated by the interests of the transnationals of the oil industry, has created the energy problem.

> "Our mythical energy shortage"Sutton indicates, "can be dismissed with a few statistics. The US consu mes about 71 Quads(*) of energy per year. There is available now in the United States, excluding solar sources and without oil and gas imports, abou t 150,000 quads. Consequently, we have sufficient energy resources to keep us functioning at our present rate of consumption for about 2,000 to 3,000 years without discovering new reserves"(see annex N°14).

Apparently, the lack of any absolute shortage of energy resources was well known in Washington, but according to Sutton, many efforts were made by the Carter administration to censor release of this evidence.

However, a revealing picture of U.S. energy abundance was published by ERDA(Energy Research and Development Agency) this picture is reproduced in annex N°15, in it we can see U.S. domestic energy consumption in 1977(71 quads) is represented by the small square in the bottom right corner of the chart. Available energy supplies, with or without new technology, are represented by the larger squares on the left. In Sutton's opinion:

> "...the only way to generate an energy crisis is by converting the big potential squares

(*) A "quad" is one quadrillion BTUs(i.e. 10^{15} British Thermal Units) Is a standard measure of energy

> into the little consumption square, and this, could only be done by gross and deliberate mismanagement"(48).

Such a mismanagement is what Sutton affirms was the situation in Washington in 1978.

William Brown, Director of Technological Studies, Hudson Institute said in 1979:

> "The President(Carter)said there is no chance of us becoming independent in our oil supplies. That is just wrong. We have at least 100 years of petroleum resources in this country"(48).

So, there is no shortage of energy either in the Soviet Union nor in the United States, and if we add to the U.S. and USSR oil reserves, the Persian Gulf, the Gulf of Mexico, the Venezuelan Orinoco reserves and the unmeasured reservoirs of the offshore sedimentary basins, then,it is very difficult to say that the world is running out of crude oil.

Rather than scarcity of oil, a new era in oil production, extracting the world's most valued natural resource from deep waters off the continental shelves has begun.

According to a Financial Times survey on Offshore Technology(49), during the next 20 years offshore discoveries could account for between a third and a half of all the world's new oil reserves. Much of this oil will be found in regions outside those covered by the Organization of Petroleum Exporting Countries(OPEC).

An oil company man, John Strickland of Conoco made his calculations:

> "The world's total expected oil reserves, were two thousand billion barrels,assuming that about 32 per cent of the oil in the reservoirs can be extracted. Some 60 per cent of this total has already been found, leaving 850 billion barrels yet to be

> confirmed by exploration teams.And nearly 40 per cent of this unconfirmed oil, 332 billion barrels, lies offshore with something like 90 billion barrels in U.K., Norwegian and Greenland waters"(50).

Finally, if we want a wider picture of the world's oil reserves, one of the most reliable overall petroleum estimates comes from former director of the U.S.Geological Survey, V.E. McKelvey:

> "...at this point about half the world's endowment of presently recoverable crude oil has been discovered(and)about one-sixth of it has been used up"(48).

Accepting the estimate that only one-sixth of the world's oil potential has been used, then clearly there is no fundamental oil crisis for many years.

So, what happened before and during 1973 that oil prices were pushed up so fast?

Should we blame OPEC for having raised oil prices to a point where the world economy was plunged into crisis?.

Or on the contrary, is there somebody else behind OPEC's back, which could be the guilty party?.

A Philadelphia investigative study carried out in 1973 by the reporters Donald Bartlett and James Steele(51) demonstrates how the government of the United States, and in particular the Nixon Administration, in connivance with the oil companies, surprised the world with a mythical energy crisis, which has seized the world economy, to the direct profit of the huge petroleum corporations.

The conclusions of this study were as follows:

1.- American multinational oil firms made deliberate long term decisions to expand operations in foreign countries to meet demands for oil products in Europe and Asia.

2.- The Nixon Administration failed to lift oil import restrictions in 1969 and said that there were no oil supply problems.

3.- Simultaneously American oil companies were telling U.S. customers to cut back on consumption, while urging their customers in Europe and Asia to buy more oil products.

4.- The American taxpayer is subsidizing the sale of petroleum abroad, through tax allowances and benefits granted to American oil companies.

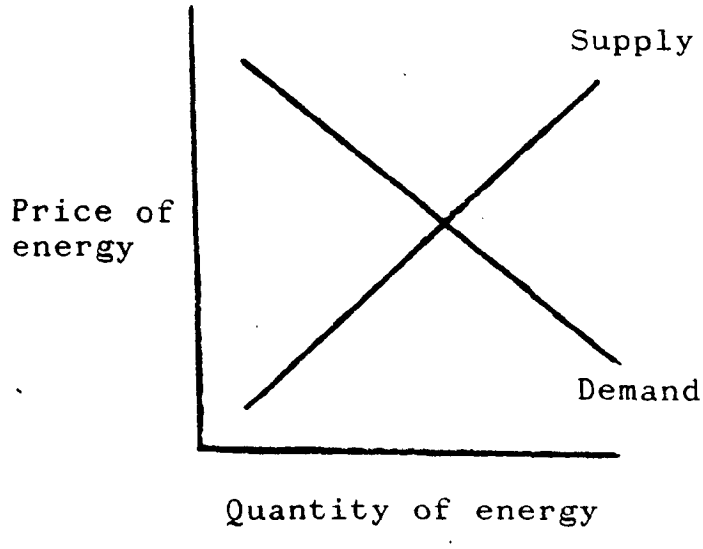
5.- The gasoline shortage of 1973 was created through default and bungling by oil companies and the Federal Government.

6.- In 1973 the oil industry launched an advertising campaign to make the American consumer feel responsible for the nation's gasoline shortage. Yet for every barrel(42 gallons) of oil products sold in the United States the five largest companies(Exxon, Mobil, Texaco, Gulf and Standard Oil of California) sold nearly two barrels abroad.

Another refutation of the supposed crisis comes from one of the most orthodox and conservative sectors of American opinion, the Wall Street Journal(52). The Journal, taking into account the behaviour of the market under economic and business conditions, apparently blames the oil transnationals for the increase in the petroleum price, when they suggest that the energy problem should be analysed from the point of view of supply and demand.

The Journal then makes use of the celebrated equation of supply and demand curves.(see figure N°1)

Figure N°1.



The Journal concludeds that all this means in layman's language is that:

a.- At higher prices people buy less, at lower prices they buy more.

b.- At higher prices more supply is forthcoming, at lower prices less supply is forthcoming.

c.- Market price is established where these two forces are in equilibrium.

In the light of the revelations showed by Anthony Sutton in his own book, he himself asks:

> "What is the role of the multinational corporations in the created crisis? Are they on the side of free enterprise and the market solution? Alas, among the multinationals we not only find the articulate proponents of big government but more than a suspicion the multinational corporations are manipulating big government for their own economic benefit"(48).

The reply to Sutton's questions has a crucial bearing on the point we are analysing, and there are two ways of replying to them. The first would be to make use of the evidence, of the facts and circumstances, which demonstrate to us that it is not merely a suspicion that the Transnational Corporations(TNCs) of the oil industry manipulate information and therefore governments for their own benefit.

Contemporary history is replete with these facts, Sutton's book is full of details in relation to the manipulations of the TNCs in the very heart of the White House.

"The Seven Sisters" by Anthony Sampson(53) also provides abundant information on restoration, support and control of dictators, both royal and military, in the oil producing countries.

The second of the responses, perhaps the more interesting one, is that which can be made using the approach

of the cybernetic theory.

Taking as the point of departure the statements pointed out by J.K. Galbraith in 1967(incidentally, before the 1973 oil crisis),in his book "The New Industrial State" (54), we could say that if we compare the basic theories of cybernetics, which we outlined in Chapter I of this work, with those which are outlined in Chapters I to VI of Galbraith's book, we shall note not only a congruence of both postulates in relation to the current behaviour of the TNCs, but in addition, those elements of judgement which enable us to suspect that the increases in price of oil since 1973 obey an action which had already been studied in advance by the oil TNCs, and figured in the expansion plans for the world petroleum industry.

In accordance with what Galbraith sets out, the market economy in which prices are established by supply and demand has been replaced, in the case of TNCs, by an authoritarian process of price determination.

This process, which is based on so-called vertical integration of the industry, permits the TNCs to replace the market forces by a control mechanism based on planning, which guarantees the total elimination of the uncertainty which normally accompanies a market economy.

Such a process occurs, according to Galbraith, when the standard of production calls for high technologies, which in turn demand huge investments of capital and time.

For the great TNCs which depend on the supply of raw material, the control of the suppliers is transformed into a simple matter of elementary security precautions, and the cost of acquisition of additional supplies acquires a strategic value in their production process.

But price control is only part of the control of the market. The uncertainty in obtaining capital, management, labour, and technology cannot be left to the judgement of the market forces either, and for this reason the TNCs establish

plans which guarantee total control over the suppliers of these resources in accordance with their objectives and at their own rate of expansion.

When the TNCs plan at medium or long range, they do so with information concerning reality which they control in all its ambits, which is why it is difficult to believe that the price increases which were decreed for petroleum in 1973 by the member states of OPEC came as a surprise to the oil TNCs.

The exploration and development of the offshore oil began in 1965 especially in the United Kingdom sector of the North Sea. Since then, it is estimated that the oil industry has invested till 1979 US$ 22 thousand million or US$ 30bn at 1979 prices.

In the early 1970s it was costing the industry roughly US$ 500 in development costs to produce each daily barrel, yet in 1979 and according to the Energy Department's "Brown Book" on offshore statistics, it was costing the industry on average US$ 8 to produce each barrel of North Sea oil. For fields under development at the end of 1979 the average was nearer US$ 10 per barrel. In some cases the costs were as high as US$ 23 a barrel.

When the oil TNCs planned their fabulous offshore investment, not only in the U.K. sector of North Sea but in the United States, Latin America, The Mediterranean, West Africa, the Middle East and Asia, the price of a barrel of crude oil was quoted in the international market at US$ 3.30. Therefore, it would be ridiculous to think that the rise in 1973 was a "stroke of luck".

In other words, the so-called "energy crisis", and all that it has meant for the world economy, has its explanation not in the bosom of the OPEC countries, which justly claim a better share of the economic interchange with the industrialized countries, but in the confidential archives of Exxon, the minutes of the Board of British Petroleum, the

studies of investment and development by Shell, and the expansion plans of Mobil, of Gulf, of Texaco and Socal.

When all is said and done, if the present crisis does not constitute the final threshold of a major conflict, its impact on world political and economic equilibrium and on the influence of new political power groups has generated a series of alternatives, of which war itself is one choice.

In the face of this alternative, the analysis of technological dependence(which will be carried out in Chapter III) is one key factor in the understanding of the phenomena which we are examining in this work.

Although our interest does not revolve around a deep study of the phantom of war, its introduction in the form in which we have employed it follows from the fact that when we study sovereignty and the problems of its vulnerability through what we have called the technological route, we must try not only to point out the causes and consequences of such vulnerability but furthermore, search after possible alternatives. One of them, as we will explain later will, paradoxically, be war.

We do not try to be fatalistic, much less handle lightly the ghost of war, but unfortunately, the analysis demonstrates to us that technology is tightly linked to comtemporary power and we could not have studied technological dependence without searching for its implications in the field of the expansion or loss of power of the nations which today control technology.

On the other hand, the technology of the post-industrial era of computing and communications, has manifested a new style of power, and it is within this context, where technological dependency is converted into an instrument, not only of control and domination, but also for deepening the development gap of the nations of the Third World.

REFERENCES AND BIBLIOGRAPHY CHAPTER II

2.- Energy crisis:threshold for a war?

2.01.- Thompson, E.P. "Protest and Survive"
Bertrand Russell Peace Foundation
Russell Press Ltd.
Nottingham. England, 1980

2.02.- Anderson,Harry "America Plunges Into Recession"
Newsweek magazine N°18
London 5th May 1980.

2.03.- Buchan,David -Washington- "Index of economic indicators takes 'steep plunge'."
Financial Times 30.10.81.London.
See reference 2.03.

2.04.- Buchan,David -Washington- "U.S. admits deepening recession"
Financial Times 10.11.81.London.
See reference 2.04.

2.05.- Carr,Jonathan -Bonn- "W. German industry investment 'will stagnate' next year"
Financial Times.London,10.11.81
See reference 2.05

2.06.- Riddell,Peter "Libya threat to halt U.S. and U.K. oil".
Financial Times.London,10.05.80.

2.07.- BBC 1 TV. "Nine o'clock news"
'England 3,170,000 unemployed'
London,22th January 1982

2.08.- Satter,David
-Moscow-
"Brezhnev rejects U.S. call for Afghan withdrawal"
Financial Times.London,23.02.80
See reference 2.08.

2.09.- BBC 1 TV
"Nine o'clock news"
'Carter had ordered the despatch of 100,000 men to the Persian Gulf'
London 17th February,1980

2.10.- McDermott,Anthony
-Cairo-
"U.S. airborne troops fly to Cairo for manoeuvres"
Financial Times.London,10.11.81
See reference 2.10

2.11.- Lennon,David
-Jerusalem-
"Begin calls decision a 'danger' to Israel"Financial Times.30.10.80
See reference 2.11

2.12.- Kende,Istvan
Quoted in Frank Barnaby's article "An unacceptable waste".Published in Mazingira N°5 magazine.
Pergamon Press Ltd.London,1978

2.13.- The Economist
"Shrunken America".Page 15
London,3.05.80.

2.14.- Newsweek
"Special report".Newsweek magazine
London,5.05.80
See reference 2.14

2.15.- Durand John D
"The Modern Expansion of World Population",included in W.Rostow's The World Economy.Page 5.
Methuen & Co.Ltd.London,1975

2.16.- Norman,Colin
"Tecnologias blandas,opciones dificiles".Mazingira N°8.Page 18
Pergamon Press.London,1979

2.17.- The Economist — "The World in Figures".Book published by The Economist. London,1976

2.18.- United Nations — "Transnational Corporations in World Development" Commission on Transnational Corp.New York,May, 1978

2.19.- Laroriere,J.de — "Financial Times Survey: World Banking".London,9.5.80

2.20.- Hogg,Sarah — "World economy:worse to come,warns OECD".Sunday Times.London,15.11.81

2.21.- Barnaby,Frank — "An Unacceptable Waste".Mazingira. N°5.Pergamon Press.London,1978

2.22.- Myrdal,Alba — "The Game of Disarmament" Pantheon Books. New York,1978

2.23.- Kissinger,Henry A — "Nuclear Weapons and Foreign Policy" Harper & Bros.,New York,1957.

2.24.- Mandelbaum, M. — "The Nuclear Question The United States & Nuclear Weapons 1946-1976. London,1979.

2.25.- McNamara,Robert — Included in The Nuclear Question Page 103.,book quoted.

2.26.- Brzezinski, Z. — "New Yorker Magazine".Page 126 New York,1.05.80

2.27.- Newsweek — "Fiasco in Iran".Newsweek magazine N°18.London,15.05.80

2.28.- Brandon,Henry — "Haig unveils arms cuts to calm Jittery Europe".The Sunday Times. London,8.11.81

2.29.- Connell,John — "So what are Nato tactics? The Sunday Times.London,8.11.81
See reference 2.29

2.30.- Sunday Times -Washington- — "Neutron bomb for U.S." The Sunday Times.London,9.08.81
See reference 2.30

2.31.- Stern magazine — Article included in the book "The USA and Human Rights".Orbis Press Agency.Praga 1979

2.32.- Pringle,Peter -Washington- — "39 fingers on nuclear buttons" The Observer.London,7.06.81
See reference 2.32

2.33.- Thompson,E.P. — "Protest and Survive".Published by the Bertrand Russell Peace Foundation.Russell Press Ltd. Nottingham.England,1980

2.34.- Kornilov,Yury — "China: The same old tune" Soviet Weekly.London,3.05.80
See reference 2.34

2.35.- Buchan,David -Washington- — "How the U.S. could rearm Peking's military machine".Financial Times London,23.03.81
See reference 2.35

2.36.- Sunday Times — "A might outdated: the power of warriors of the Peoples's Republic" The Sunday Times.London,15.11.81

2.37.- Katin,Vladimir "West German militarist ambitions a threat to the world" Soviet Weekly.London,3.05.80

2.38.- Buschschluter, S. -Cologne- "Nuclear crisis grips Germans" The Sunday Times.London,31.05.81 See reference 2.38

2.39.- BBC 1 TV "Newsnight" news on recession in Detroit.London,5.05.80

2.40.- Kevin,Done -Frankfurt- "Japan urged to curb car exports" Financial Times.London,11.07.80

2.41.- Merritt,Giles -Brussels- "Trade warning to Japan" Financial Times.London,9.10.81 See reference 2.41

2.42.- F.Times reporters -Tokyo- "Japanese Minister warns of world trade war".Financial.London,20.11.81 See reference 2.42

2.43.- Boarman,Patrick & Schoolhammer,Hans "Multinational Corporations and Government".Praeger Publishers New York,1975.Chapter 15 p.208

2.44.- Whymant,Robert "Japan's no war state laws attacked by right".The Sunday Times. London,30.11.80

2.45.- Wilson,David Dr ?Leeds University- "Soviet oil production" Financial Times.London 16.04.80

2.46.- The Economist I.U. "Soviet oil gas to 1990" The Economist Intelligence Unit Ltd. London, November 1980.

2.47.- The Economist I.U. "World outlook 1981"
The Economist Intelligence Unit Ltd.
London,February 1981

2.48.- Sutton;Anthony "Energy the Created Crisis"
Books in Focus Inc.New York,1979

2.49.- Financial T.Survey "Offshore Technology"
Financial Times Survey
London, 22.08.80

2.50.- Stansell,John "Oilmen ready to get into deep water"
-Texas- The Sunday Times.London,22.11.81
See reference 2.50

2.51.- Bartlett, D & "The Philadelphia Inquirer",July 22
Steele,J. 1973.Included in Energy the Created
Crisis.Page 5.Quoted book

2.52.- Wall Street J. "A no-shortage solution to the energy
crisis.Chart 1-2".May 27, 1977.
included in Energy the Created
Crisis.Page 7.Quoted book

2.53.- Sampson,Anthony "The Seven Sisters"
Coronet Books.London,1977

2.54.- Galbraith,John "The New Industrial State"
Penguin Books Ltd.
London,1979.

Financial Times 30.10.81

Index of economic indicators takes 'steep plunge'

BY DAVID BUCHAN IN WASHINGTON

THE INDEX of leading economic indicators, designed to gauge the future course of the U.S. economy, took "an especially steep plunge" of 2.7 per cent in September, the Government reported yesterday.

This was the biggest monthly drop in the index since April, 1980, and it confirmed the U.S. economy has entered its second recession in two years, as all top officials in the Reagan Administration now admit.

The largest factor in the September index's decline was a sharp rise, for the second successive month, in the rate of U.S. workers being laid off. But eight of the 10 components used in making up the September index showed a downturn. The Administration said yesterday it saw no light at the end of the economic tunnel until next year, with industrial production and real gross national product expected to continue their slide for the rest of this year.

With the consequences of recession for the federal budget deficit now manifest, Mr David Stockman, the Reagan budget director, has warned Congress that revenue could fall short of public spending in the current 1981-82 fiscal year by as much as $100bn (£54.9bn), if the legislators take no further action to prune spending.

His warning drew weighty support yesterday from Mr Paul Volcker, the Federal Reserve Board chairman, who told Congressmen they should now show more vigour than ever in cutting spending, if Government deficits and borrowing were not to swell out of control.

A foretaste of the deteriorating picture in federal finances came as the Administration announced that the 1980-81 fiscal year had ended on September 30 with a budget deficit of $57.9bn—$2bn above the White House estimate. The Administration had hoped to keep the current year's deficit within $43bn.

Economic recession depresses profits and incomes, and thus Federal tax revenues, while at the same time increasing unemployment, and thus Government payments to the jobless.

Mr Beryl Sprinkel, the Treasury under-Secretary for Monetary Affairs, spelt out the implications for the markets of Washington's new budgetary squeeze, when he announced on Wednesday that the Government would have to borrow $34.8bn in the final three months of 1981, and another "$29bn-$32bn" in the first quarter of 1982.

Moves to ease savings banks takeovers Page 27

The U.S. trade deficit improved sharply in September, dropping to $2.6bn (£1.43bn) from $5.6bn in August, the Commerce Department has reported. Exports rose by 3.2 per cent over the previous month and imports were down by 9.9 per cent.

The Department attributed the $3bn improvement largely to a return to normal after an artificially high level of imports in August, when the dollar was at its highest. Importers, suspecting that the dollar was about to fall, accelerated their foreign purchases to take advantage of the high rate in August, it said.

The weakening of the U.S. economy also contributed to the slowdown in imports which fell by $2bn to $22.2bn, the Department said. Exports, in September, rose to $19.6bn.

Page. 92

Financial Times 10.11.81

2.04

U.S. admits deepening recession

BY DAVID BUCHAN IN WASHINGTON

THE PRESENT U.S. economic recession will be deeper and last longer than the Reagan Administration earlier forecast, U.S. officials said yesterday.

Unemployment would exceed 8 per cent and the recession would last until mid-1982, they said.

Mr Murray Weidenbaum, the chief Reagan economic adviser, told a Press conference that "strong recovery" would come in the middle of next year, but in the meantime the recession would worsen.

In a weekend interview, Mr James Baker, the White House Chief of Staff, said recovery would be delayed until late spring or early summer 1982.

President Reagan formally conceded last Friday that the recession had made his target of balancing the federal budget by 1984 improbable. But Mr Weidenbuam stressed that the Administration hoped to bring the 1982-83 and 1983-84 deficits below the recession-swollen 1981-82 deficit. Mr Baker said the President was confident that "we have laid the foundation for economic recovery."

Further confirmation of the impact of recession came yesterday as major banks, including Morgan Guaranty, Chase Manhattan and Manufacturers Hanover, brought their prime rates down to 17 per cent.

Falling loan demand in the weakening economy make further cuts in the prime, as well as another reduction in the Federal Reserve's discount rate, likely soon, Wall Street analysts said.

Government statistics due out this week on wholesale prices, industrial output and retail sales are all expected to confirm the picture of an economy in a slump worse than the 1980 mini-recession.

Despite the Administration's claim that the current slump would stay "shallow," last month's unemployment rate hit 8 per cent.

The latest money supply fiures, showing a substantial drop in the measure of currency and checking savings accounts, known as M-1 B, in the week ending October 28, indicate the Central Bank is undershooting its M-1 B target for 1981.

The Administration has publicly pressed the Fed to relax money growth enough to hit its targets.

Faced with the inescapable prospect of a much larger deficit this year, President Reagan has decided to press on with his request for Congress further to cut public spending, without making any new increases in taxes or rescinding already enacted tax reductions.

In doing this, Mr Reagan is following the advice of Mr Donald Regan, Treasury Secretary. Mr David Stockman, the Budget Director, had urged that some action be taken to raise tax revenue.

Financial Times 10.11.81

W. German industry investment 'will stagnate next year'

BY JONATHAN CARR IN BONN

INDUSTRIAL investment in West Germany will in general stagnate next year, although the mining sector will register another big spending increase.

This emerges from a survey of the investment plans of more than 5,000 enterprises taken by the IFO Economic Research Institute of Munich this autumn, and published today.

The survey shows that, overall, industrialists will invest only about the same sum in plant and machinery in nominal terms in 1982 as they did this year. That means a cut of nearly 4 per cent in real terms after allowing for inflation.

Much the worst-hit sector remains the construction industry, which will see an investment cut in nominal terms of 10 per cent next year, after one of 25 per cent this year.

The mining industry will show a rise of 17 per cent after one of 30 per cent this year—a boom stimulated above all by the exploitation of domestic coal to cut the country's imported energy dependence.

The institute notes that if the economy picks up in coming months, these investment figures will be revised upwards. But its survey also makes clear that even if this occurs, a marked improvement on the labour market cannot be expected.

Only 19 per cent of industrialists say their main investment aim next year is to enlarge capacity—compared with 34 per cent who gave this aim this year.

On the other hand, 53 per cent will be investing mainly to rationalise, compared with 41 per cent this year.

This intensification of the drive to rationalise helps support recent forecasts that the average number of jobless will rise to more than 1.6m next year from 1.3m this year—even if economic growth improves.

Real incomes will have to fall, says Lambsdorff

BONN — Count Otto Lambsdorff, the West German Economics Minister, said yesterday that real incomes will have to fall in the coming pay round, and called on both employers and unions to show restraint

"There is appreciably less to go round this time, and this fact must be accepted," he said in a West German radio interview.

Too much should not be expected from talks tomorrow between Government, unions and employers, which have been called to discuss rising unemployment. The Government has no new plans or initiatives to unveil, he added.

Herr Alois Pfeiffer, a member of the West German trade union federation's national executive, told a television interviewer that real wages will have to be maintained if economic demand is to be stimulated.

The unions will take account of the unemployment problem in formulating their wage demands, he added.

Reuter

Financial Times 23.02.80

2.03

Brezhnev rejects U.S. call for Afghan withdrawal

BY DAVID SATTER IN MOSCOW

MR. LEONID BREZHNEV, the Soviet president, yesterday rejected President Carter's call for the withdrawal of Soviet troops from Afghanistan. He indicated they would remain until "the tribal rebellion" against Soviet-backed rule was over.

Mr. Brezhnev's statement came as the Afghan Government imposed martial law in the capital, Kabul, following outbreaks of arson and rioting which the Afghan Interior Ministry blamed on "agents and British, American, Pakistani and Chinese henchmen."

Speaking to voters in the elections to the Supreme Soviet, the Republic's nominal parliament, Mr. Brezhnev said the Soviet Union had acted only in response to a request by the legislative government of Afghanistan.

He accused the U.S. of deliberately frustrating an early Soviet withdrawal by continuing and intensifying its "interference" in Afghanistan's affairs from Pakistani territory, in co-operation with China.

Mr. Brezhnev said it would be possible to withdraw the Soviet forces from Afghanistan when "the reasons that caused their presence there disappear." But he warned that Soviet military strength was "tremendous," and that the Soviet Union and its allies would be able to "stand up for ourselves and rebuff any hostile sallies."

The U.S., he said, was circulating lies about a war between the Russians and the Afghan people and about a Soviet threat to Iran and Pakistan; Washington needed a pretext to broaden its expansion in Asia and it created this pretext by any means.

Mr. Brezhnev said the anti-Soviet campaign was necessary for anyone hoping to win the American presidential election, but its main purpose was to support Washington's decision to create a network of military bases in the Indian Ocean and to subordinate countries in the Near and Middle East to its hegemony.

The American desire to ensure the security of its oil routes might be understandable to some extent, Mr. Brezhnev said. But this could not be achieved by turning the area into a powder keg.

If the U.S. and Afghanistan's neighbours guaranteed an end to all outside interference, the need for Soviet military assistance would cease to exist, Mr. Brezhnev said. The Soviet authorities, however, have always described the Afghan rebellion as "outside interference."

Reuter reports from New Delhi: The riots and arson which broke out in Kabul yesterday, coupled with the imposition of martial law and a curfew, followed the closure of most shops in the city on Thursday as part of a protest strike called by the rebels.

The Press Trust of India news agency said that three people were killed in a demonstration in the centre of Kabul — the first against the Government since the Soviet forces moved into Afghanistan in December.

2.10

Financial Times 10.11.81

U.S. airborne troops fly to Cairo for manoeuvres

BY ANTHONY McDERMOTT IN CAIRO

ABOUT 1,000 U.S. troops, many of them from the 82nd Airborne Division arrived at Cairo West airbase yesterday to take part in a three-week joint military exercise with Egyptian forces.

Code-named "Bright Star," the operation will be on a larger scale than last year and a total of 4,000 U.S. troops and an equivalent number of Egyptians will be involved in three-stage exercises lasting until November 25. The exercises will also involve operations at a later date in Sudan, Somalia and Oman.

At one point eight B-52's flown direct from North Dakota are due to make live bombing runs over the western desert.

Operation Bright Star has received little attention in the Egyptian Press, beyond a statement by Gen. Abdel-Halim Abu Ghazala, the Defence Minister, who emphasised the benefits for Egypt of joint training with the U.S.

Meanwhile members of two Egyptian Communist organisations have been arrested in the first announced clampdown on the Left since Mr Hosni Mubarak became President nearly a month ago.

2.11

Financial Times 30.10.81

Begin calls decision a 'danger' to Israel

BY DAVID LENNON IN JERUSALEM

THE U.S. Senate decision to sell Awac's surveillance aircraft to Saudi Arabia poses a "new and serious danger" to Israel, Mr Menahem Begin, the Prime Minister, said yesterday. He warned: "We will do what we have to do in order to overcome this threat."

He did not specify how Israel would combat this "new danger," but there have been repeated hints by other officials and military experts that, if necessary, Israel would not hesitate to shoot down the Saudis' spy planes.

Mr Ariel Sharon, the Defence Minister, said that the supply of Awacs and F-15s to Saudi Arabia is "a very serious decision." The danger, he said, lies in the tendency to give sophisticated weapons to the Arabs which will help them close the military gap "between them and us."

Speaking after a special Cabinet session to discuss the outcome of the Senate vote, Mr Begin expressed Israel's regrest over the decision, since "Saudi Arabia is in a state of war with Israel, rejects the Camp David accords and finances terror in our region."

Israel waged a lengthy battle to try to block the U.S.-Saudi arms deal and especially the supply of the sophisticated surveillance aircraft which it believes will expose the country's military secrets.

Jerusalem was yesterday trying to assess the significance of the Senate defeat for the Israeli lobby in Washington. Mr Begin paid tribute to their efforts, saying "the friends of Israel conducted the just struggle with courage and dignity."

2.14

Newsweek -Special report- 05.05.80

Oliphant © 1980 Washington Star

'Whatever you say, Imam—I guess you know what you're doing . . . '

Sunday Times 15.11.81

World economy: worse to come, warns OECD

by Sarah Hogg, Economics Editor

AN ALARMING picture of worldwide slump has emerged from a new forecast circulating privately among governments of industrial countries. The Organisation for Economic Co-operation and Development, which only a few months ago was predicting slow but continuous growth, has now revised its expectations sharply downwards.

A drop in output on the scale forecast would lead to a steep increase in unemployment among the OECD's 24 member countries. The jobless total, which reached 24m in the middle of this year, could be rising towards 30m by late next year.

Last summer, OECD reckoned that industrial countries would avoid a repeat of the slump that followed the first oil price shock in the mid-1970s. But the revised forecast, prepared for the Economic Policy Committee meeting in Paris this week, says that a real slump is now taking place—with no recovery until the second half of 1982.

Nor is there much cheer for governments battling to conquer inflation. The rate is expected to fall, but rather more slowly than this year, reducing the rewards of tough policies.

The reasons for greater pessimism lie in the three biggest OECD economies: the United States, Japan and West Germany. OECD was expecting output to slow—but not fall—in the United States. But the American economy has clearly been taking a real "dowher", in President Reagan's words. Japan is still growing strongly; but largely through expanding exports, which the other industrial countries are likely to hinder if Japan swings into bigger balance of payments surplus.

Japan's domestic demand (and so its appetite for other people's imports) is growing more slowly than hoped. And the West German economy is also proving sluggish. The five main German forecasting institutes' autumn report suggests no more than 1% growth next year; Kiel (notoriously the most gloomy of the five) suggests no growth at all.

Although the French economy is still growing, President Mitterrand's struggles to damp down inflation are expected to slow the economy down next year.

Britain, for once, is the bright spot. The industrial production figures this week do suggest a modest recovery is under way, though it may be jerky. But Britain is no longer one of the largest economies, and can hardly pull the world out of slump.

There are two other gleams of hope. One is that Opec surpluses appear to be falling faster than forecast, partly because of a sagging real oil price but also because of higher-than-forecast imports by oil producers from other countries. Both are good news for the industrial world.

The second hope is that American recession will allow world interest rates to subside. Unfortunately, the troubles of Reaganomics and its creators are likely to slow the fall.

Interest rate policy will clearly be on the agenda of the Economic Policy Committee.

But some delegations will be worried about national government's budget policies too. Not even the French are seriously arguing for the kind of co-ordinated boost to world demand agreed at the economic summit of 1978. There is general agreement that only modest world growth is possible without running into another oil price and inflation crisis. But there will be pleas for governments to allow budget deficits to rise when unemployment does, rather than all make simultaneous attempts to cut their public deficits regardless, causing knock-on effects on other countries' growth and unemployment.

Guide to good forecasting, page 59

2.29

Sunday Times 8.11.81

So what are Nato tactics?

by Jon Connell, Defence Correspondent

THE AMERICAN secretary of state, Alexander Haig, was correct when he revealed to the Senate foreign affairs committee last Wednesday that Nato might "fire a nuclear weapon for demonstrative purposes." The statement caused horror among European peace movements and brought a swift denial by the defence secretary, Caspar Weinberger, that there is any such plan.

But semantics apart, Haig's statement makes sense. Nato's actual "plans" for waging a nuclear war essentially add up to sets of targets designed to fit specific situations. A particular kind of Soviet attack might demand that certain targets be selected from a particular "targeting folders" at Nato headquarters.

The "plan" Haig floated is not among these more precise alternatives, which is why Weinberger could deny that it exists. But there is nothing to prevent Nato leaders abandoning specific plans in a war and opting instead for such a "demonstrative strike."

Though Haig did not spell out what he meant, he was implying that Nato could use one bomb simply to demonstrate that it could no longer contain an enemy attack by conventional means. The idea would be to explode the bomb in the air—to minimise fallout—over enemy troops, over the sea or, more likely, over a deserted area of the Soviet Union in the hope that this might prove sufficient to deter further aggression.

To a West German chancellor faced with the appalling prospect of having battlefield weapons devastate his — or east European soil (thus inviting immediate retaliation) — such a "demonstration" might seem a possible way out. And a British junior foreign minister, Douglas Hurd, told the Commons on Thursday: "It has always been recognised that Nato strategy embraced actions that would be primarily demonstrative in effect."

The idea of a nuclear "shot across the bows" first surfaced, in fact, in 1945. Several of the scientists advising President Truman urged him not to attack Hiroshima or Nagasaki but to explode a bomb over the desert or a barren island to show Japan what would follow if it did not surrender. The idea was rejected, not least because America then possessed only two bombs. If the demonstration one failed to go off, for example, the threat might not seem plausible.

In the first period of the cold war, when the West was vastly superior to Russia in nuclear weapons, there was little need to think about such "demonstrative use." But as Russia's arsenal expanded and Nato began rethinking its strategy, the possibility re-emerged: in the late Sixties, when Denis Healey was defence secretary in Britain, it was intensely discussed in Nato. Since then it has come to seem less credible but, according to one Nato official, it is still very much on "the list of options."

The problem, however, is that most military planners, believe it would achieve little: the effect of a demonstrative strike might simply be taken by Moscow as a sign that the nuclear threshold had been crossed and invite massive retaliation.

But to politicians, particularly in central Europe, it might seem a plausible way of showing that Nato meant business: if a German chancellor refused to agree to the use of battlefield weapons in Europe, an American president would be unlikely to try and overrule him. If he did, the Germans could simply surrender, probably followed by the Belgians and the Dutch. As David Owen puts it, a demonstrative explosion might, "in the event of an all-out conventional attack," be "the only sensible political nuclear response."

Many Europeans are unnerved by the way the whole tortuous debate about nuclear weapons has suddenly burst into the open after years of secrecy.

Much of it appears to be emerging because of a private struggle between Haig and Weinberger for control of US foreign policy making. It is hardly an atmosphere likely to lead to enlightenment.

2.30

Sunday Times 9.08.81

Neutron bomb for US

by Sunday Times reporters

PRESIDENT Reagan has decided to go ahead with the full production of the controversial neutron bomb, the *New York Times* reports today. The move to make neutron bombs and artillery shells is bound to provoke protests from European anti-nuclear groups who are already campaigning against the siting of Cruise and Pershing missiles in Europe.

Reagan's decision—predicted by the *Sunday Times* last month—comes at a sensitive time for European-American relations. The last time that production of the bomb was discussed in 1978 it led to strains within the alliance

The neutron bomb is a so-called enhanced radiation weapon which is designed to kill people with less destruction of property than existing nuclear weapons. It is a battlefield weapon designed principally for use against armoured units.

President Reagan has reportedly ordered that the new bombs and artillery shells be deployed only in the United States and that any decision to base them in Europe would be taken only after full consultation with Nato allies.

According to the *New York Times* there was a conflict of views between Alexander Haig, Secretary of State, and Casper Weinberger, Defence Secretary, over when to build the new weapons. Haig contended that the decision to go ahead would have serious repercussions on relations with the allies, but Weinberger and Reagan decided that the Europeans should not be given a veto over US weapons policy.

2.32

The Observer 7.06.81

39 fingers on nuclear buttons

PETER PRINGLE reports on a chilling disclosure from Washington

THE United States appears to have confirmed, for the first time, that in certain extreme circumstances the President does not have to authorise the firing of nuclear weapons. In these circumstances each of America's 39 nuclear submarine commanders is empowered to arm and fire his weapons without receiving special codes from the White House.

This means they manoeuvre outside the comprehensive system operating on land-based missile and bombers, where technical safeguards make it impossible for commanders to act on their own.

Confirmation of the submarines' independent capability comes from Admiral Powell Carter, communications director of strategic and theatre nuclear warfare, in a CBS television series on America's nuclear arsenal due to start being shown here next Sunday.

'There is nothing on a submarine system that prevents [a launch] mechanically through some sort of interlock system . . .' says the admiral.

The official Pentagon line has always been that the commanders of the US nuclear submarine fleet—carrying 4,000 nuclear warheads—are unable to launch missiles on their own. Admiral Powell says they can, even though a missile launch would necessitate the co-operation of practically the entire crew.

The reason for the submarines' independent capability is clear: in the event of a surprise nuclear attack, communications between the President (or his successor if the President were dead) might become impossible. Underwater communication is in any case much more difficult than that with land and air units.

Admiral Powell's statement is expected to cause an angry reaction among nuclear disarmament groups worried about the risk of an accidental missile launch. It follows two moves to strengthen the US nuclear arsenal.

Without a special presidential directive the Department of Energy, which produces the nuclear material for America's nuclear weapons, was last week exported to have started to produce radioactive tritium for insertion in the neutron warheads of Lance missiles. The original idea was for these to be deployed in Europe.

President Carter deferred production of the neutron weapons in 1978, but last year approved production on 350 low-yield Lance warheads while deciding not to allocate the tritium needed to turn them into neutron warheads.

2.34

Soviet Weekly 3.05.80

China: The same old tune

WHEN DENG Xiaoping was recently asked by Italian pressmen in Peking if it were true that the Chinese leaders thought war was inevitable, he replied:

"Yes, we still believe war will break out sooner or later ..."

Is it possible that Deng realises the calamities that a big international conflict would in this nuclear age, bring on mankind — including the Chinese people themselves?

It would be useless to ask him that question, however. The Peking leaders, with their expansionist ambitions, have long proclaimed war not only inevitable but even desirable, relegating ordinary people to the role of cannon-fodder.

Remember what Mao said: "It doesn't matter if war kills half mankind. Nor will it matter much if only a third survives."

Deng has expressed the hope that his "inevitable war" will not take place for "at least 20 years." Why that period?

Twenty years is about the time the Chinese leaders think it will take them to carry out their "four modernisations" — by which they mean, primarily, to complete the militarisation of the country — and then begin to carry out their great-power plans.

Those plans are no secret.

Out of the 30 military conflicts in Asia since the second world war, 19 have been provoked by China. And China's territorial claims on neighbouring countries involve an area as large as China itself.

Deng probably hopes to cut that 20 years down with the help he expects from some countries in the West.

Which explains why he has made it clear that China's strategic policy is "maintenance of friendly relations with the United States."

This strategy, by which China assumes the role of assistant and junior partner of imperialism, is meeting with growing "understanding" in Washington and Nato, where some groups hope to further their own political ends by playing the China card.

These groups are gambling on Peking's anti-Sovietism, but they ought to remember the lesson of history: that he who encourages and arms an aggressor often falls the first victim.

To sum up.

Deng's statement makes it clear that, four years after Mao's death, Peking's rulers still cling to his concept of the inevitability of war.

And Peking is still prepared to sacrifice half mankind in pursuit of Chinese domination.

True, Deng did not say in which half of mankind the Peking leaders place themselves, but you may guess that they propose to be among the survivors.

And then, no doubt, to build some sort of new Peking-style world on the ruins.

YURY KORNILOV

2.35

Financial Times 23.06.81

David Buchan in Washington

How the U.S. could rearm Peking's military machine

THE ONE tangible result of Mr Alexander Haig's visit to Peking last week was the U.S. decision to allow China to buy limited quantities of lethal weapons. This, plus the admission that the U.S. had set up a missile-tracking station inside China to monitor what was going on in the Soviet Union, raised the Sino-U.S. relationship to a very different level.

It also suggested the U.S. was intent on keeping up its relationship with Peking rather than Taiwan. Both Moscow and Taipei were sharply critical of the proposed injection of military strength into China. Taiwan reacted with predictable, if unjustified, alarm. From Moscow's viewpoint, it has shifted the global balance of power. But what will it add up to in terms of improved Chinese military capacity, when Peking is broke and already 15 to 20 years behind?

China's forces are quite outclassed by those of its neighbours. Mainly equipped with 1950s weapons, they will take years and huge sums of money to modernise.

Peking has, of course, a nuclear capability, but its delivery system is not good. Last year it successfully tested its first Intercontinental Ballistic Missile and it has a fair number of medium-range missiles. But its missiles are probably still liquid-fuelled. It has no second-strike capacity.

A long way after this strategic force comes the army of 3.6m men, equipped with about 12,000 old Soviet or Soviet-type tanks. It has some surface-to-surface missiles and a few wire-guided anti-tank weapons, but otherwise mainly old-style artillery.

The air force has 5,000 or more aircraft, about four-fifths of them fighters, of which most are old MiG17s and 19s or Chinese copies. Of the remainder, about 550 are light and medium 1950s-vintage Soviet bombers. Despite the numbers, aircraft are precious in China; in the 1979 war with Vietnam, the Chinese tried not to use them.

The navy is largely a coastal defence force, but has about 100 submarines with one nuclear vessel which is reported never to have functioned properly. A second is thought to be undergoing trials. It has fewer than 40 major surface combat ships, only about half equipped with surface-to-surface or surface-to-air missiles.

Industry, and consequently arms production, made little progress in the 1960s and 1970s because of constant political struggles. Even many Chinese seem to have lost faith in their ability to manufacture arms.

The 1979 Vietnam war revealed how inferior Chinese artillery was, lacking night-vision sights or automatic range-finders. The export of Chinese-made MiGs to Pakistan has shown up their inadequacy compared with the genuine Russian article, which is more versatile and needs servicing less frequently.

To update this military leviathan would cost in the region of $300bn, according to one military specialist. Weapons experts have said that no one European defence industry—or even all together—could more than dent the problem, while the U.S. arms industry is already under strain without fulfilling vast Peking orders. Re-equipment on any scale would take a decade to have significant effect.

China has been window-shopping in Europe since 1977, but has bought very little. Helicopters have been important: France's Aerospatiale sold 30 in 1977 and another 50 last year. West Germany's Messerschmidt-Bolkow - Bloehm despatched three, and Bell (of the U.S.) eight in 1979. However, the 1977-80 haggling, apparently on price, over the British Harrier jump jet fighter, came to nothing.

In 1975 the Chinese bought an £80m production line, plus technology, for the Rolls-Royce Spey engine, intended to power a supersonic Chinese fighter. This is now completed, but not operating. The Chinese could not design an airframe to put it in.

In the 18 months since Mr Harold Brown, the former Defence Secretary, announced after a trip to Peking that China would be allowed to buy non-lethal military equipment, the U.S. has had much the same experience. Some 40 export applications have been made by U.S. companies, but few have come to fruition—the most notable being the sale of Cessna aircraft with special photographic equipment.

While small packages like this may have some effect, the problems remain enormous. Ill-equipped Chinese infantrymen are sitting across the border from 42 well-armed Soviet divisions.

Australia and New Zealand voiced reservations yesterday about some aspects of U.S. policy in Asia outlined by Mr Alexander Haig, the U.S. Secretary of State, Reuter reports from Wellington. Mr Haig has been urging increased efforts to isolate Vietnam if it does not withdraw its 200,000 troops from Kampuchea.

But, according to Mr Brian Talboys, New Zealand's Foreign Minister, during yesterday's meeting of the Anzus Council, which groups the three allies, "there was some discussion on the extent to which present policies might be pushing Vietnam further into the arms of the Soviet Union." Mr Tony Street, Australia's Foreign Minister, said however, that Australia had decided Vietnam's invasion of Kampuchea was totally unacceptable.

2.36

The Sunday Times 15.11.81

A might outdated: the power of warriors of the People's Republic

A RARE glimpse of the Chinese military in action: units of the People's Liberation Army from Peking, with air support and a naval presence, are seen here staging a recent exercise on the north China plain. The display, which was followed by a grand parade, was suitably vast. The Chinese armed forces, at 4,750,000 people in all, are the largest in the world. However, for the party and state leaders watching, in particular for Deng Xiaoping (left), it must have been a forceful reminder of the problem China faces, writes **Jon Connell.**

As chairman of the military commission of the central committee, Deng is charged with modernising his country's defences. For China's military machine is no match for those of its neighbours: it is plagued by inefficiency and chronically under-equipped. Its MiG fighters and most of its 12,000 tanks were salvaged or copied from the Russians in the Sixties or before.

China's top brass, therefore, are shopping around. The American government is keen to help and has lifted the ban which restrained its arms manufacturers from selling to the People's Republic. European countries, too, are anxious to take advantage of such a potentially enormous market. Recently the chief of China's general staff, General Yang Dezhi, visited Britain and General Sir Edwin Bramall, our own Chief of the Defence Staff, has just returned from a week in Peking.

The difficulty is that China is desperately short of cash. Fully modernising its armed forces would cost at least £100,000 million but at present it is spending only around £6,000 million a year on defence (not including service pay). And because of pressures on the economy the army modernisation programme has recently been demoted in the list of priorities. It was perhaps appropriate that Yang Dezhi, on his British visit, should linger longest not amid the high technology of our forces, but in the more historic surroundings of Nelson's flagship, HMS Victory.

2.38

The Sunday Times 31.05.81

MAY 31 81 2/38

Nuclear crisis grips Germans

SIEGFRIED BUSCHSCHLUTER in Cologne

NOT SINCE the fall of Willy Brandt and the detection of a communist spy in the Chancellery seven years ago have domestic German politics gone through such turbulent times as in the last seven days.

There have been threats to quit from Chancellor Schmidt and Foreign Minister Genscher over the issue of American nuclear missiles in Europe as well as a resignation threat from a regional Social Democratic prime minister and the actual resignation of the Hamburg Social Democrat mayor over the expansion of nuclear energy. A chain reaction has put the survival of the ruling coalition of Social Democrats and liberal Free Democrats in jeopardy.

Both Schmidt and Genscher have won important votes on the missiles issue, but have given hostages to fortune by linking their own personal futures to progress on arms control.

The fact that each felt the need to threaten resignation reflects the intensity of the backlash in their own parties against the NATO decision to station 464 cruise missiles and 108 Pershing IIs in West Europe.

The fear of a nuclear holocaust in a country so perilously exposed to the claws of the Russian bear and already bristling with hundreds of ballistic missiles, is very real.

People are frightened by the prospect of a limited nuclear war. Frontline Germany, where most of the modernised US missiles would be based, would be wiped out in any nuclear exchange between the super-Powers.

Even after Schmidt's talks with President Reagan in Washington and their agreement that 'equal weight' should be given to the twin elements of the 1979 NATO decision — stationing plus arms control talks — doubts persist about America's willingness to achieve progress in talks with Moscow.

Critics of the NATO decision no longer see a need for additional nuclear missiles in Europe. They acknowledge the unprecedented build-up of Soviet SS-20 strategic missiles, most aimed at Europe. But they maintain that America's existing nuclear shield is a sufficient deterrent.

At his party congress, Genscher admitted the reason for sticking to NATO's decision was political. If Europe rejected the stationing of theatre nuclear forces on land, he said, it would cause a serious crisis of confidence in relations with the United States.

The option of sea-launched missiles had been rejected by NATO because they did not have the same deterrent effect. He won the vote by 271 to 103 with eight abstentions, but the revolt's strength was a shock.

Schmidt had twice threatened to resign before going to Washington. The real test will come at the party congress next spring.

The SPD-FDP coalition in Bonn is going through a difficult patch, each party wrestling with its own dissident left wing. Last week, the Social Democrat mayor of Hamburg resigned because he failed to carry his parliamentary group with him in all-out opposition to the proposed Brokdorf nuclear power station.

In Hessen, the Social Democrat Premier called an extraordinary party congress to secure a vote of confidence on his policies of expanding nuclear energy. The atom has split the SPD down the middle.

2.41

Financial Times 9.10.81

9-Oct. 81

Trade warning to Japan

BY GILES MERRITT IN BRUSSELS

JAPAN was given a clear warning yesterday that it must abandon its present "perilous" trade policies immediately or face tough EEC action.

The threats being made against Japan if it fails to restrain its exports and abolish import barriers range from action under the General Agreement on Tariffs and Trade (GATT) to "breathing space" controls aimed at protecting the EEC's most vital industries.

The European Commission and the Brussels-based UNICE European employers' organisation both warned Japan that urgent trade concessions were essential if a trade war was to be avoided.

The warnings were issued to a mission of top-ranking Japanese business leaders touring EEC capitals. The concerted attack has come as a surprise, however, because the Japanese government-sponsored mission, which groups the heads of companies like Nissan Motors, Sumitomo Chemicals, Hitachi, Mitsubishi and Bank of Tokyo, was intended to assess industrial investment opportunities in Europe.

But Commission officials opted to use the mission's visit to Brussels to stress the serious consequences of Japan's failure to curb its rising trade surplus.

Herr Wilhelm Hakerkamp, the EEC External Affairs Commissioner, put the Community's likely 1981 trade gap with Japan at a record $15bn (£7.9bn) and warned that selective import controls to curb cars, televisions and machine tools may have to be imposed.

According to senior Commission officials, these would probably run for five years while EEC restructuring took place.

The UNICE welcome to the Japanese mission was similarly cold.

In a formal statement Sig Guido Carli, the organisation's president, accused Japan of operating import restrictions from non-tariff barriers to secret quotas and of operating price cartels that cornered supplies of key industrial materials to the EEC's disadvantage.

Brussels officials hope the Japanese Government will be able to outline a package of trade measures to avert protectionist action by the Community in early November.

"Super" computer talks, Page 8.

2.42

Financial Times 20.11.81

Japanese Minister warns of world trade war

TOKYO — Mr Toshio Komoto, a Japanese Cabinet Minister, said yesterday that Japan's fast-growing current account surplus was pushing the world towards a trade war.

Reflecting growing official concern over Japan's foreign trade disputes, Mr Komoto, director-general of the Economic Planning Agency (EPA), said: "[redacted]

Mr Komoto told business leaders that discontent in the U.S. and Western Europe "has been causing a protectionist tendency which might deal a fatal blow to the world economy."

He said Japan's current account was likely to swing into a $12bn to $13bn (£6.8bn) surplus in the financial year ending next March unless the Government took swift and effective measures to curb the trend.

Mr Komoto was speaking shortly before the arrival of Mr Donald Regan, U.S. Treasury Secretary, for a two-day visit in which he is expected to discuss the trade issue in talks with Mr Zenko Suzuki, the Prime Minister and other Ministers.

Mr Regan's visit starts three days after the U.S. submitter to Tokyo proposals for opening up the Japanese market to more foreign goods.

On Tuesday, a day after delivery of the proposals for abolishing import tariffs on 29 items such as computers and car parts, a special Japanese cabinet council failed to agree on fresh measures to resolve the nations foreign trade disputes.

Japanese industrial leaders have joined the U.S. and Western Europe in seeking quick government action over the trade surplus, which the Finance Ministry believes could reach a record $23bn in this financial year.

The Keidanren, the Japanese employers' federation, said yesterday it would formally warn the government by the end of this month that pressure in Western nations for trade protection would intensify unless Japan worked out effective measures.

Reuter

Mr Zenko Suzuki (above) who is due to hold talks on trade with Mr Donald Regan (below)

2.50

The Sunday Times 22.11.81

Oilmen ready to get into deep water

JOHN STANSELL, in Texas, reports on the coming era in oil production.

RISING energy costs and improving technology, combined with the foreseeable end of oil supplies from conventional sources, have set the scene for a new era in oil production—extracting the world's most valued natural resource from deep waters off the continental shelves.

At present, most offshore oil is produced in water depths of about 500 feet, but oil companies are now looking at potential fields in waters up to 8,000 feet.

The need for deep-water platforms has been foreseen by the industry for several years. But the present condition of the world oil market is hastening the transfer of concepts into hardware. Both C. L. Blackburn, senior executive vice-president of Shell Oil, and David Walker, of BP Petroleum Development, emphasised the importance of the western developed nations increasing the rate at which they exploit their offshore oil resources during this year's Offshore Technology Conference (OTC), the annual jamboree of the world's offshore oilmen, in Houston, Texas, last week.

Another oil company man, John Strickland of Conoco, set the scene. The world's total expected oil reserves, he said, were two thousand billion barrels, assuming that about 32 per cent of the oil in the reservoirs can be extracted. Some 60 per cent of this total has already been found, leaving 850 billion barrels yet to be confirmed by exploration teams. And nearly 40 per cent of this unconfirmed oil, 332 billion barrels, lies offshore — with something like 90 billion barrels in UK, Norwegian and Greenland waters.

There is no shortage of ideas on how to produce from deep water, although building platforms in greater depths than the 600 feet which is today's limit has presented offshore engineers with a massive technical challenge.

The most favoured concept for the wild waters around the British Isles is the 'tension leg platform' (TLP) sometimes known as the covered buoyant platform. This is a floating structure pulled down against its own buoyancy by massive steel tubes anchored to the sea-bed. The first TLP is now taking shape on the drawing boards of firms like Brown and Root and Vickers Offshore, and will be installed on Conoco's Hutton field in four years' time.

The next most favoured concept is the 'guide tower' designed by Exxon for one of its deeper fields in the calm waters of the Gulf of Mexico. A conventional platform — though lighter than used in the North Sea — will be supported on a single long leg and stayed by cables in the same way as a radio mast is kept up.

These designs are now all in the offing; examples of each will be on station around Britain by 1985 or thereabouts. But for the longer term far-seeing designers are working on what Walker described as the 'ultimate challenge,' the so-called complete sea bed production system. British consulting engineers Humphreys and Glasgow, working with Sir Robert McAlpine and Sons, already have detailed designs for a complete production platform below the sea.

This futuristic solution overcomes all the problems of the massive structures needed to support existing production platforms, but it introduces many others—particularly the need for the structure to resist the high pressures at great depths.

Although nobody actually dismisses the sea bed solution few of the consulting engineers at OTC expressed much enthusiasm for it. And as they are beholden to the intensely conservative oil industry that may mean it won't happen for at least 15 years.

C H A P T E R I I I-

3.- Underdevelopment: the real crisis

> Venezuela, that is to say Latin America, does not escape, in spite of its immense riches -and perhaps because of them- from misery, exploitation and hunger. Each day the mechanisms, perfectly designed to avoid, detain or distance the possibility of closing the gap with the superdeveloped nations,functions in strict accuracy. Thus it is determined in a factual way, the impossibility of a capitalist "development" for our Countries.
>
> D.F. Maza Zavala 1973(1)

3.1.- Technological dependence and underdevelopment in Latin America.

The process of industrialisation in Latin America and the growth experienced by some countries of the region rests on one of the most complex obstacles to development: technological dependency.

The majority of these nations find themselves in what some authors consider to be the most advanced phase of underdevelopment and what Maza Zavala(1) calls the diversification and complementation of exporting. Professor Maza Zavala indicates:

> "...This phase arises from the necessity to compensate for the effects of the disintegration of industry from within(embedded) with integration into the international market. This integration offers two possibilities: a.- The horizontal,that is between the national markets of the underdeveloped countries(i.e. Alalc, Andean Pact).And b.- The vertical, with the capitalist markets, developed by means of the partial liberation which they allow to the countries of the Third World (the UNCTAD system)".

It is within this phase, which for some Latin American countries represents a sort of condition of "less underdeveloped among the underdeveloped", where we concentrate our analysis of technological dependence, because paradoxically in terms of technology, these countries turn out to be the "most dependent among the dependents".

And it is precisely this paradox of technological dependency and its implications for Latin American reality that we are trying to analyse in this chapter.

Of what does technological dependency consist? Let us begin with the easiest part, the definition of the term.

Technology, according to Webster's New Collegiate Dictionary,is a systematic treatment of an art,technologia, techno+logia-logy.It is as well technical language, applied science, a technical method of achieving a practical purpose, and finally the totality of the means employed to provide objects necessary for human sustenance and connfort.

The Royal Academy of Spanish Language defines the word technology as a collection of knowledge appropiate to a mechanical function, also as a treatise of the technical terms or language,exclusive,technical of a science or art.

The United Nations Organisation for Industrial Development(2) considers it as the sum of the knowledge, experience, and professional aptitudes,mastery, necessary to make one or more products and to establish a business with this purpose. Also, the term "know-how" is pointed out as being synonymous with technology.

Industrial technology is also defined as the sum of the processes by means of which raw materials or intermediate products are transformed into final goods.

Industrial technology is made up of capital goods (plant, machinery and tools) procedures, technical information (patents, licences, know-how), training of personnel, and final product.

The situation of technological dependence arises when the majority of the technological resources of a country come from abroad. In the case of Latin America, as in the rest of the nations of the Third World, these resources come from the industrialised countries.

The degree of dependence is found to be tightly linked with the concentration of these resources in the basic areas of the economy of the receiving country. Equally so, a nation can consider itself more technologically dependent

when those resources come mostly from a single country. In Latin America more than 75% overall of technological services come from the United States.

3.2.- How does technological dependence arise in Latin America?

It is difficult to isolate the study of technological dependence from the global context of underdevelopment and from the relationships which, within the capitalist framework of production, are established between the nations which do and do not produce technology.

If we understand under-development not as a stage in a historical process preceding development, nor as a situation of stagnation in the levels of productivity and welfare, but as the antithesis of development, that is to say: of the process which results from the expansion of world capitalism which generates development in nations which never were underdeveloped, we must analyse the influence of this expansion on the formation of underdeveloped Latin America.

Let us then try to link the politico-economic circumstances surrounding the most outstanding events of the last 400 years of Latin American history.

We should begin by pointing out that the process of Spanish colonisation did not mean the transfer to the conquered territories of the feudal model of production which existed in 15th Century Spain.

The tendency to explain Latin American under-development, in contrast to the Unites States, by means of the simple comparison between the advanced English capitalist industrial model and the backward Spanish feudal one,turns out to be inappropiate, for what was implanted in Hispano-America was not feudalism, nor was Spain really the nation which directed and controlled, in economic terms, the process of colonisation which followed the discovery.

The Commission(la encomienda) as a manifestation of feudal structure did not fully develop, and already by

the end of the 17th Century was practically extinct.(3)

The 16th Century, as pointed out by Andre Gunder Frank(4), meant the century when the modern history of mercantile capitalism was created across the Atlantic.

The New World meant the possibility of an expansion of European capital accumulation, which at the time already existed in German, Dutch, Italian, Spanish and English banks.

This capital not only financed the Spanish Crown in the enterprise of the conquest, but also joined together with private groups in the investment and exploitation of silver and gold mines and in the production and trading of agricultural products of the colonies.

The so-called "Asiatic method of production" existing in Mexico and Peru, based on collective work and the commune, was destroyed, and the Inca and Aztec communers were eliminated or incorporated in a new production structure based not on feudalism, but on monopoly investment, mercantile activity and the slave trade.

"A colonisation without the problems of colonising..." said the Marquess of Pombal, Prime Minister of Portugal in 1755, referring to the way Spain and Portugal had become satellites as a result of British and Dutch financing(5).

In accordance with what Gunder Frank points out, during the first three centuries which followed the conquest, the flow of capital from Latin America to Europe reached a figure equivalent to approximately 1,000 million pounds sterling. This sum represents more than the total value of European shipping industry at the end of 1800, and a quantity equivalent to half the whole investment carried out by Great Britain in its metallurgical industry up to 1790.

It was centuries of exploitation and depredation which stimulated the development and consolidation of the great European metropolis, to the detriment and submission of Latin America.

The Spain pictured by Cervantes in Quixote, with

its 9,000 convents, 625,000 noblemen and 200,000 priests, received 1,000 ships each year with products manufactured by other European countries and in its own territory 160,000 foreigners monopolised its external trade.

> "And by the 17th Century", points out Eduardo Galeano(5) "Spain, even when it possessed the juridical control over its possessions in America, only controlled 5% of the commerce with its colonies. Holland controlled the equivalent of 30%, France 25%, Italy 15%, Germany 13% and England aproximately 12%.

A similar situation occurred in the territories colonised by Portugal, with the difference that the gold of Minas Gerais and the rest of the riches of Brazilian soil served to enlarge the capital of only one beneficiary, the English bankers and investors.

By 1750, the volume of gold which arrived in London proceeding from Brazil was so high(the equivalent of an income of 2,500,000 pounds sterling per year) that the principal centre of European finance, which at that time was to be found in Amsterdam, was moved to the English capital.

> "All Englishmen of good heart who acknowledge their King, their Country and their Religion, hate the French and damn the Pope, are permitted to enlist in a ship of war and receive the bounty given by His Majestiy of two months pay in advance at the following tariffs:
> Able Seaman.....5 pounds
> Ordinary Seaman.....2 pounds and 10 shillings"

This was part of a notice which called for volunteers for the Royal Navy to fight the French. It appeared in the streets of London at the end of the 18th Century(6).

The gold of one year's production at Minas Gerais was enough to pay 500,000 able seamen. Perhaps, had it not been for Minas Gerais, Napoleon would not have lost the battle of Waterloo.

We have said that Latin America was discovered, conquered and colonised within the ambit of the expansion and consolidation of the great centres of European economic power,which enjoyed not only the greatest riches ever conceived as a result of the subjugation and exploitation of a continent, but also the greatest concentration of labour force conceived at that time.

The business of the Spanish colonization then,was in reality the best business of European history, but also the greatest genocide in the history of humanity.

In the 150 years after the discovery, the population of the Aztecs, Mayas and Incas, estimated for the year 1500 at between 70 and 90 million inhabitants, was reduced to 3.5 millions.

The transmission of Latin American riches abroad remained unchanged in every respect after the process of independence and continues even today.

The absence of an interdependent economic nexus between the different regions of Hispano America, produced by a system which is structured fundamentally on the action of plundering,not of colonials, but of merchants,whose main interest consisted in the finding and extraction of resources, or in the representation of those who, from abroad, enjoyed the riches, motivated the fragmentation and formation of isolated economic regions after independence.

The splitting up of Gran Colombia, formed by Venezuela, Colombia, Ecuador, Peru, Bolivia and Panama, was a consequence of this process.

The efforts of Simon Bolivar to create a republic inspired by the English and French liberalism of the time,a republic capable of confronting what he perceived as the expansionist power of the United States, failed to bear fruit, and after 6 years,Gran Colombia ceased to exist. Its creator died in 1830.

Six year before, in 1824, when Bolivar himself was

engaged in the decisive battle for the emancipation of these nations, Lord Canning, British Foreign Secretary declared:

> "Spanish America is free; and if we do not mismanage our affairs sadly, she is English"(7)

The War to Death Decree issued in 1813 by Bolivar(8) apparently was not what it should have been.

Jose San Martin(9) suffered the same fate and so did Jose Artigas, who also died dissillusioned, and from what had been the Viceroy-ship of the River Plate arose Argentina, Chile, Paraguay and Uruguay.

Francisco de Morazon was shot dead, and what could have been the Federal Republic of Central America, became Guatemala, San Salvador, Honduras, Nicaragua and Costa Rica.

From the fragmentation of Latin America,technological consequences arose which we will analyse later.

> "Spain in the 15th and 16th centuries,Spain of the arts and letters, the magnificent Spain of Velasquez, El Greco, Goya,Quevedo and Gongora but without science and technology".As Marcel Roche points out(10),it is the Spain which saw its economic sunset, perhaps at the expense of its own riches and through its inability to generate the transformation, both social and economic which in other countries was produced after the birth of industrial capitalism.

> "For much of the time the principal economic preoccupation of the Spaniards was the business of salvation",as it was also pointed out by Marcel Roche in "Discovering Prometheus"(10).

Simultaneously with the progressive deterioration in the Spanish economy, another phenomenon was ocurring in Europe. The concentration of riches and its financial mobility established the basis for what much later would be "the transnational capital".

In this way, the brotherhood of capital extended its bonds to the other side of the Atlantic and, like the

"promised land" the United States began to convert itself into a seat of European capital, even before it transformed itself into a nation.

By the time of the War of Independence in 1783, there already existed manufacturing centres in areas such as steel, textiles, paper, glass, ceramics etc., important banks such as the Bank of North America, the Bank of New York and the Bank of Boston were in operation, and an abundant commerce with France, Holland, the Near and Far East had already been established(11).

This process of reproduction of capital, promoted mainly by England and within a scheme of colonisation,different to the conquest and rapacity which they practised in their Caribean colonies, permitted the development of the colonies of North America.

According to the study by R.W. Van Alstine(12) in these excolonies, the concept of an American empire and the principal projects of its future growth were already complete by 1800.

Nevertheless the major transmission of capital was produced after 1870. The major exporter was, without doubt England. According to the figures published by A.K.Cairncross (13) between 1870 and 1913 the net export of capital reached 2,400 million pounds sterling.

2,400 millions pounds at the prices of the time(see annex N°15) and mobilised in conditions different to those which the United States itself would later mobilise in Latin America, plus the outflow of qualified European emigrants(see annex N°16) which also took place at this stage, are circumstances which are sufficient to have developed a nation such as the United States any where else on globe whether in Rio de la Plata, Brazil or Gran Colombia.

It seems that when Karl Marx wrote "Das Kapital" in 1867 and supposed that England would be the first Communist country(14) of the world, because of the economic impact of

the accumulation of the export of capital, among other reasons, the English capitalists were so "frightened" that they moved off to a distance of 3,000 miles.

The great mobilisation of capital took effect and soon history witnessed the birth of a new world centre of power. Latin American riches no longer had to cross the Atlantic, and during the 19th Century England, France, Italy, Holland and Germany seemed to be re-born in the United States.

3.2.1.- U.S.A. and the sovereignty of a new empire

Between 1803 and 1853 the 13 original British colonies which formed the United States, with the aid of annexations, treaties and purchases, expanded to the South and West, building a country which today is bounded by two oceans(15).

In 1845 the United States annexed the Mexican territories of Texas and New Mexico. Later, in 1848, Mexico "ceded" the territories which today form the U.S. states of Colorado, Arizona, California, Nevada and Utah(see annex N°17).

The totality of territories "ceded" by Mexico to the United States, represent an extension equivalent to 11 times the size of Great Britain.

So it seems that by the beginning of this century the political and economic destiny of the Latin American nations had been decided anew.

In 1912, the President of the United States,William H. Taft declared:

> "The day is not far distant when three stars and stripes at three equidistant points will mark our territory: one at the North Pole, another at the Panama Canal, and the third at the South Pole" and not happy with this he added "The whole hemisphere will be ours in fact as, by virtue of our superiority of race, it already is ours morally"(16).

The same Taft, according to what he thought U.S. foreign policy should be pronounced that:

> "...a correct path of justice may will be made to include active intervention to secure for our merchandise and our capitalist opportunity for profitable investment"(17).

The military actions of the beginning of the century were, without doubts, the response to the pronouncements of President Taft, as was confirmed by one of his own generals who in 1935 said:

> "I spent thirty three years and four months in active service as a member of our country's most agile military force, the Marine Corps. And during that period I spent most of my time being a high-class muscle man for Big Business, for Wall Street, and for bankers. In short, I was a racketeer for capitalism. Thus I helped make Mexico and especially Tampico safe for American oil interests in 1914. I helped make Haiti and Cuba a decent place for the National City Bank to collect revenues in...I helped purify Nicaragua for the international banking house of Brown Brothers in 1909-12. I brought light to the Dominican Republic for American sugar interests in 1916. I helped make Honduras 'right' for American fruit companies in 1903(18).

In the same period, as E.Galeano(5)points out, ex-President Theodore Roosevelt loudly recalled his succesful amputation of land from Colombia:

"I took the Canal Zone and let Congress debate", said the proud Nobel Peace Prize winner as he related how he had invented Panama. Colombia soon afterwards received US$ 25 millions in indemnity: it was the price of a country that was born so that the United States could have a route between two oceans"(5).

The history of great empires has always been accompanied by the development of gigantic military structures, capable of guaranteeing not only the expansion of the empire, but also the control of the dominated territories.

In this study we will analyse how technological

dependence in a certain way changes this concept of control by military means and in its place generates a mechanism for domination which is more sophisticated, and difficult to eradicate.

The United States, as Paul Baran (19) points out

> "...during the whole period 1914 to 1945, augmented its relative strength more or less continually at the expense of both allies and enemies, and at the end of the Second World War, rose up as the indisputable leading nation, with an absolute position in the capitalist world, as dominating as that occupied by Great Britain after 1815".

By 1959, according to the work of D.F.Fleming(20) the United States had a total of 275 military complexes in 31 countries and 1,400 bases in all the places where they then had North Americans in post and the places for occupation in emergency. These bases were garrisoned by approximately one million North American troops.

This gigantic military structure, which still exists outside U.S. territory, was developed in accordance with the so-called post-war Marshall Plan. This Plan consisted of a rapid rehabilitation of the traditional centres of Western power and their integration in a military alliance, dominated by the United States.

This Alliance, signed in 1949, received the name of North Atlantic Treaty Organisation (NATO).

Nevertheless, since 1917, the central proposition of the United States has been to rub Communism fron the face of the earth, and that explains the development of this enormous military structure and of alliances such as the above.

Pursuing this objective, the phantom of communism and Soviet aggression has been converted into the excuse to justify their incursions, direct and indirect, into the

countries of the Third World.

In Latin America the military presence of North America is made manifest by the so called military aid missions to the armed forces of the countries of the region. Already by 1957, 40 of these missions formed from personnel of the Army, Navy and Air Force of the United States, were to be found on Latin American soil.

No one can imagine that the United States,needs to conclude pacts or military alliances with the countries of Latin America to confront the Soviet Union.

The "aid" for development, the "alliances for progress" and the pacts to confront communism have typified a good part of the relationships of "friendship and mutual aid" between the U.S.A. and Latin America.

Certainly Bolivar did not lie when at one point in his life,with astounding political vision, affirmed:

"The United States seem to be predestined
by providence to subjugate Latin America
in hunger and misery in the name of liberty"

This he said at Guayaquil, 5th August 1829 (21)

"We had to get rid of a communist government
which had taken over"(22)

This said President Dwight D. Eisenhower in 1963 to justify the invasion of Guatemala carried out 9 years earlier.

"The Iron Curtain is falling over
Guatemala",

announced the North American dailies in 1954. In reality, the Iron Curtain was nothing but agrarian reform, which, favoured by the nationalist government of President Jacobo Arbenz Gusman affected the interests of the United Fruit Company in Guatemala.

As time went by, United Fruit continued in Guatemala and a dictator supported from abroad brought back "order" to the country.

26 years later the story of the red phantom

repeats itself but this time it is not the Iron Curtain, it is the red flag with the Hammer and sickle.

"If we were to insist on overnight change
we would end up with a red flag and hammer
and sickle flying over Guatemala City".

General Robert Schweitzer made these declarations on 10th July 1980 in a television programme on BBC 1 in London(23). General Schweitzer, present Director of Strategy of the State Department of the United States, was referring to the violently disturbed situation in which the people of Guatemala live today.

In reality, Guatemala in 1954, was only one of the many military incursions of the United States into Latin America. A summary of events listing the sequence of these interventions has been provided for us by Robin Jenkins in his book "Exploitation"(24).

1854.- USA intervenes in Nicaragua
1867.- USA burns the capital of Nicaragua
1860.- Walker(a buccaneer in USA service) burns Granada
1860.- USA invades Mexico and annexes Texas
1871.- USA occupies Santo Domingo
1881.- USA sets up a naval base in Peru
1901.- USA annexes Puerto Rico and submits Cuba to its contr
1903.- USA takes the Panama Canal Zone
1915.- USA occupies Haiti
1903.- USA intervenes in Honduras
1917.- USA intervenes in the elections in Nicaragua
1926.- USA invades Nicaragua
1934.- USA intervenes in Cuba
1948.- USA bombards the town of Catavi in Bolivia
1954.- USA invades Guatemala
1958.- USA gives military aid to the dictator Batista in Cub
1961.- USA finances an invasion of Cuba(Bay of Pigs)
1965.- USA invades the Dominican Republic
1981.- USA intervenes in San Salvador.

Once in 1500 it was the pearls of a Venezuelan island called Margarita. In 1600 it was the ornamental gold of the Aztecs in Mexico, the Mayas of Central America, the Chipchas and Timotocuicas in Colombia and the Incas of Peru. In 1700 it was the gold and silver of gigantic mines at Guanajuato in Mexico, of Potosi in Bolivia, and Minas Gerais in Brazil. In 1800, the sugar plantations of the Carribbeam, Cuba, Santo Domingo, Barbados and Jamaica as well as the plantations of coffee and cotton of Brazil and Colombia and the nitrates of Peru and Chile.

But in 1900 technological development established new necessities. The raw materials needed by the new industries acquired a strategic value for the maintenance of the great cities. Once again Latin America was the "Pandora's Box" and from its prodigious soil rose the so-called strategic resources: petroleum, iron and bauxite from Venezuela; iron, asbestos, manganese, bauxite, and uranium from Brazil; antimony, tin and tungsten from Bolivia; lead, mercury, sulphur, zinc and petroleum from Mexico; lead, and zinc from Peru; oil from Ecuador and copper from Chile.

Both the raw materials and their destinations insofar as they concern the countries of the Andean Pact are quantified for 1977 in annexes N°18 and 19.

From annex N°18 "Andean Region's Main Exports products 1977" it may be appreciated that these products continue to be raw materials, and in annex N°19 "Andean Region's Exports Geographical Distribution 1977" we note that a significant diversification has not been produced and that market dependence is demonstrated by 34% going to a single market, the United States.

"The insolent foreign foot print has
profaned the national soil",

said the Venezuelan President Cipriano Castro at the beginning of the century, when the blokade by British Navy together with the Italian and German Navy in 1908

took the principal ports of this country(26).

The United States intervened as mediator and in 1909 President Castro was deposed, and a dictatorship which lasted 27 years sent Venezuela's oil riches to the United States. John D.Rockfeller met in Scotland with his colleagues of Royal Dutch Shell and together they shared out Venezuelan's black gold.

One year before his fall President Cipriano Castro had suspended relations with the United States and ordered the confiscation without compensation of all North American interests in the country.

His Minister of Defence General Juan Vicente Gomez, taking advantage of a foreign visit by President Castro, indicated to the Government of the United States his desire to resume relationships and bring to a successful conclusion the outstanding claims.

Castro was not able to return to the country and was accused of betraying his country. Eight days after the coup the Secretary of State of the U.S.government sent the Secretary of the Navy, George von Meyer, the following memorandum:

> "Department of State, Washington March 1909
> Huntingdon Wilson: from the declarations contained in the telegram from our Minister, you can see that Castro is expected to be arrested in Venezuela, under criminal accusation, in the event that he seems to intend to return there confident in his capacity to overturn the government, an eventuality which would be disaster not only for the Americans but for all the foreign interests in that republic"(27)

On 24th November 1948 the first democratic government in the history of Venezuela is destroyed. The ex-president Romulo Gallegos, from his exile in Mexico blames the United States for his overthrow.

"The Democratic Action party of President Gallegos planned to take over the Army and impose a Marxist government in Venezuela"(28)

Thus said Colonel Carlos Delgado Chalbaud, Head of the usurping junta a few days after assuming power, in conversations with Walter J.Donnelly, the Ambassador of the United States. Three years later, Delgado Chalbaud is assassinated and one of his comrades in the junta, Colonel Marco Perez Jimenez, is installed in power and once more another bloody military dictatorship gives away more oil concessions and promises the conveyance of Venezuelan iron to the Orinoco Mining Co.

In Venezuela as in the rest of Latin America, the search for guarantees in the supply and control of strategic raw materials, produces a succession of coups d'etat and military dictatorships, backed by the United States.

"Terrible forces have been unleashed against me"

Said Janio Cuadros on 21th August 1961 when he renounced the presidency of Brazil. Four days earlier President Cuadros had signed a decree restoring the iron of Minas Gerais to the National Reserves and annulling the illegal rights of exploitation which were owned by the U.S.enterprise Hanna Mining Company.

The Vice-President in Cuadro's government assumed power and while the courts decided on the turbulence thrown up by the decree of Cuadros, the new incumbent attempted to establish new possibilities for negotiation and direct sales of iron with European countries, including the Socialist ones, but in March 1964, the "bomb" of the Hanna Company exploded again and another coup d'etat finished the similarly progressive government of Joao Goulart(30).

During the years that followed 1964, Hanna Mining Company re-established itself and collaborated with Bethlehem Steel to increase the exploitation of iron.

Thanks to an open-door policy towards

foreign investment put into effect by the successive military governments of Brazil,an area of land in the heart of the state of Amazonas comparable in size to England has passed into the ownership of the United States,by way of purchases of Brazilian soil by North American business.

The conquest of the West of the United States from 1800, with missionaries of the Protestant Church teaching English in the Indian reservations is being repeated now in South America and in lands which supposedly have nothing to do with the territorial sovereignty and supremacy of United States.

The only difference is that the 20 missions which teach English to the natives of this area of Amazonas, also introduce contraceptive devices to the women, to avoid an increase of population in an area which, paradoxically, is one of the least populated in the world.

Together with the missionaries, an army of biologists, geologists, chemists, physicists and entrepreneurs,extract and evaluate the reserves of gold, silver, diamonds, gypsum, heematite, magnetite, thorium, bauxite, niobium, uranium, zinc, chrome and mercury, which previously had been detected in the region by the United States Government with the aid of the Air Force and NASA.

In 1973, the U.S. interests, allied to the copper business and what Anthony Sampson calls "The Sovereign State of ITT"(31)brought about the downfall of the Chilean President Salvador Allende.

In November 1981 Alexander Haig, the U.S. Secretary of State, in an interview with the New York Times said:

> "...military options being considered by the Pentagon are a blockade on Nicaragua and operations against Cuba,including naval exercises, a quarantine on the shipment of arms to Cuba, a show of air power and a general blockade"(32)

As we have seen, the recent history of the Latin American countries has been distorted by continuous aggression. It has been a history of political and economic manipulation, of military threats, of foreign intervention and exploitation.

During the last 60 years, the economic history of the countries of the Third World, which has been conditioned by the technological and political control of the United States, has been the history of dependence and anti-development.

For those whose land remains exhausted and whose economy lies in ruins it has been nothing but the road toward hunger and the international financial begging bowl.

The problem of underdevelopment and stagnation, in the form we have described, permits us now to analyse the phenomenon of technological dependence as the continuation of a process which, for Latin America, began 400 years ago.

3.2.2.- Technological dependence

It is a well known fact that the technological development which took place at the end of the last century and the beginning of the present one(1880-1915,a period considered by some authors as the second Industrial Revolution) permitted the explosive expansion of the industrial and mercantile activity of the United States and its international commerce.

Nevertheless it was not until after the Second World War that, with the exception of Standard Oil of New Jersey, the concept of the transnational corporation,as a business conceived world wide, came into vogue.

And it is this circumstance which in our opinion represents an important aspect for the concrete explanation of the process of formation of technological dependence,since the seeking of industrialisation by means of import substitution plays a significant part in this process; this seeking does not obey an action which is merely nationalist for the governments which take these measures, nor is this done behind the backs of the expansionary interests of the great corporations which for the moment control the Latin American markets

During the years after 1946, the overseas profits of U.S. companies turned out to be substantially greater than those which they received in their domestic markets. The result of this has been that between that date and 1963,the direct foreign investments of the United States were raised from 7,200 million to 40,600 million dollars(33)

The higher potential of the post war market began to be exploited on grand scale and in a new style: direct investment associated with the construction of plants developed with U.S technology.

"Foreign markets can generally be better exploited by a local operation than by exporting from the United States. An overseas plant can avoid tariffs and other barriers to trade, which impede the exports of this country",concluded a special article in "U.S. News and World Report"(34).

Before the Second World War, very few countries in Latin America showed traces of industrialisation. The British investments between 1870 and 1914(35), oriented basically towards textiles and foods, had generated an increase in the industrial sector in the so-called non-durable consumer products(cloth, skins, processed foods etc.),which by 1929 represented the following shares of the Gross National Product of the following countries:

Argentina.....22.8%	Mexico.....14.2%
Brazil.....11.7%	Chile..... 7.9%
Colombia..... 6.2%	

In the year 1929 and in accordance with the statement of Celso Furtado(37), the impact of the economic and financial crisis in the United States contributed to the deterioration of the already weakened process of industrialisation of these countries.

The collapse in the capacity to import,the contraction of exports, and the blocking of the international financial channels, created by the crisis, obliged the governments of these countries to adopt economic means which in the opinion of Furtado,began the process of import substitution.

By means of this process, the countries indicated achieved an expansion of their internal market for manufactures as a result of the manufacture and substitution of goods which they had previously imported.

With respect to this process Professor Maza Zavala is of the opinion that:

"It has been attempted to explain the process

> of import substitution in Latin America as being imposed by dificulties with balance of payments deriving from the persistent deterioration in the primary exporting sector of the economy.Although this could be the concrete historic circumstance of some South American countries as Argentina, Brazil, Chile, Uruguay,and Colombia, it does not have the significance of the principal determining factor,since the necessary condition for the initiation of such a process is, from the point of view of the laws of capitalism in underdeveloped countries, the formation and growth of a local market until it reaches a size where it represents the economic minimum from which it becames viable to establish some light industries, which can operate to take advantage of the already existing demand up to then satisfied by means of imports"(38).

For other countries such as Venezuela and Peru this process began at the end of the 1950s.

This form of industrialisation which fitted in with the plans of the expansion of the TNCs to which we have drawn attention before, not only signified the ruin of the embryo Latin American industry but in addition,has been the carrier of a new style of political control by the United States in her relationships with South America.

By 1965, the gross investment of the United States in Latin America reached 9,371 million dollars(39) of which 2,741 million corresponded to manufacture. A good part of this investment did not effectively leave the United States, because over and above the financial incentives which some countries such as Venezuela conceded to the companies which wished to produce in their territories, in many cases, the

patent rights, or the intangible Good Will of a brand or a name, constituted a considerable part of the import of capital of a transnational for the establishment of a subsidiary or affiliated company abroad.

The monopolistic conditions obtained by the total control of the patents on the manufacturing processes, machinery and equipment, conferred upon them a situation of pre-eminence over the Latin American industry, which saw itself pushed to one side or converted into the advocate of the interests of its powerful associate, by the impossibility of competition with the owners of the technology.

In this way, the TNCs began to operate in many areas in a monopolistic or at least quasi-monopolistic situation, achieving excessive profits. By the end of the decade of the 70s, the Department of Commerce of the United States itself, in one of its announcements, pointed out that the U.S.business installed in Latin America obtained an annual return of more than triple that which their parent companies received at home.

The criteria expressed with the aid of the historical review of the process of formation of technological dependence in Latin America leads us to expose with care the characteristics of this dependence, from the consideration that today there tends to exist a broad consensus in the sense of assigning to technology a key role in the contemporary explanation of social, political and economic evolution, pointing to the decisive weight which it bears in the general progress of the developing countries.

This circumstance and the undeniable fact that technology constitutes an indispensable resource for the survival of the modern world has, without any doubt, oriented the policies which Latin American countries have been implementing in the matter of development in this century.

Nevertheless, the great question which the search

for technology for development suggests, belongs to the ambit of the conditions for its negotiation.

In today's world, no country is autarchic in terms of technological development. Technological interdependence or technological commerce between industrialised states is an irrefutable fact. But when this interchange takes place between countries with deep inequalities in the levels of their economies, e.g. U.S.A and Latin America, and at the margin of true cooperation, the process of technological negotiation is converted from a transfer to a kind of quasi-rental of the technology implicit in the transaction, and consequently into a mechanism for generating dependence.

From this point of view, the industrialised countries which have devised a system for commercialising technology, based on the property rights in "know-how" which can be sold, encounter in the Third World not a market of buyers, but rather a market of "renters" of technology. This establishes a dependent relationship, "enthroned", in which technology plays a double role, a kind of useful article which in some cases is built as a "turnkey" factory and at the same time a means for perpetuating a relationship which allots the provider other additional advantages, within the scheme of capitalist production.

In the countries with a centralised economy, the in terchange of technology is effected in accordance with a scheme of integration promoted by the so-called Council for Mutual Aconomic Assistance -CMEA or COMECON, and since 1971 within what is called the Comprehensive Programme or Integrated Programme(40).It presents different characteristics.

If we observe the process of industrialisation of such countries as Hungary, Czechoslovakia, Roumania etc., in the context of their relationships with the Soviet Union since 1946, and compare them with the same process during the same period with countries such as Greece, Turkey and Latin America, in the ambit of their relations with the

United States, we shall note a difference not only in respect of the process of negotiation or technological transfer but fundamentally in the results of the implementation of this technology in respect of development.

Whilst the underdeveloped countries which have been negotiatingwith the United States and other industrialised nations since 1946 go on being underdeveloped and without sight of a technological "take off", those which use the socialist scheme of negotiation have achieved highly significant levels of technological development during the same period.

Hungary,for example,is a nation of 12 million inhabitants. Before 1950(41) she possessed a fundamentally agricultural economy.Nevertheless in the next 20 years she achieved a spectacular industrial development and already by 1970 had a Gross National Product of 16,000 million dollars and a per capita income of 1,534 dollars.

The example of Hungary is interesting if we consider that the major part of the raw material which she imports comes from the Soviet Union and her major market for manufactured products is also the USSR.

This relationship of interchange is rather as if Hungary were the United States and the Soviet Union Venezuela, that is to say, Hungary the developed country and the USSR the underdeveloped one.

At the margin of the political considerations and of the analysis of the benefits of the so-called "free world" for the developed countries, there is an evident fact, and that is that this small nation has achieved a technological development which no country in Latin America has achieved, including those with better natural, human and capital resources.

Of the technological achievements of these countries little is known in Latin America. From Hungary perhaps we know the "Icarus" motorbuses, but what we do not know is that

for 1978 in this field of industry, this country placed itself at the head of the principal producers in Europe with a production of a 12,800 units(42) higher than British Leyland(England) with 6,500 units, Daimler Benz(Germany) with 5,533 units, Iveco-Fiat-(Italy) with 5,249 units etc.

For a country which in 1950 began by producing only 170 units, this is significant enough.

The study of technological dependence is also found to be closely tied to the conditions of development of the technological infrastructure of the receiving country.

We have pointed out that technological dependence comes from abroad(when we speak of abroad we mean to refer to the so-called command levels of the international capitalist system),but we ought to clarify the point that there are countries like Japan and West Germany which even when they use a good deal of imported technology in their production, cannot be included in the list of the dependent nations.

These countries are simultaneously importers and exporters of technological services(43)as showed in the following table:

Receipts and payments for licences and patents (*)

		1973	1976
Japan.....	Receipts.....	82	175
Japan.....	Payments.....	661	799
West Germany..	Receipts.....	219	306
West Germany..	Payments.....	602	806

(*) million dollars.

The Soviet Union between 1920 and 1950(44) incorporated in its industrial development a high proportion of foreign technology, which helped to strengthen the bases of its own technological development.

In reality, all the countries of the socialist block use technology which comes from the capitalist states(45).

Between 1973 and 1976 around 133 agreements for technological cooperation have been concluded between East and West(see annex N°20).

Among these agreements which take the form of joint ventures, licensing agreements, cooperation in research and development; these examples stand out: Massey Ferguson Perkins Ltd, with the Agromet Motor Import of Poland, to produce tractors; The Control Data Corporation of the United States with the Commitee of Science and Technology of the USSR in an agreement for research and development in computer technology; Agreements with Singer of USA to produce sewing machines in Poland; With Olimpia Werke to produce typewriters in the USSR; and in general an extensive list, in which figure Nissan Motor, Toshiba, Phillips, Fiat, Volvo, Shell, Xerox, General Electric, DuPont, Lockheed and even ITT.

A similar situation is occurring increasingly in Mainland China, where the so-called process of modernisation put into practice by the government of Deng Xiaoping and the new Prime Minister Zhao Ziyang is opening the doors to a profound process of technological negotiation with the Western countries.

The experience of these countries demonstrates that if previous preparation on the part of the recipient nation does not exist, in the matter of selection, assimilation, development and control of the technology it is going to import, the capacity for negotiation is reduced to levels of such inefficiency that the excusing of direct investment as a"necessary evil" acquires significance.

The process of introduction of technological elements in Latin American economies present characteristics which, as has already been said, correspond fundamentally to the ambit of foreign direct investment, or to the establishment of "turnkey" plants by means of governmental contracting and finance.

No government or private entity in Latin America seems to have trespassed into the world of so-called industrial espionage, nor has it participated in the capture or purchase of brains, technicians, formulas or technological secrets which could signify advantages in their possibilities for development.

It would seem to be that not only technological information is the patrimony of the industrial countries, but also the unconventional methods of obtaining it.

Whoever said that there are laws which only the poor respect could have said at the same time that in the matter of technological information, there are also laws which only the underdeveloped countries respect,

> "The espionage connection is a reality. Many senior executives doubt that it is widespread until they realise they have been victimized. Sometimes victims never know they have been'had'" ,

points out Leonard I.Krauss(46) in a book published in 1979 and dedicated to the analysis of the extraction of computerised information.

Foreign direct investment constitutes a mode of operation which has allowed the transnational enterprises to use their own capital, and often that of the Latin American financial institutions to create affiliates or fully owned companies, or associates with national investors, for the commercialisation or manufacture of products made with their own technology.

Technology transferred in this way represents a sort of cost of usage, which includes the ownership of the process of manufacture, product specifications, trade mark, name of affiliated company, management system, training, patents, licences, and technical services.

This "cost of usage"(47) comes generally accompanied by a monopolistic action in the market, which permits the

enterprise a return in excess of the costs plus a normal profit,which in practice constitutes a sort of quasi-rent of the technology implicit in the process.

This apparent contradiction, between a business which controls its market and which at the same time accepts a high "cost of use" for its technology, is resolved by the evidence that when this business sits down to negotiate with the outside world as provider of patents and technological licences, this outside world is its parent house, so that when it pays its "fathers" for services rendered, it is paying with the money which deep down, belongs to the country in which it is operating.

The significance, then, of the system of technological imports(when the importer responds to the interests of the country and not of the TNC) depends on what will be done with the imported technology, and it is precisely here where other elements are involved, other elements which respond to the political orientation of the model of development followed, of the conception which is held in the political and economic ambit of development, and of the correct deployment of resources, human, natural and financial of the receiving country.

Technological transfer, and not dependence,confers significant advantages on the receiving country, when the former is used to increase or modify the country's internal processes, adapting to its own necessities, and preventing the transposition of or competition with other, already existing technological resources.

When the expectation of industrialisation is satisfied by the dependent or peripheral way, as is the case in Latin America, this exposes a combination of consequences both real and potential, which react negatively in the political and economic plane.

3.2.3.- Consequences of technological dependence

3.2.3.1.- Prices

The first of these consequences is seen in prices. It becomes extremely difficult to measure the exact total of the costs involved in technological importation, because of the fact that the payments for this concept take such diverse forms and mechanisms.

The payments for royalties and licences cover only a small proportion of the total cost. The cost of plant and machinery, salaries of foreign personnel, of intermediate goods, and expenses and the remission of profits themselves, represent together a considerable cost.

Also in these costs has to be included the so-called hidden transfer of profits, in virtue of which, the subsidiary enterprises of the TNCs which operate in Latin America, by reason of evasion of taxes and other means, pay to their own head offices an excessive price for the supply of intermediate goods and raw materials, and in the same relationship export to them manufactured products at prices below the norm.

The Confederation of the United Nations for Trade and Development(UNCTAD)(48) estimates that about 5% of the global value of the exports of the countries of the Third World(Asia, Africa and Latin America) and which represented a total of 1,500 million dollars in 1968, correspond to payments for patent concepts, licences, know-how, trade marks and technical and management services.

Equally, they pointed out that for the same year of 1968,the total sum paid for plant and machinery was 18,240 million dollars, and that the annual increment of the cost of what we have called the "use of technology"(patents, licences,know how etc.) would be 20%, reaching 15% of the total of exports in 1981.

This evidence induces us to think that by the end of 1981, the so-called "nations of the South" will have paid more than 54,000 million dollars for the concept of technological usage and will still continue to suffer from the consequences of a situation of "quasi-rental" for their technology.

Sadly we do not possess figures which will allow us to determine the sum of these distributions for the Latin American case. But one of these countries, Venezuela shows the following in a study on technological transfer by a group of investigators of CENDES(49):

> "The business remits high amounts for conceptual rights, utilities, over-pricing in imported raw materials, payments to managerial personnel and foreign technicians, technical assistance etc. It is estimated that such payments exceed 30,000 million bolivares(US$ 6,976 million) in the decade between 1960 and 1969".

This amount is truly considerable, if we appreciate that 70% of this quantity corresponds to payments made to US companies(US$ 4,883 million) -that is to say that, of the amount of US$ 9,371 which the United States had invested in all the countries of Latin America up to 1965, more than half of it was recovered in a single country four years later.

3.2.3.2.- Discouragement of creativity

The second of the consequences of technological dependence is the discouragement of the creative capacity of the receiving countries.

When technological transfer takes place between affiliated companies, the form of transfer is presented as a sort of private agreement between associates, and in which

one of them, the parent company, permits the other(the affiliated company) the use of its technology in return for an elevated contribution.

The circumstances which surround technological transfer between businesses only separated in geographical terms and accountable one to another(characteristic of direct foreign investment) and which negotiate at the margin of the interests of the receiving country, generate a picture of relationship in which the use of the patent plays a predominant role.

The system of patents was designed and established by the developed countries with the object of stimulating applied research, adding to the number of inventions, and protecting the rights of the inventors.

> "The patent allows to its possessor the possibility of restricting the diffusion of the invention, until such time as the inventor is able to obtain the benefits conferred by a short period of monopoly exploitation".

points out M.Kranzburg in "Technology in Western Civilisation(50).

Nevertheless, the patent, analysed as a means of technological commercialisation, has suffered a change in its structure of ownership. The majority of patents which are produced today do not come by the efforts of individual inventors. They have left this world, to become within the ambit of ownership of the great corporations.

The concentration of patents in the hands of a small number of firms confers upon them a situation of privilege and control of the markets in which they operate, especially in the underdeveloped countries where less than 1% of patents are produced locally.

This fact, protected by the legal support which is conferred upon them by Continental legislation in the form

of the Register of Intellectual Property and Patents,signed and respected by all the countries of the Continent,allows them to register patents which are never exploited, thus achieving the safeguarding of the market against possible local or foreign competitors(51).

In other words, what this means in plain language is that all the international regulation relative to the protection of so-called intellectual property, is for the direct benefit and protection of the industrialised countries.

In Latin America, and in accordance with an investigation carried out by Constantine Vaitsos(52), the registration of patents has done nothing but contribute,with legal support, to guaranteeing a better control of local markets and a substantial reduction in the possibilities for development of the industrial sector of Latin America.

In Peru for example, of 4,872 patents authorised between 1960 and 1970, in the electronics, textile, chemical, pharmaceutical, transport, mechanical engineering and food industries, only 54 were exploited.

In Colombia, of 3,513 patents registered, only 10 were exploited. This situation is repeated in the same way in the rest of the Latin American countries.

The mechanism introduced in the legal system of patents of the countries of the Andean Pact, in order to halt this situation, turned out to be insufficient and after long and costly legal and administrative process, the working teams which respond to the interests of the Pact, found themselves enslaved and neutralised by the great power of political and financial play of the TNCs.

All the mechanism of the system of patents, the privileged and monopolistic action which takes places through direct foreign investment, is translated into a disincentive for invention and creative capacity in the receiving country.

In Chile for example, 35% of the patents registered in 1937 were of national origin, nevertheless in 1967 only

5% were of national origin.

The patents of invention registered in Venezuela by Venezuelans, have continued to decrease progressively and those registered by foreign business (most of which are incidentally not developed in the country) have been increasing up to a point where they provide these foreign business with a complete monopoly in important sectors of the economy in this nation.

Of course, the production of patents of invention also is tightly linked to the structure and functioning of the system of research in science and technology.

In contrast with the scanty investment in areas of science and technology which is made by the developing countries, in the industrialised nations, the private sector and the governments invest gigantic sums in what has come to be called R & D (Research and Development).

To establish a means of comparison between countries in relating to the scientific effort which each one has achieved, a measure of investment, based on a percentage of Gross National Product of the respective has been devised.

In accordance with this measure, the industrialised countries invest between 2 and 3 per cent of their Gross National Product in R & D, whilst the developing countries find it difficult to exceed 0.3% of their own GNP.

If we analysed the figures showed by the "Guide to World Science"(53), of the totality of Latin American countries only five displayed data relative to the investment in this area.

For 1970, Argentina showed 0.28%, Mexico 0.13% Peru 0.25%, Venezuela 0.25% and only Cuba out of this group showed 1.2%.

Equally, the number of workers in science and technology(scientists, professional engineers,technicians etc.) registered by each country are as follow:

Argentina 10,820; Brazil 8,000; Mexico 3,665; Venezuela 2,056. and Cuba 11,820. The total amount invested by the previously mentioned countries appears to be US$ 100 million.

Thus, in 1970 Latin America disposed of 35,911 people dedicated to research, and had invested for this year 100 million dollars. If only for the purposes of comparison we estimate by the first arithmetic rule an annual increase(exaggerated)of 10% (at constant prices)for 1975, we would have a global investment for all Latin America of 150 million dollars and a figure of workers dedicated to research which would reach 39,911 people(calculating the wages of the workers at the low level of US$ 1,000 per month).

For the same year 1975, the United States had invested(see annex N°21) 32,100 million dollars and had 530,000 workers employed in scientific activities.

We can conclude from this comparison that for each US dollar invested in Latin America in science and technology, 321 are invested in the United States. And for each Latin American scientist there exist 16 North American ones.

Another country which has also made great investments in R & D is Japan. In an article published by the English magazine "Physics in Technology"(54) Japan appears to have invested, in 1976, US$ 15,900 millions, with 523,000 people working in the field.

But the increase in production and registration of patents as a consequence of development in science and technology unfortunately is not produced only by the increase of investment in R & D.

The symbiotic character of the relationship between science and technology is universally accepted.

> "Science without technology is converted into a sterile action, while technology without science is converted into something moribund" says D.J. de Solla(55).

Nevertheless, this relationship does not come about

in Latin America; in those countries, as everyone knows, the development of science and technology cannot be a policy of simple scientific investigation, studied in isolation and with its back turned on technological transformation of industry and agriculture.

All Latin American planners know the role of technology as an important factor for growth and development of the economy, but in spite of this the major part of the effort produced by our researchers is comprised of the study of problems or phenomena which only interest the developed world.

A publication of UNESCO "Science Policy in Latin America"(56) points to the circumstance that the majority of Latin American countries which invest in science and technology do so principally in the sector of basic or fundamental science and very little in applied research on the concrete problems of material well-being

The Latin American science is certainly a sterile science insofar as it refers to its community, it is more oriented to the enhancement of universal knowledge than bringing solutions to our "own" problems.

It would seem that seeking after individual recognition, participation in the so-called international scientific community, or contributing to the national prestige, impels our Latin American researchers to enlist in the race for the Nobel Prize instead of participating in the race for development.

But even if this were true, it would only be an additional consequence, which has to be added to the list, of those produced by technological dependence. This third consequence we designate:

3.2.3.3.- The isolation of science

Economically speaking, in the capitalist industrial

countries, the evaluation of the investment made in R & D is established when technological invention produced as a result of research has been commercially exploited(57).

There exists,then, a chain linking scientific research,(fundamental and applied) market research,invention (patents),development of a design, machinery or teams to produce it and the marketing or commercialisation of the new product.

The first link in the chain, the research and initial development, receives a relatively low proportion (5 to 10%) of the total cost required for the overall development of the technological innovation(see annex N°22).

This means that innovation and investment are very close together, from the point of view of the application of technology, to economic growth.

But investment always needs its return, which in our case is profit. This only is possible when a market, capable of demanding the new product or the innovation, exists.

So that, then, those who determine the investment in the development of new goods and with that the direction of the applied research for producing the technology are not the researchers, but ultimately, the conditions of the market. And it is precisely these conditions, which in the underdeveloped countries are characterised by a substitution of the demand for local technology by a demand for foreign technology, within a structural malformation of the economy, which generate the obligatory divorce between our scientists and applied science, forcing them into isolation, which means doing basic science unconnected with the country, and without any possibility of influencing its development.

We pass now to the analysis of the condition under which patents and licences are negotiated in contracts of technological commercialisation and how in this way, another consequence of technological dependence is reached.

This fourth consequence we have called

3.2.3.4.- The loss of control of national reality

The analysis of the agreements on technological commercialisation constitutes an element of judgement which is important for the study of the loss of control over local decisions.

One of the principal and most prejudicial clauses which is found in the majority of contracts is the one relative to the prohibition of exporting. This clause affects directly the advantages derived from the economy of scale, as a result of the under-utilisation of the capacity of the installed plant, which generally uses high technology, devised for the great markets of the developed countries.

The narrowness of the national markets of Latin America and the impossibility of exporting result therefore in higher production costs and in consequence higher prices at the consumer level, which, in their turn restrains the potential of demand, thus forming a vicious circle: capacity unused = high costs = high prices = insufficient demand = capacity unused.

For example, of 409 contracts of this type signed in Bolivia, Ecuador, Peru and Chile, 319 showed absolute and complete prohibition of exports and in the other 92, only export to certain countries was permitted

The major part of these contracts of commercialisation also contain clauses which oblige the recipient of the technology to import(usually from its own parent company) raw materials and intermediate goods which are required in its production process. When this clause does not figure in the contract, it is because the characteristics of the technology implied assumes the use of inputs with specific levels of yield which can only be supplied by the provider

of the technology.

Thus, in the same way that one clause forbids the recipient to export, another obliges him to import.

If we add to the contractual restrictions indicated other clauses(also very popular in such contracts) such as those relative to the volume of sales and production, to the quality and price of the goods to be made, to the hiring of personnel, and those which specify that any legal controversy between the supplier and recipient shall be settled in the courts of the supplier's country, we find ourselves face to face with a table of decisions of which the only local decision is whether to accept the terms of the negotiation, or not.

It is clear that as in almost every case the recipient of the technology is the supplier's own affiliated company, the terms of the agreement are, logically,accepted.

Of course, in this sort of "development game" those who participate and always win are the TNCs and the loser is always Latin America. Local minorities also benefit, corrupt politicians and fortunate advisers who apparently promote development do so from what is in reality a technological trap.

For some Latin American countries this "development game" results in dependent industrialisation under the conditions established from abroad by the consortia which possess the technology. We can appreciate this in terms of figures by analysing the "Statistical Bulletin N° 6" published by the central banks of the Treaty of Cartagena(58).

By the examination of some data contained in this bulletin we should be able to find the answer to our"process of industrialisation"by answering the questions: What do we export? and Who do we export to? What do we import? and who do we import from?

On page 208 of the Bulletin (see annex N°18)appears the "Exports of Important Products of the Sub-region" and

by examining them it is easy to see that all the products come from the primary sector of the economy, that is to say, raw materials. If there is any product coming from the manufacturing sector, it does not represent more than 1% of the total exports, and since they do not appear anywhere in the list, we must suppose they are hidden in the column of Other Products.

To whom do we export? On page 216 of the quoted Bulletin is displayed the geographical distribution of exports(see annex N°19) and as one might expect it is appreciated that the principal purchaser is the industrialised world.

The response to the question What do we import? can be found by studying the data on page 226 of the Bulletin (see annex N°23)under the designation "Andean Group's Imports 1977",we observe that for 1977, 99% by value of the whole imports of the group corresponded fundamentally to manufactured goods or chemicals.

And finally Where do we import from? On page 234 of the same bulletin appears the geographical distribution of imports(see annex N°24) and again we note that the largest percentage of imports come from Japan, the European Economic Community, and especially the United States.

In other words, for 1977 and after 30 years of "industrialisation" we continue to be, just as we were 300 years ago, fundamentally exporters of raw materials and importers of manufactured ones.

The text of a publicity notice taken from the Venezuelan paper "El Nacional"(59) of 1st June 1980, is very eloquent in typifying the true industrialisation and technological development achieved in Latin America. Part of the advert reads:

> "Venezuela is proud to possess the biggest assembly plant for country vehicles in South America.'To cars', a business with completely

> Venezuelan capital, has reached such a level of technological development that a 'Macho Toyota' rolls out of the plant every eight minutes 60 units a day". And later, the tale continues: "As the response of 'Tocars' to the increasing development of the country, in 1981 the extension of the Toyota plant which will enter into service in 1981 will increase the capacity to 87 units a day".

There is no doubt that with this type of "technological development" the "industrialisation of Venezuela is assured" and the interests of the Japanese economy will be "seriously affected".

The problem of the loss of autonomy in the matter of local decision-making needs to be analysed in the ambit of Latin American economies, and within the context of their relations with the industrialised world.

From this point of view, when we speak of the loss of control of national reality, we should be able to analyse this situation from the level where the particular lack of control is determined in each specific area of technological action(because of the dependence),to the general plane of the economy as a whole, in which each industrial sector should have its own importance and its specific meaning for development.

The absence of local control or the presence of foreign control in each sector is then translated into a global loss of control, or what amounts to the same, into a dependent economy, or one managed from abroad.

If we understand the meaning of political and economic independence as defined by H.R. Green(60):

> "Situation in which national institutions (including private business and interests groups) have the right, capacity and power to take and implement decisions affecting

the national economy and its component units without a de jure or de facto veto power being held by foreign individuals, enterprises, interests groups or governments".

We arrive then at the other aspect of technological dependence which is the possibility which entices whoever is in control to produce, from abroad, situations of psychological political and economic pressure with the effect of neutralising any decisions which although within the sovereign ambit of a government could damage the system of dependent relationships.

"After his call of yesterday I had news from Washington and a representative visited me this morning. He was the same man whom you encountered with Merrian some weeks ago.We discussed the situation in detail and he made suggestions based on recommendations of our representative on the spot and on analysis in Washington.The idea presented, with which I am not necessarily in agreement, is to apply economic pressure in accordance with the following suggestions:

1.- The banks should not renew credits or should delay in doing so.

2.- Companies should drag their feet in sending money,making deliveries,sending replies etc.

3.- The saving and lending companies there have problems,if pressure is applied they will have to close their doors, so creating greater pressures.

4.- We should withdraw all technical aid and promise no technical assistance in the future.The companies which could do so should shut their doors.

He was given a list of companies and it was suggested that we should approach them

> as had been indicated...The visitor added that money was no problem.He indicated that certain steps had been taken,but he was seeking additional help to induce an economic collapse. I discussed these suggestions with Guilfoyle".

This transcript is part of the text of a message cabled from Washington by the company ITT to one of its agents(61).

The cable message was sent on 29th September 1970 two years before the destabilisation of the government of the Chilean President Salvador Allende.

Recent history gives very significant examples of this type of pressure or 'technological blockade' with which countries that are technologically dependent find themselves menaced.

In all of them, the technological blockade has succeeded and its consequences have been disastrous for the economies of these nations.

In 1960 a process of destabilisation similar to that carried out in Chile began in Cuba, and in the midst of other problems faced by the Cuban revolution since 1959, such as the flight of human resources and of capital, and the very scarcity of natural resources, the technological impact produced by the blockade of the United States and her allies forced an almost total restructuring of the technology implicit in basic sectors of Cuba's economy. The initial efforts, to keep working or replace the machinery and equipment employed in transport, communications, electrification, the sugar industry, the liquor industry, in textiles and in general in all those areas where western technology was present, became extraordinary, and only Soviet aid and the tenacity of a people determined to advance prevented the total crumbling of the economy.

Another country where a process of destabilisation

by techno-economical means is now well under way is Iran. This nation, in the middle of a revolution which is different from the Cuban one, and not Marxist but Islamic, is trying to achieve its own scheme of development.

Without taking into account the analysis of the possibilities of succes of such a scheme, there is one certain fact and that is that the government of Ayatollah Khomeini, like that of Fidel Castro in the 1960s, has begun, in its own way, a process of social transformation which has placed it in confrontation with the interests of the developed capitalist world.

Within this world, led by the United States, once again the solidarity of international capitalism becomes manifest, and at the request of the USA, a summit meeting of the European Economic Community, which took place in Brussels, decided to carry out a technological and economic blockade of the government of Iran from June 1980.

The characteristics of this blockade and its impact on the Iranian economy is particularly important in the analysis which we continue to pursue, above all if we realise that in this case, we are dealing with a revolution which is far from being communist, but which in any case turns out to be, in principle, anti-imperialist and destructive of the dependent relationship which up to the time of the revolution was maintained with the United States.

In accordance with what we have already pointed out, if the present government of Iran does not receive technological assistance immediately or at least in a short time, all its production structure and its defences will be seen to be seriously affected and in consequence, in the medium term, a political and economic collapse could be produced, or the fall of the government, or a prolongation of the conflict through its extension to other areas of the system.

In any case,what the future of Iran will show us in the next few years, should serve to confirm the truth of

the thesis of the loss of control of national reality by the technological route.

In other words, if the Iranian revolution, in the terms in which it has been conceived up to now, succumbs, we believe that this will be fundamentally due to economic and political deterioration caused by the technological blockade.

When we point out that technological dependence constitutes the best and most sophisticated instrument of domination, deep down we are trying to establish a criterion in relation to the modern manner of relationships of domination which in Latin America began in the years of colonialism.

During the last 400 years of Latin American history, it is evident that the mechanism of this domination has been changing in accordance with historic circumstances and the style of the dominant nation, indeed, the very concept of the term has changed, in relation to the modern concept of power.

The mechanism of domination by the technological route is found to be much further from the 'apparent reality' that everyone sees, and is moreover a process which belongs to a different style, in which the factors to be controlled are different from those in the past.

This new style,which uses control of information as the central element of of its operations, has permitted the perfection of the mechanisms of dependence and domination.

The "technological style" as an expression of the so-called Third Industrial Revolution has structured a system which in practice permits a permanent vulnerability of sovereign nations and a constant neutralisation of the actions of government.

In this new structure, any Latin American nation which aspires to change its reality,has to be aware of the new role of the information as a key factor for change and to avoid sterile confrontation, revolution without control,and defeat.

REFERENCES AND BIBLIOGRAPHY CHAPTER III

3.- Underdevelopment: the real crisis

3.01.- Maza Zavala,D.F "Los Mecanismos de la Dependencia" Fondo Editorial Salvador de la Plaza Caracas,1973.

3.02.- ONUDI. "Pautas para la Adquisicion de Texnologia Extranjera por los Paises en Desarrollo".New York,1973

3.03.- Wolf,Eric "The Spanish in Mexico and Central America",Included in Economic Development and Social Change,The Natural History Press.New York, 1971

3.04.-Gunder Frank,Andre "Latin America:Underdevelopment or Revolution".Monthly Review Press. London,1974.

3.05.- Galeano,Eduardo "Open Veins of Latin America Five Centuries of the Pillage of a Continent".Monthly Review Press. London,1974

3.06.- National Maritime Museum. England.

3.07.- Gunder Frank,Andre "Capitalism and Underdevelopment in Latin America".Monthly Review Press. London,1969.p.285

3.08.- Venezuelan History.War to Death Decree.Simon Bolivar.

3.09.- Argentinean History. Jose de San Martin.

3.10.- Roche,Marcel "Descubriendo a Prometeo" Ensayos sobre Ciencia y Tecnologia en Venezuela y Latinoamerica.Monte Avila Editores.Caracas,1975.p.20.

3.11.- Hacker,Louis "The Course of American Economic Growth and Development".John Wiley & Sons,Inc.London,1970

3.12.- Alstine,R.W.Van "The Rising American Empire" Thames and Hudson.London,1973.

3.13.- Cairncross,A.K. "Home and Foreign Investment 1870-1913".Studies in capital accumulation The Harvester Press Ltd. Sussex,England,1975

3.14.- Marx,Karl "Capital", A critique of political economy.Lawrence & Wishart. London,1977.Vol.1 Page.19

3.15.- Jones,Peter "An Economic History of the United States since 1783". Routledge & Kegan Paul.London,1964

3.16.- Selser,Gregorio "Diplomacia,Garrote y Dolares en America Latina".Editorial Palestra Buenos Aires,1962

3.17.- Huberman,Leo "Man's Worldly Goods" Monthly Review.New York,1952

3.18.- Galeano,Eduardo Quoted book.

3.19.- Baran,Paul & Sweezy,Paul — "El Capital Monopolista" Siglo Veintiuno Editores. Mexico,1966

3.20.- Fleming,D.F. — The Cold War and its Origins 1917-1960".Allen and Unwin.London,1961

3.21.- Pividal,Francisco — "Bolivar: Pensamiento Precursor del Antimperialismo".Ediciones Casa de las Americas. La Habana,1977.p.148

3.22.-American Booksellers Association.Washington,D.C.10.6.63

3.23.- Schweitzer,R. — BBC 1 TV. "Uncle Sam's Backyard" London,10.7.80

3.24.- Jenkins,Robin — "Exploitation".The world power structure and the inequality of nations. MacGibbon & Kee Ltd.London,1970

3.25.- Boletin Estadistico Conjunto de los Bancos Centrales de los Paises Miembros del Acuerdo de Cartagena (BANCEPAC) Boletin N°6.Quito, 1979

3.26.- Rodriguez C,M — "La Administracion Fiscal Venezolana y el Bloqueo Portuario de 1909".Publicaciones de la Universidad Central de Venezuela.Caracas,1977

3.27.- Edsel,Carlos — "Los Intereses Imperialistas contra Castro.Article from the Venezuelan paper "El Nacional".Caracas,3.5.80

3.28.- Castellanos,R. & Palacios,R. — "La Crisis del 48 y el Derrocamiento de Gallegos".Article from the Venezuelan paper "El Nacional"13.4.80 See reference 3.01

3.29.- Galeano,Eduardo "Open Veins of Latin America" Quoted book.

3.30.- Parker,P.R. "Brazil and the quiet intervention" American University Publishers Group Ltd.London,1979

3.31.- Sampson,Anthony "The Sovereign State,the Secret History of ITT".Coronet Books. London,1976

3.32.- Blundy,David -Washington- "New York Times 6th November 1981

3.33.- Survey of Current Business.August,1964 included in Capital Monopolista by Paul Baran.Quoted book.

3.34.- U.S. News & World Report.1st Jun 1964

3.36.- ECLA "El Proceso de Industrializacion de America Latina".Anexo estadistico.

3.37.- Furtado,Celso "Economic Development of Latin America.Cambridge University Press London,1970

3.38.- Maza Zavala,D.F. "Los Mecanismos de la Dependencia" Quoted book

3.39.- Boorstein,Edward "The Economic Transformation of Cuba" Monthly Review Press.London,1968

3.40.- COMECON.Meeting N°25. Bucarest July 1971

3.41.- Countries of the World and their Leaders. Gale Research Company. Book Tower. Michigan,USA,1975

3.42.- Gooding,Kenneth "Leyland shares top place in European league" Financial Times Survey "Buses and Coaches".London,20.2.80

3.43.- Prentice,John "Japanese R & D".Included in Physics in Technology. Vol.10 N°4 London, July 1979

3.44.- Sutton,Anthony "Western Technology and Soviet Economy Development".Hoover Institutions Publications 1971.Stanford University Stanford.California,USA.

3.45.- Levcik, F. & Stankovsky, J. "Industrial Cooperation between East & West".Translation: Michael Vale MacMillan.London,1979

3.46.- Krauss,L. & MacGahan, A. "Computer Fraud and Countermeasures" Prentice Hall,Inc.New Jersey,1979

3.47.- UNO-United Nations Organisation "Principales cuestiones que plantea la transmision de tecnologia a los paises en desarrollo"Informe de la UNCTAD TD/B/AC.11/10/Rev.2 New York 1975

3.48.- UNO "Transfer of Technology" UNCTAD TD/106

3.49.- Soriano,H., Tirado,G.& others "Transferencia de Tecnologia" CENDES.Caracas,1973

3.50.- Kranzburg, M. & Pursell, C. "Technology in Western Civilization" Oxford University Press. London,1967.Vol 1 p.518

3.51.- UNO ""La funcion del systema de patentes en la transmision de tecnologia a los paises en desarrollo".UNCTAD TD/B/AC.11/19/Rev.1.New York,1971.

3.52.- Vaitsos,C. "The Process of Commercialization of Technology in the Andean Pact" Oxford Clarendon Press.London,1974

3.53.- Guide to World Science.Published by Francis Hodgson F.H.Books Ltd.London,1976

3.54.- Prentice,H.A Japanese R & D Quoted work.

3.55.- Solla Price,D.J. "The structures of publication in science and technology".In Factors in the Transfer of Technology. Edited by Gruber,W & Marquis D. MIT Press, 1969.p.91

3.56.- UNESCO "La Politica Cientifica en America Latina".Science policy study N°14 Paris,1969.p.14

3.57.- Jones,Graham "The Role of Sciences & Technology in Developing Countries".Oxford University Press.London,1971

3.58.- Boletin Estadistico de BANCEPAC,Quoted book

3.59.- El Nacional.Venezuelan newspaper.Caracas 1st Jun 1980

3.60.- Green,H.R. Included in Technology and Under-development.by Stewart,Frances. The MacMillan Press.London,1977

3.61.- Chilean Government "Secret Papers of ITT"
Published by La Secretaria de Gobierno
Revolucionario de Chile.
Santiago de Chile,1971

Edsel, Carlos

The Imperialist Interests Against Castro.

Los Intereses Imperialistas Contra Castro

Source:
El Nacional
Caracas 3.5.80

Al suspender la Alta Corte Federal y de Casación del ejercicio de la Presidencia de Venezuela al general Cipriano Castro el 17 de febrero de 1909, quedó consumado "legalmente" el hábil golpe palaciego tramado y ejecutado por J. V. Gómez y su camarilla, quienes sin disparar un tiro, ni tener que disolver el Congreso Nacional, ni enfrentarse al problema del reconocimiento diplomático de las naciones extranjeras, desalojaron del poder al líder de la Revolución Liberal Restauradora, acusado de "traición a la Patria, atentar contra los poderes nacionales, tratar de asesinar al general Gómez, encargado entonces de la Presidencia de la República, y homicidio intencional en la persona del general Antonio Paredes".

Como las relaciones diplomáticas entre Venezuela y Estados Unidos se habían suspendido en julio de 1908, a raíz de que el Presidente Cipriano Castro ordenara la confiscación de todos los intereses norteamericanos en el país y se negara a pagar indemnización alguna, J. V. Gómez se apresuró a manifestar su deseo de reanudar de inmediato las relaciones y ultimar satisfactoriamente todas las reclamaciones pendientes.

A tal efecto fue nombrado William W. Russel Enviado Extraordinario y Ministro Plenipotenciario de Estados Unidos en Caracas; quien una vez instalado en la ciudad envió al Secretario de Estado norteamericano Huntington Wilson, un informe evaluando la situación política imperante en nuestra capital, cuyo texto original se halla en el Archivo Histórico del Departamento de Estado en Washington, junto con cientos de legajos que contienen importantes documentos relacionados con nuestra historia política contemporánea, clasificados para entonces de secretos, y que arrojan nueva luz sobre la implacable persecución que sufrió Cipriano Castro por parte del gobierno norteamericano.

"Correspondencia del Ministro Americano en Caracas al Secretario de Estado. Legación Americana, Caracas, marzo 21 de 1909.

"Señor: Tengo el honor de informarle que he llegado a Caracas el 14 de marzo. De conformidad a las instrucciones del Ministro traje conmigo nuevas cartas credenciales para el general Gómez, a cargo de la Presidencia de la República, y con el propósito de presentar dichas cartas, solicité audiencia del Ministro de Relaciones Exteriores. Fui recibido por el general Gómez el sábado 20 de marzo, a las 4 p.m.

Confidencial: Fácil es observar que hasta el momento no se ha producido una completa reacción en contra de Castro. Casi todos los viejos seguidores de Castro se encuentran en Caracas o preparándose para venirse acá. El general Gómez es un hombre de buenas intenciones, pero absolutamente carente de educación o experiencia y en todo depende de sus consejeros. Hasta el momento lo ha hecho muy bien y ha inspirado confianza al revocar los odiosos decretos del general Castro. Su principal consejero y prácticamente el hombre que lleva el Gobierno, es el doctor Leopoldo Baptista, Secretario-General. Baptista es un hombre muy inteligente y muy ambicioso. Todo el mundo espera con gran ansiedad y gran preocupación la próxima sesión del Congreso, el 23 de mayo. Este es el mismo Congreso elegido por el general Castro y que era absolutamente controlado por él.

La Alta Corte Federal, de aquí, respecto del intento del asesinato del general Gómez, ha declarado procedente el juicio contra el general Castro, ordenando pasar los autos al tribunal en lo criminal para el correspondiente juicio y al mismo tiempo, declarando que Castro, de conformidad a los preceptos de la Constitución, quedaba en consecuencia suspendido de sus funciones presidenciales. En otras palabras, el general Castro ha sido sometido a proceso por intento de asesinato de Gómez y el tribunal en lo criminal está conociendo de la causa. El juez del tribunal donde debía incoarse la causa, reconocido amigo de Castro, fue aprisionado y todavía permanece en la cárcel, alegando el Gobierno que fue encarcelado por haber insultado a un funcionario del gobierno (?)".

Ocho días más tarde, el Secretario de Estado del Gobierno Norteamericano, dirige al Secretario de Marina, George von L. Meyer, el siguiente memorándum:

"Departamento de Estado-Washington, marzo 29 de 1909.

Huntington Wilson: Por las declaraciones contenidas en el telegrama de nuestro Ministro, usted podrá observar que Castro está expuesto a ser arrestado en Venezuela bajo acusación criminal, en tanto que él mismo parece intentar retornar allí confiado en su capacidad para derrocar al Gobierno, eventualidad que sería desastrosa no sólo para los americanos, sino para todos los intereses extranjeros en esa república.

El Ministro norteamericano Russel, como casi todos los políticos que para entonces rodearon y apoyaron a Juan Vicente Gómez, se equivocaría rotundamente a la hora de evaluar la personalidad, sagacidad y capacidad política, de aquel hombre destinado a ser el patriarca de los dictadores venezolanos. Y los intereses extranjeros que menciona el Secretario de Estado Huntington Wilson, fueron los que verdaderamente se encargaron de impedir el retorno del general Cipriano Castro a Venezuela, quien desde entonces fue sometido a estricta vigilancia por parte de las policías secretas de Alemania, Inglaterra, Francia, Holanda y Estados Unidos, como jamás se había hecho antes contra otra personalidad política de América Latina.

Reference N°3.01

C H A P T E R I V

4.- Transnational corporations and sovereignty

"Transnational corporations may attenmpt to exert influence on the host country's political system by actively supporting or opposing the Government,or particular persons and groups of the country".

United Nations.Commission on transnational corporations. Fourth session May 1978. E/C.10/38 - E.78.II.A.5.p.74

4.1.- What does sovereignty mean

In etymological terms and in accordance with Klein's Comprehensive Etymological Dictionary of the English Language (1),the word sovereignty comes from the medieval Latin word "superanus" which means leading chief and is a word which,in its turn comes from the word "super" which in Latin suggests above, over, and "soprano" which like a variation of "sovrano" means the highest, the supreme.

The Oxford English Dictionary(2) defines it as something which holds supremacy, rank or authority over others. A superior, a governor. And incidentally, it also considers sovereignty the authority of a husband in relation to his wife.

For the Dictionary of Social Sciences edited by J. Gould and W.Kolb under auspices of the United Nations Educational, Scientific and Cultural Organization(3)sovereignty denotes: a.- The authority to make and amend law conferred by the rules of a legal system; b.- The political or moral authority of the state ; c.- The effective source of or influence upon the exercise of political or legal power; d.- The independent legal or moral status of a community.

In constitutional law and political science sovereignty may be defined as the legislative authority defined by a constitution from which all the rules of a legal system derive their validity and by whose action all the rules may be amended or the entity or collectivity in whose name a constitutional system is promulgated.

In international law and international politics it is used to denote the independence or autonomy of a state in relation to other states.

But for the purpose of this work, the definition which interests us most is that which applies to the field of political economy,where it refers to the paramount power of the people of a nation state over both its internal and external affairs,that is the right to refuse to accept any other authority over its own affairs, which also signifies self-determination and free choice of economic policies which it considers to be most convenient for the achievement of its objectives.

Sovereignty thus conceived, nevertheless, is the object of severe criticisms. It is believed that the concept of sovereignty is out of fashion, that modern states no longer function as a political unity or as Werner Levi pointed out in"International Politics Foundations of the System"(4):

> "The mutual penetration of states or their integration are no longer merely foreign policy devices -bad or good- but almost inevitable consequences of advanced technology. The linkages between the internal and external politics of states are such that the division aimed at by the principle of sovereignty becomes virtually impossible".

This view also seems to be supported by the violation of the principle of what in terms of sovereignty is considered "Territorial sovereignty". This is the right of the State to control or safeguard its national frontiers by its own military means. The cases of Germany and Japan, where the control and defence of the territories of both countries seem to be in the charge of other States would be a modern example of the violation of this principle.

For many states planning integration involves,in certain cases, the elimination of its frontiers rather than their protection,at least insofar as economic and defence relationships are concerned.

Also prestige, reputation, or the so-called

"National Honour", have become secondary to the analysis of sovereignty. More important than honour for some nations would be the political and economic implications of any intent to rescue the lost honour. The case of the kidnapping in Iran of United States Embassy personnel in 1980 would be a good example of this situation.

Nevetheless sovereignty in the form which we are trying to analyse in this chapter would allow us to affirm that in spite of the circumstances which at present tend to negate the feasibility of its implementation,we believe it should be taken up again and analysed as an important element not only for its contribution in the explanation of the economic stagnation of some countries of the Third World, but also, for its aid in the formation of government policies for development in those nations whose main problems in decision making are how to face the increasing power of the transnational corporations(TNCs) and their impact in terms of sovereignty.

It is said that sovereignty without power is nonsense, and consequently we should deduce that only the nations capable of concentrating or demonstrating power have the right to enjoy sovereignty,but we have also pointed out that nowadays the natural way to power is more a function of control of information than of control of the resources or of the traditional instruments of power(natural resources,capital and labour) and how technology is converted into the key factor for the control of information.

In other words the control of information is converted into a problem of national sovereignty, and the control of technology possesses not just an economic value, but also a political value converting itself into the fundamental platform for the exercise of power.

In chapter III when we showed that the loss of control of national reality constituted one of the consequences of technological dependence, we also analysed the role of

the TNCs in the control of this technology, which logically and in accordance with what was indicated above, permits us to establish a relationship which we consider mainly valid for the Third World and which we would enunciate thus: Seemingly, in peace time the sovereignty of the government of a nation state ends when the loss of control over its information and know-how occurs.

This affirmation obliges us to analyse what could be the link between TNCs and the trilogy sovereignty, information and technology, from two points of view:

1.- Within the context of the international political system (we shall call it:TNCs within the international political system).

2.- Within the specific ambit of its behaviour in a technologically dependent state(we shall name it: TNCs within the technologically dependent states).

4.2.- TNCs within the international political system

First of all we would like to make clear that this analysis,even if it is not in great depth should nevertheless be oriented fundamentally towards a study of the international political system of the so-called capitalist world and as an extension of the consideration which we have given to the point called "Information a new factor of power" which we included in chapter I.

While it is impossible for conceptual as well as methodological reasons to determine precisely the impact of the TNCs on the international political system, it is important in this plan to identify ways in which TNCs can affect the sovereignty of the states where they operate(host-states). The role of TNCs as foreign policy conduits is pointed out by David H.Blake(5):

> "There is the much talked about fear with some justifying examples that multinational corporations may serve as conduits for parent state foreign policy actions. There is the example of US government efforts to hinder the development of a French nuclear force by prohibiting IBM from selling needed equipment. Certainly the well-known ITT-CIA case regarding the Allende Government in Chile heightens the fears and suspicions that multinationals may be the vehicle for U.S. foreign policy efforts".

Sovereignty as a principle is laid down in Article two of the United Nations Charter:

> "The Organization is based on the principle of the sovereign equality of all its Members".

Nevertheless, within the international political system the relationships which are established between the

developed and underdeveloped economies present special characteristics in the context of sovereignty. In these relationships sovereignty holds sway in one sense only and that is it exists in some countries at the expense of its deterioration or non-existence in others.

The formulation and execution of foreign policy in the industrialised countries acquires a key content in the maintenance of this relationship,given that, by representing an outline of the strategic character of what the state desires in relation to its own interests, this necessarily means the central expression of its economic behaviour as a capitalist state,which is: expansion.

This expansion, as we have analysed in the course of this work, is only possible at the expense of the political and economic submission of those nations towards which they are also directing their foreign policy.

Thus, the execution of foreign policy of Western industrialised nations could acquire a content of subjugation when it is oriented towards the nations of the Third World, making the principle of sovereignty take up a purely formal character, since, substantially the principle loses validity when for these countries there remains no alternative within this scheme but to act under the permanent pressure of the international political system.

In the international political system, as Werner Levi establishes(6):

> "The inherently, directly and undoubtedly political processes can be broadly categorized as diplomacy, propaganda and pressure.All international political processes fall into one of these categories" and later he points out: "And because making political decisions effective is virtually always a function of power, diplomacy, propaganda and pressure are tools of power. They are the transmission

belts through which one state applies its power upon another".

Of the three categories indicated by Levi, that which is most interesting for us to analyse is pressure; it interests us to investigate the contemporary methods used to manipulate or exercise this pressure and the role which the TNCs assume in perfecting this process.

It is clear that when one talks of external pressure, one accepts the politico-formal scheme of pressure of one state upon another, and that theoretically in the formulation of political decisions it is assumed that such pressure is not due to the intervention of the TNCs and that is simple because their interference within this scheme does not concern them because they find themselves outside the authority structure of the state.

However, the facts tell us something else, and when we analyse the modern means for exercising pressure, we find that increasing technological development has imposed a different way of doing things, and the military resource as the traditionally valid and formerly exclusive method by which a state brings pressure to bear has been replaced. In its place, besides the ways of technological pressure we already showed in chapters I and III, a new way has come into play: the action of many international organizations which have been created for the regulation of economic matters, from trade to currency values. These organizations tend to regulate the world economic behaviour, seemingly on behalf of the interests of the TNCs.

Alongside these organizations, such as the International Monetary Fundation, or, for the Latin American case, the Interamerican Development Bank, the TNCs have an important role as participators in the formulations of the policies of these organizations. If we can remember the participation of the IMF before and after the elections of 1980 in Jamaica(7),(8) then we can find a good example of how

these organizations can make use of economic tools as political instruments.

The influence of the TNCs in the formulation of foreign policy is an undeniable fact, the mechanism which allows them to manipulate the decision-making process at the political level is constantly revealed in the elaboration of this policy. The conclusions which we presented in chapter I are clear examples of this fact.

The participation of the TNCs in the execution of foreign policy is also an irrefutable fact. The processes which allow them to manipulate the economies of the host countries through the direct or indirect control of key institutions, in commerce, industry and finance are shown in the execution of this policy. The many examples and arguments put foward in chapter III provide a convincing demonstration of this participation.

Some authors and analysts of international politics try to deny the role of the TNCs as participants in the formulation and execution of the international policies of the developed states.

There are those who try to attribute a non-national character to the TNCs, even pointing out that they might even be able to reach a point where they join the United Nations Organizations, and enjoy the same prerogative, rights and privileges as this Organization confers on its member States.

And as Wayland Kennet indicates(9):

> "There are even those among the leaders and philosophers of the TNCs(one of them, George Ball, former undersecretary of the US State Department)who believe it will be possible to see the first appearance of a supra-national world order in which the conflicts of nationalism would be superseded by an international organization for production regulated by the impersonal motive of profit".

According to Ball, the TNCs are the means for achieving the objective of a new order, including the demise of the nation state in favor of a supranational government guided by the TNCs.

This concept of the TNC as an organization of the World and not of one country in particular, which mobilises its interests and technology in the places which it considers most convenient, and dissociates itself from the foreign policy of any state,as even some Latin American writers affirm(10), appears implausible.

We know that the internationalism of these corporations only functions at a level which has no other explanation,which can only be expressed in accounting and administrative terms as costs and benefits. However, it doesn't mean that the industrial base of countries like United States will be undermined and narrowed by its corporate investments abroad and the people of this country will wake up some day and say: "Oh my God we ran out of jobs, the runaway investors from Wall Street have sent all the money to the Third World and now the Brazilians, the Taiwanese and the people of South Korea, Hong Kong and Singapore are enjoying our technology and our money"

The effects of TNC investment upon world trade, the U.S. balance of payments, domestic employment and transfers of technology were studied by the U.S. Tariff Commission at the request of the Subcommittee of Finance(11). That study found that all of the consequences of TNCs' investment abroad were favorable to the United States. Such investment made a large positive contribution to the U.S balance of trade and payments(see annexe N°25).

Nothing would be more convenient to a TNC than to place itself under the protection of a powerful State and enjoy the advantages of its influence in its own profit.

4.3.- TNCs within the technologically dependent states

Within the scheme of operation of those economies which are strongly dependent on foreign technology, the link between TNCs, information and technology and its impact upon sovereignty show characteristics which are very special. In those countries which we have placed within the most advanced stage of underdevelopment,(see chapter III-technological dependence), the level of deterioration of their sovereignty, we believe, follows a proportional relationship to the participation of foreign technology uncontrolled by national interests.

We know that to establish this proportional relationship does not turn out to be easy, even less when it implies the determination of a measure of information expressed as a proportion of the control of the technology implicit in the productive process of a country.

Nevertheless, within the complex mechanism which underlies the economic activity of a nation, there exist elements clearly measurable. In our analysis we shall only take those which act specifically in the area of production of goods and services.

The table below shows indicators of foreign participation in selected industries in some Latin American countries and in selected years :

Estimated percentage of foreign share of:

Year	Country	Chemicals	Rubber	Iron-st.	Non-Elect.	Elect.	Motor.V
1969	Argentina	37(0)	75(0)	....	82(0)	33(0)	84(0)
1976	Brazil	51(0)	44(0)	61(0)b	55(A)b	33(A)b	100(0)
1973	Mexico	67(0)	84(0)	37(0)	31(0)	63(0)	...
1969	Peru	67(S)	88(S)	...	25(S)	62(S)	...

Source: (12)

Note: A= assets, 0= output, S= sales.
b= based on the 5,113 largest non-financial TNCs

As we can see, almost all the industrial activities shown in that table are under TNC control with parent companies outside these countries. The criterion usually employed by the United Nations Centre on Transnational Corporations to determine the control is according to the Balance of Payments Manual(13) which suggests as criterion of control, the ownership by a closely associated group of 25 per cent or more of the voting stock of the enterprise in which the investment is made.

So if we can identify and measure the participation of foreign interests in each industrial activity and express it in terms of foreign control over shares, why can we not do the same by using a different criterion?

In other words, if so much participation by TNCs can be determined as well as the technology in the productive process, it would then be possible to establish a differentiation between the production of goods and services controlled by local interests and those which would be within the ambit of direct or indirect control of foreign interests.

The criterion employed to assess this separation would not be a function of the ownership of the shares of the enterprise, but of the control of the technology implicit in the productive process of that enterprise, so that by these means a business with national capital, but which would not be capable of assimilating and getting under control the technology which it used in its process, would be considered to be under the indirect control of non-local interests.

The concept of control over technology must be understood as a process by which any enterprise which uses foreign technology can keep running without any supply from abroad.

Since this point of view, and again making reference to the table already shown, when we said for instance that 37% of the chemical industry of Argentina is under control of foreign interests, we ought assume that the other 63% of

of this output is under control of Argentinian interests,But the question is: have they actually absolute control over their output?

To know that and according to our view, we would have to identify in this particular example how many enterprises are producing this 63% of chemical goods and how many of them are in fact able to control their technology.

Another example comes from the pharmaceutical industry. In this particular area, which incidentally shows very high levels of foreign control in underdeveloped countries (see annexe N°26), a study carried out by L. Schauman: "Pharmaceutical Industry Dynamics and Outlook to 1985"(14) indicates that 88% of the pharmaceutical market in Venezuela in 1975 was under foreign control and the other 12% was held by Venezuelan enterprises which showed heavy dependence on foreign technology supplies.

That is to say then that in this example there is 88% of the market under foreign direct control and the other 12% under foreign indirect control.

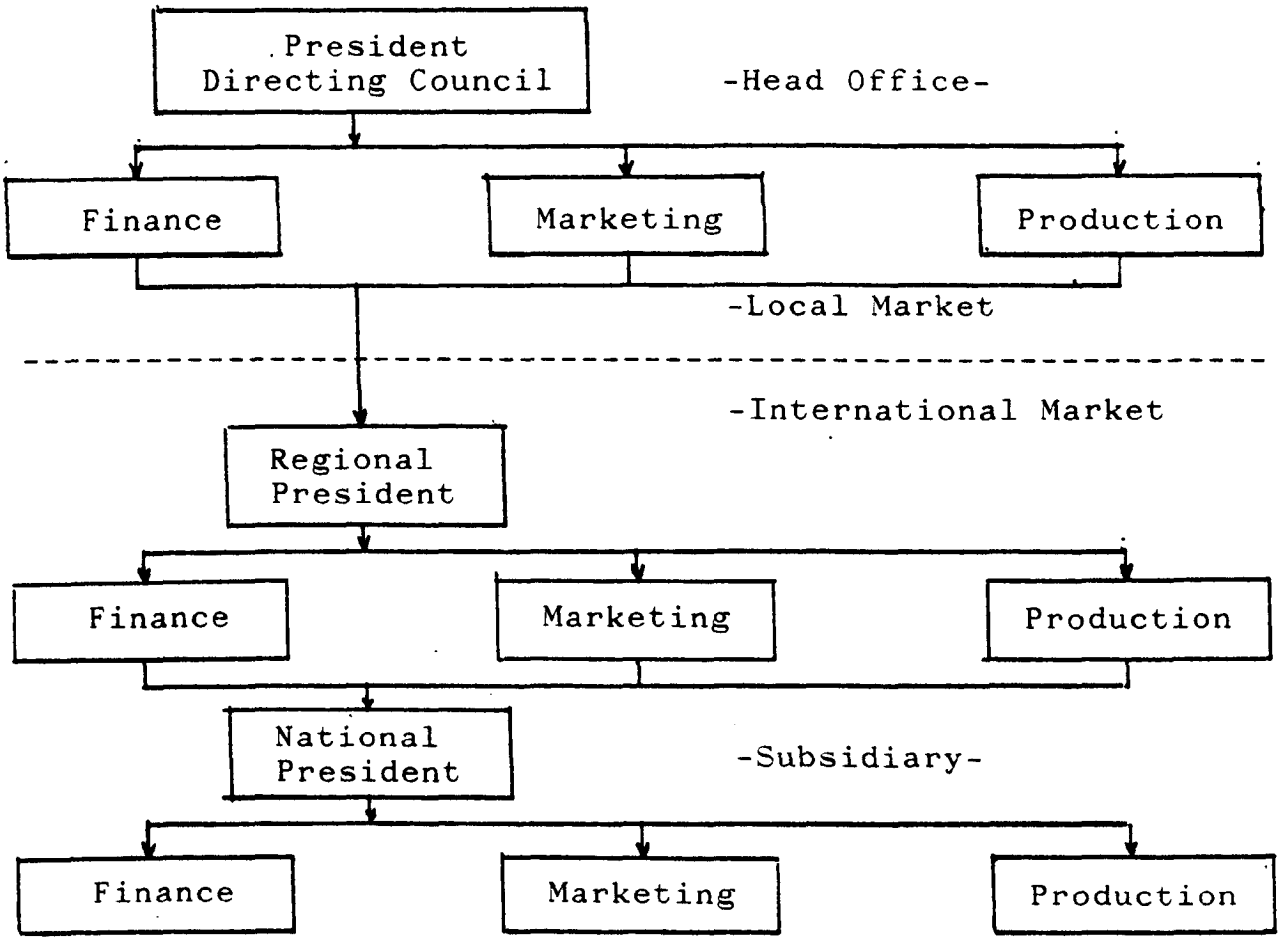
Now let us analyse what happens in terms of information with the subsidiaries under TNCs direct control.

The TNCs possess an extensive system of communication for transmitting routine information, which apparently possesses no political or strategic value.

The progress and results of their administrative management are communicated by various channels which run from simple correspondence sent by international mail to the sophisticated communications by electronic mail(15) or teleprocessing via satellite.(16).

The structure of relationships between the head office of a TNC and its subsidiaries takes different forms in accordance with its size and the economic area in which it operates. We present on of these structures in the following diagrams:

see next page.



In this structure the information flows in two directions: one descending (instructions, know-how,publicity support,technical support, administrative support etc) which comes from the President or international directors(finance, marketing and production) to the base of national subsidiaries, and, and the other upwards (reports, statistics, balances, market studies etc.) which goes from the national subsidiaries to the international directors through the regional President.

The levels which exist between the top and the base or periphery of the system establishes what is called the "organizational distance". According to the writing of Michael Brooke in his book "The Strategy of Multinational Enterprise"(17), information circulates across the organizational distance subject to a mechanism which should be rigidly adhered to, and making use of procedures which guarantee that communication flows completely and at a speed

compatible with that at which the activity of the subsidiary occurs.

The information so transmitted constitutes an analytical description not only of the microeconomic behaviour of the organization, but in addition its interaction within the general context of the economy in which it operates.

Between the balances and the statistics submitted there exist studies concerning market conditions, the trends on supply and demand, the forecasts of sales and receipts both in short and long term, technical studies referring to location, production, availability and price of raw materials, economic studies, sociological studies, etc., and, the most important, the detailed analysis of the possible impact of political and economic decisions by the local government on their particular interests. In a word, a permanent, "X-ray", almost "live" of what is happening in the economic area in which they are involved.

The information collated and submitted by the subsidiaries to their head offices often exceeds what they particularly need for their own operations.

"We are compiling statistics for headquarters far in excess of those needed here for practical operations" said a British executive in a letter which he sent to his Head Office in London(18).

The significance of the transmisssion of information by we have called the "transnational route" constitutes an importantaspect for the study of sovereignty. This information, analysed in isolation, does not present apparent risks for the country which produces it, but when it is processed and analysed globally and in the context of the phenomenon we are investigating, it permits the prediction of reality from wherever it comes, acquiring in this way a political and strategic value.

From this point of view this kind of underlying value of information which is produced as a consequence of

the production of goods and services and by those enterprises which are under foreign control,both direct and indirect,must be taken into consideration by any government which wants to face the power of the TNCs and for those who inside the Third World are working for the formulation of policies for development,but are aware of the vulnerability of the politico-economic decisions which will have to support these policies.

The effectiveness of the direction and control of an economic policy, which for the Third World countries are devised in response to the objectives of development,should depend on what Manea Manescu describes in his book "Economic Cybernetics"(19) as the management of the economic process.

In accordance with Manescu this management should be a function of a dynamic executive process of decision-making on the daily happenings in micro- and macro-economics of the country. But for this to be possible he points out, it requires the construction of a cybernetics mechanism for collection and permanent evaluation of the information produced for this micro- and macro-economic activity.

This mechanism, which in the industrialised countries is implemented with sophisticated cybernetic models and with the aid of data-processing systems, is lacking in those countries which we have classified in the most advanced phase of underdevelopment, and as a consequence of this, the gigantic volumes of information which the very dynamics of the execution of development plans generate, not only is not controlled in an efficient way, but also,by taking flight through the transnational route is converted into information for input into the international political system.

To illustrate the way in which the information flows towards the international political system, we are going to simplify the process of political and economic relationships maintained between the international political system and the underdeveloped countries.

Let us suppose that such relationships are held

mainly between two entities and in this case they are only two countries which are United States and a Latin American country, say for instance Venezuela.

Within the international political system these two countries have their specific economic and political relationships; from them,we are going to take only those relationships acting in connection with the production of goods and services.

Now let us call the relationships between these two countries"The Continental American System"(CAS).

Who within"CAS" actually owns the technology or holds a substantial portion of the equity share capital of the enterprises which produce the goods and services to supply the Venezuelan market?

Answering this question and having a precise idea about who they are, we have examined a wide range of source material including press coverage, information from Venezuela's Foreign Investment Superintendent (Superintendencia de Inversiones Extranjeras)(20),United Nations publications(13), and Dunn & Bradstreet directories(21),(22),(23),(24).

In this examination, all the enterprises have been classified by country of origin and in alphabetical order of parent company name.

The outcome is shown in annex N°28 and from it we can observe that the distribution of companies by country of origin is as follow:

Country	Number	Percentage of total
1.- United States	380	65.51%
2.- United Kingdom	40	6.90%
3.- W. Germany	27	4.67%
4.- Netherlands	24	4.15%
5.- Italy	18	3.10%
6.- Japan	17	2.93%
7.- France	15	2.59%

8.- Canada	14	2.41%
9.- Sweden	13	2.24%
10.- Belgium	11	1.90%
11.- Switzerland	7	1.20%
12.- Spain	6	1.03%
13.- Denmark	5	0.86%
14.- Australia	1	0.17%
15.- Austria	1	0.17%
16.- Finland	1	0.17%
Total.....	580	100.00%

If we classified all these firms into the main industrial sectors(Primary,Secundary and Tertiary) and if we codified them by type of industrial activity according to United Nations International Classification Standard(ISIC) (see annex N°28),then, we could conclude that there is no industrial activity in Venezuela outside the transnational corporations'interests.

Five hundred and eighty firms of which 66% are U.S. parent companies have taken over directly or indirectly almost all the industrial sectors as far as economic information is concerned.

The Continental American System which we describe in the diagram N°1,shows the leak of this information through the transnational route and how such information flows and turns itself into an important input in the decision-making process of the foreign policy of the United States.

As we can see, the TNCs inside the technologically dependent states become a means for the leak of economic as well as political information.

We know that to try and stop the flow of such information within the "CAS" could be an impossible task.

However,if we must to induce changes towards development, while accepting the rules of the TNCs'game, then, in a democracy, we must be aware of how important

Diagram N°1 Page.182

THE CONTINENTAL AMERICAN SYSTEM

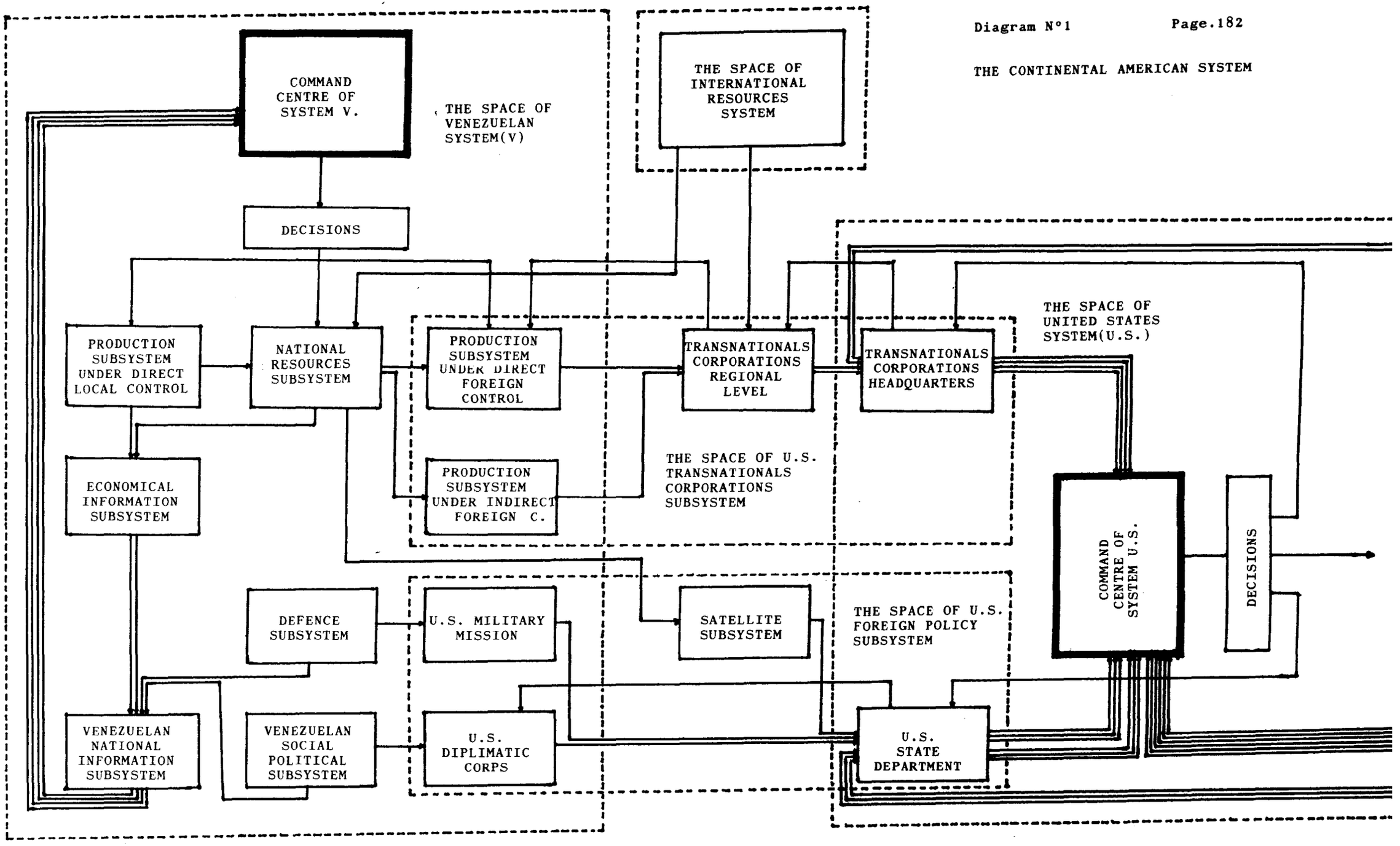


DIAGRAM N°1

it is to develop a pragmatically effective information and control system. As mentioned in the introduction, such a system must be robust and adaptable and should provide reliable information relevant to the needs of decision makers at all levels in the nation without producing information overload.

A pragmatic information system such as this must be able to interact with the data flows of the "CAS" and provide outputs that allow the nation to monitor and control events-to support, and allow it to develop, its strategy of sovereign actions in dealing with the TNCs.

REFERENCES AND BIBLIOGRAPHY CHAPTER IV

4.- Transnational corporations and sovereignty

4.01.- Klein,Ernes — "A Comprehensive Etymological Dictionary of the English Language". Elsevier Publishing Company. London,1966.p.1478.

4.02.- Oxford U.Press — "Oxford English Dictionary" Oxford University Press. London,1961.p.488.

4.03.- Gould,J. & Kolb,W. — "A Dictionary of the Social Sciences" Under the auspices of the United Nations Educational,Scientific and Cultural Organization.London,1964.

4.04.- Levi,Werner — "International Politics Foundations of the System".University of Minnesota Press.Minneapolis.USA,1974.

4.05.- Blake,David — "Implications of Multinational Corps. for International Politics"Included in Multinational Corps.and Government. Edited by P.Boarman & M.Schoolhammer. Prager publisher.New York,1975

4.06.- Levi,Werner — Quoted work.

4.07.- James,Canute -Kingston- — "Secret IMF talks anger Jamaica" Financial Times,London,14.10.80. See reference 4.07

4.08.- Tonge,David
-Washington-
"IMF set to lend Jamaica $566m"
Financial Times.London,11.11.80.
See reference 4.08

4.09.- Kennet,Mayland
"Sovereignty & Multinational Companies"
Prager Publisher. New York,1975

4.10.- Bufalo,E &
Paredes,E.
"El Pensamiento Critico Latinoameri-
cano".Ediciones Nueva Sociologia.
Caracas,1978

4.11.- Boarman,P. and
Schoolhammer,M.
Editors.
"Multinational Corporations and
Government".Prager Publisher.
New York,1975

4.12.- Sabolo,Y. &
Trajtenberg,R.
"The Impact of Transnational Enterprises
on Employment in the Developing
Countries".R.Newfarmer.Geneva,1976

4.13.- United Nations
"Transnational Corporations in World
Development: a re-examination"
Commission on Transnational Corp.
fourth session 15-26 May 1978

4.14.- Schaumann,L.
"Pharmaceutical Industry Dynamics and
Outlook to 1985".Menlo Park,Stanford
Research Institute.1976 table 3

4.15.- Dunne,Nancy
-Washington-
"U.S.Postal Service switches into
the electronic age"
Financial Times.London,17.11.81
See reference 4.15

4.16.- Betts,Paul
Hargreaves,Ian
-New York-
"Satellite Business Systems under
way"."Satellite channels auctioned"
Financial Times.London,18.11.80.and
10.11.81.See reference 4.16

4.17.- Brooke,M. & Remmers,H. "The Strategy of Multinational Enterprise,Organization and Finance" Longman Group Ltd.London,1970

4.18.- Brooke,M Quoted work page 54

4.19.- Manescu,Manea "Economic Cybernetics" Abacus Press. London,1980

4.20.- Superintendencia de Inversiones Extranjeras.Lista de corporaciones registradas.Caracas,1981

4.21.- Dun & Bradstreet "Who owns Whom United Kingdom & Republic of Ireland" Dun & Bradstreet Ltd.London,1981

4.22.- Dun & Bradstreet "Who owns Whom Australasia and Far East".Dun & Bradstreet Ltd.London,1980

4.23.- Dun & Bradstreet Who own whom Continental Europe" Dun & Bradstreet Ltd.London,1980

4.24.- Dun & Bradstreet "Who owns whom North America" Dun & Bradstreet Ltd.London,1981

Reference 4.07

Financial Times 14-10-80

Secret IMF talks anger Jamaica

BY CANUTE JAMES IN KINGSTON

THE RIFT between the Jamaican Government and the International Monetary Fund has widened after disclosures that officers of the fund held discussions last June with Mr. Edward Seaga, the Jamaican Opposition Leader.

Mr. Hugh Small, the Finance Minister, has said the Government was not informed of the talks between Mr. Seaga and representatives of the Fund's Latin American and Caribbean division. He has sent a letter of protest to M. Jacques de Larosiere, the Fund's managing director.

The Government of Trinidad and Tobago has also protested to the IMF about the talks with Mr. Seaga, and according to a statement from the office of Dr. Eric Williams, the Prime Minister, the IMF has apologised to the Jamaican Government.

Dr. Williams is the longest serving head of government of an independent Commonwealth Caribbean country and is regarded by many, particularly in Trinidad and Tobago itself, as the senior statesman of the area.

Trinidad and Tobago is also the richest country of the Commonwealth Caribbean with big international reserves accumulated from the sale of natural gas and oil; therefore it goes in no fear of the consequences of criticising the Fund.

However, neither the Jamaican Finance Minister nor Mr. Michael Manley, the Jamaican Prime Minister, has referred to any apology in recent statements on the issue.

No official comment could be obtained yesterday from the IMF, owing to the Columbus Day holiday in the U.S.

Financial Times 11-11-80

Reference 4.08

Seaga will bite the bullet, writes **David Tonge** recently in Washington

IMF set to lend Jamaica $566m

THE INTERNATIONAL Monetary Fund is prepared to lend the new Jamaican Government 444m Special Drawing Rights ($566m) over the next three years. But it says that Jamaica will also need emergency help on a large scale, and that the fund will back an aid consortium for Jamaica led by the World Bank.

The loan is the main option being considered by the fund staff as they attempt to close one of the most embarrassing chapters in the IMF's history. Officials from Mr. Edward Seaga's new conservative Government are due shortly in Washington for preliminary negotiations with the fund, the first such contacts since Mr. Michael Manley's Government broke off discussions in March.

The officials will find the IMF concerned at Third World criticisms that its handling of Jamaica is a prime example of its insensitivity to developing countries' problems. But the officials will also find the IMF's mood is firm. "Jamaica cannot wash out the past," the IMF tells visitors.

It warns that a greater effort will be necessary to adjust the economy and reduce its external deficit. "The further run-down means that the economy has further to pull back." It indicates that its prescriptions could be at least as unpalatable as those which Mr. Manley rejected as politicaly unacceptable.

With GNP down one-sixth in six years and unemployment plaguing one-third of the labour force, Mr. Manley chose relations with the IMF to be one main issue in last month's elections. He lost there and Mr. Seaga has made it clear that he will bite the IMF's bullet.

The staff arrive at the figure of SDR 444m ($566m) as this is the new limit agreed for advances from the fund's Extended Facility: the limit is 600 per cent of a country's quota, spread over three years and Jamaica's present quota is SDR 74m.

Allowing for the repayments Jamaica has to make to the IMF, this advance would bring Jamaica's net borrowing from the fund at the end of 1983 to SDR 560m ($714) and be a ratio of borrowing to quota which has only been matched in the IMF's recent dealings with Turkey. But IMF staff warn that repayments mean that its net new lending over the next three years would be only around $250m.

Mr. Edward Seaga

This, they say, is inadequate, given Jamaica's commercial arrears, forecast to reach $120m at the end of the year, and given an external deficit forecast to total $85m this year.

This deficit—in IMF parlance, a fall in the Bank of Jamaica's net international reserve position—was $130m in 1979, and has only been held down by depressing imports.

Tourism receipts have been increasing and the country has resolved its dispute with the bauxite producers, but the IMF is looking for backing from two sources. The first is the banks, which are owed $450m of the country's $1.3bn external debt.

They have largely agreed to a moratorium on principal repayments but have refused to discuss a rescheduling or fresh loans until an agreement with the IMF is in place.

The IMF would also back a package operation to help Jamaica in the way that the Paris-based Organisation for Economic Co-operation and Development has been helping Turkey. The vehicle for Jamaica would be the Caribbean Group for Co-operation and Economic Development.

This little-known body is an aid-co-ordinating organisation for the Caribbean which began work in July 1978. It has a steering committee chaired by the World Bank.

In the year ended June 1979, Jamaica accounted for nearly half of the $115m pledged to the Caribbean Group.

No figures are available for what was pledged to it for the following year, though in total fresh pledges of $183m were made. For the year beginning July 1980, not even the total amount of pledges is available.

Reference 4.15

Financial Times 17-11-81

U.S. Postal Service switches into the electronic age

BY NANCY DUNNE AND PATTI REALI IN WASHINGTON

THE U.S. Postal Service, beset by competition from the private sector and quarrels with official agencies, is moving into electronics in an effort to ensure that it has a future.

From January 1982, the Post Office will run a full electronic postal service—known as E-Com—for large-volume business post, transmitting messages from computers to any of 25 post offices across the U.S.

The messages will be printed at high speed, automatically folded and sealed in envelopes and placed in the first-class mailstream, which guarantees delivery within two days, according to the Post Office.

The service is now calling for bids to install the communications network itself. Business users will have access through their own computers, through telecommunications companies like Western Union or through magnetic tapes handed in "over the counter."

The decision to enter the computer age was strongly supported by the U.S. Postal Union which, as the third largest U.S. work force, has considerably lobbying power.

The union, whose workers earn an average of $17,000 a year for a 40-hour week, have seen proposals to close 92 post offices in the past two years, and recognise the post offices existence is threatened by competition.

While the post office has a monopoly on the delivery of first-class letters, its other services have been losing ground. United Parcel Service earned $2.8m last year and delivered 3.5 times as many parcels as the Postal Service. Post Office delivery of third-class advertising mail has been hurt by the rising use of sales phone calls, private hand delivery services and the increase of advertising inserts into newspapers.

A study of consultants Arthur D. Little said that if the Postal Service did not enter the electronic field, private telecommunications services from such companies as A T and T, RCA and Western Union might replace over 15 per cent of the first-class letter market by 1985.

The U.S. electronics mail industry is still in its infancy, but is now earning about $70m a year. Electronics messages can be sent by a variety of devices—copiers, word processors, facsimile transmitters, telecopiers or terminals—over any communications network with the right equipment. Systems now in operation allow home offices to send and receive written messages from their branches.

The Postal Service moves over 104bn items a year, 80 per cent of which comes from the business community, and the volume is expected to increase. Officials estimate that E-Com will cost its users 30 cents for the first printed page and 10

Reference 4.16

Financial Times 13-11-80 and 10-11-81

Satellite Business Systems under way

By Paul Betts in New York

THE FIRST satellite in a $375m programme designed to relay computer data, telephone calls and electronic mail exclusively for business was launched from Cape Canaveral in Florida at the weekend.

The venture, known as Satellite Business Systems (SBS), which will involve the launching of two more similar spacecrafts during the next three years, is a partnership including International Business Machines, the electronics group, Communications Satellite Corporation and the Aetna Life and Casualty Insurance Company.

The launch of the first SBS satellite this weekend is expected to open the way to a new age of high-speed office communications. The system will enable computer data, voice, video and other material to be transmitted at considerable speeds throughout the U.S.

Among the customers of the new high-speed communications system are such giants of U.S. industry as General Motors, Boeing Computer Services, IBM and Aetna.

Satellite 'channels' auctioned

By Ian Hargreaves in New York

RCA and Sotheby's yesterday successfully auctioned off annual leases on seven transponders on board RCA Americom's Satcom 4 communications satellite, but the total price of $90.1m (£49.5m) was a little lower than the most optimistic forecasts.

The unique auction attracted 50 bidders, and successful bids ranged from $10.7m to $14.4m for each transponder. Every transponder represents a channel on the satellite, which can be used either for transmitting a single television signal or a cluster of telephone-type signals.

The legal status of the auction was not cleared up in advance of the sale, although the Federal Communications Commission has warned that the sale may be illegal as it represented a transparent attempt to get round Federal limits on transponder leases, which currently sell for about $50,000 a month.

Among the successful bidders were Home Box Office, the Time Inc. pay television company, and Warner Amex, another cable television company which has also filed a suit to declare the auction illegal on the grounds that it is entitled to a transponder on Satcom 4 to replace a lease on a transponder on an earlier RCA satellite.

Satcom 4 is due to be launched from Cape Canaveral in January. It cost about $65m to build and launch and will carry 24 transponders in all.

C H A P T E R V

5.- The cybernetic alternatives

"It is a grandiose idea to attempt to create only one nation from the New World with one link only that can bind their parts together and with the Universe as a whole. If those nations have the same origin, the same language, the same customs and the same religion should, therefore, have only one government who can form a confederation between the different states,that will be created"

Simon Bolivar
Jamaica's Letter.
Kingston 6th September 1815(1)

5.1.- The peacetime alternative

5.1.1.- What should a host-state know about its TNCs.

Up to now, we have tried to identify the process by which the TNCs work within both the international political system and in the productive activity of the underdeveloped countries. Also we have analysed their influence in the formulation of foreign policy of the industrialised nations, and their role in the capture of a part of the information which serves as a basis for the decision making process which regulates such foreign policy.

The analysis of what could be the link between TNCs and what we call the trilogy Sovereignty, Information and Technology served to establish a relationship between the loss of sovereignty and the absence of control over both the technology and the information implicit in the production processes of some underdeveloped countries.

On the other hand we also postulate that apparently, in peace time, the sovereignty of the Government of a Nation State deteriorates when the loss of control over its information and know-how occurs.

So the question is: could we measure the way in which any nation is losing access and control over its information and technology?

This question has a global character and by that we mean that when we say that sovereignty is deteriorates as a result of the loss of control over information and technology, we must embrace, in order to be consistent with the above postulate, virtually all the information which can be identified as relevant information in connection with the sovereignty of any particular country.

But the identification of such a wide range of information is an enormous task and is impossible to achieve

within the time and resources available for the present project. Furthermore, the actual source information required by a cybernetic information system-i.e. a pragmatically effective information system- can only be fully determined as the system is put into operation and the specific needs for data input are identified. Such a system will necesarilly evolve and adapt and will itself generate new data sources to fulfil its needs.

However, standard financial data is already generated and used by firms for their own management purposes and such data will certainly be one important input source for a cybernetic information system. Since this data is fairly standarized and produced by all firms, the nations can make a start towards effective information control by attempting to secure reliable access to such standard financial data. In what follows, a simple measure of access to company financial data is outlined for the productive sector of a nation,to indicate what is meant by the degree of control of information. It should be emphasised that such a measure takes little account of the pragmatic value that may be extracted from the data concerned but it does at least demostrate that some measures can be derived.

A cybernetic system of the above type assumes the identification of information not only from the production of goods and services as we are going to analyse in this chapter, but in addition information which comes from other parts of the whole reality of the country considered.

If, by way of example, we conceive such a reality as an ensemble composed of some of the parts(subsystems and systems) we have already illustrated in chapter IV graphic N°1(Continental American System), then we have Production subsystem, National Resources subsystem, Defence subsystem, Social-political subsystem, TNCs subsystem, the Industrialised countries'Foreign Policies subsystem and the International Resources System, and we could say that the control of this

reality would be a function of the control of the information generated by each one of these parts

Under these circumstances it will be very difficult or impossible,to obtain all the information that we should take into consideration. Because of practical limitations we have chosen to restrict our range of analysis only to one part of the whole reality. This part will be the Production subsystem.

So, our original question ought to be reformulated as follows: Could we establish a measure of the access to the standard financial information implicit in the productive process of a country?

Let us suppose that the maximum access to information that we could achieve in the Production subsystem is represented by 1.0. It is of course very likely that full access would never actually be achieved. Actual access can then be represented by a number between 0.0 and 1.0.

Within the Production subsystem we can identify 64 industrial activities (subsystems)clasified into the three main economic sectors(system) as follow:

Primary System:

Subsystem code	Subsystem's name
110	Agriculture and Hunting
120	Forestry
130	Fishing
210	Coal mining
220	Crude petroleum and Natural gas
230	Metal ore mining

Secondary System:

Subsystem code	Subsystem's name
311	Food manufacturing
313	Beverages
314	Tobacco
321	Textiles
322	Clothing
323	Leather and Leather products
324	Footwear
331	Wood and Wood products

332	Furniture and Fixtures
341	Paper and paper products
342	Printing,Publishing,and allied industries
351	Industrial chemicals
352	Other chemical products
353	Petroleum refining
354	Products of petroleum and coal products
355	Rubber products
356	Plastic products
361	Pottery,China and Earthenware
362	Glass and Glass products
369	Cement,Concrete,Asbestos etc.
371	Iron, Steel and Ferro-alloys
372	Non-ferrous metals
381	Fabricated metal products
382	Machinery
383	Electrical machinery,Aparatus and supplies
384	Transport equipment
385	Professional and scientific instruments
390	Other manufacturing industries.

Tertiary System: (code 3)

Subsystem code	Subsystem's name
410	Electricity, Gas and Steam supply
420	Water works and supply
500	Construction
611	Wholesale of consumer goods
612	Wholesale of producer goods
613	Wholesale of motor vehicles and fuel
614	Commission broking
621	Department stores
622	Retailing of foods,Beverages and Tobacco
623	Retailing of clothing and textile goods
624	Retailing of furniture and furnishings
625	Retailing of hardware,Paints,Glass etc.
626	Retailing of optical and musical instruments

627	Retailing of motor vehicles and gasoline
629	Other retailing
631	Operation of restaurants and cafes
711	Land transport
712	Water transport
713	Air transport
719	Services allied to transport, storage
720	Communications
810	Financial Institutions
820	Insurance
831	Real Estate
832	Business services
833	Machinery and equipment rental and leasing
920	Sanitary and similar services
952	Laundries

All the indicated subsystems have been codified by type of industrial activity according to the United Nations International Classification Standard (ISICC).

With respect to the gathering of the sixty four subsystems into three main system (Primary, Scondary and Tertiary), the standard procedure which has been taken is the correspondence between each one of these subystems and their location inside the country's economic activity.

Nevertheless all the subsystems shown are not the totality of the industrial activities that can be identified inside each industrial sector of the economy, but as an exemple, they represent almost all the subsystems that we believe must be included in this analysis.

Each one of these subsystems possesses its own dynamic of change. This dynamic, even when it is produced as a result of the interaction between them, in cybernetic terms, can be separately analysed, that is to say, observing each subsystem as a system and identifying the flow of information corresponding to each one of them.

The detailed study and the functional description of each one of these sixty four subsystems analysed as systems turns out to be extremely complex and extensive and is not the object of this work. Therefore and for the purpose of our analysis we shall assume that in these subsystems the information that ought to be known by the Government of an underdeveloped country, and in consequence under their control, is the micro-economic information(*)(2) produced by each one of these sixty four subsystems.

The best way to determine this microeconomic information is by identifying in the first place who are the producers of such information inside each subsystem.

These producers are the manufacturers of goods and the suppliers of services and as we analysed in chapter IV (TNCs within the technologically dependent states) for some underdeveloped countries they are mainly Transnational Corporations.

So if we can identify who are these TNCs(see in annex 27 a detailed list showing who they are in each one of the sixty four subsystem of the Venezuelan Production system) then the question will be:

What is exactly the microeconomic information that the nation needs to know from each one of these TNCs?

We suggest that one answer in plain language is: The same information that each TNC has to send periodically to its country's headquarters in order to be controlled by its parent company.

The characteristics of this information depend upon the location of each enterpise inside the economy(Primary, Secondary or Tertiary system), but its meaning as well as its

(*) Microeconomics: The part of Economics concerned with the detailled workings of the economy, that is, the study of particular cases, such as the supply of butter, unemployment in the shipping industry, the best output for a firm etc.

impact on the decision making process of both users(the host-state and the parent company)are completely different. For the TNC's parent company, such information concerns the management of a business and the way to control it. But for the host-state this information could be important source data for a cybernetic information system designed for the control of the TNCs within the country.

We should also take some account of the relative value of each item of financial data produced by a firm. Clearly some data, such as an income statement is more valuable as indicator of the firm's health and profitability than, say, isolated market analysis information. Of course, assigning useful relative values will be a difficult task but should be done in order to arrive at a balanced measure.

Brooke and Remmers(5.03) attempted to carry out such an assignment of relative values for international firms and those are used in the example below. The values are referred to as "arbitrary" in this present work to remind the reader that a definitive assignment of values has not yet been achieved.

Thus, we can catagorise the financial information that makes up the source-data we have been considering as follow:

1.- Financial information:(*)	Arbitrary value
1.1.- Balance sheet	13
1.2.- Balance sheet supporting data	7
1.3.- Inventory analysis	6
1.4.- Income statement	14
1.5.- Income statement supporting detail	10
1.6.- Product line income statements	6
1.7.- Cash flow	4
1.8.- Sales analysis	6
1.9.- Order backlog analysis	8
1.1).-Local borrowing position	10

(*).-Regular financial reports to corporate management(3)

	Arbitrary value
2.- Market information:	
2.1.- Market developments	2
2.2.- Market share(compulsory report)	4
2.3.- Market analysis	2
3.- Production and technical information:	
3.1.- Production and productivity figures	4
4.- Personnel information	
4.1.- Personnel-turnover,absenteeism,disputes	3
5.- Other key information that applies to the industry subsystem	1
Total arbitrary value.....	100

The access to all this information could be measured but this measure can only be balanced and meaningful in terms of comparision if the systems(Primary,Secondary and Tertiary) which produce the information employ similar accounting procedures and, in addition, similar accounting policies in implementing the procedures.

By degree of access to the financial data of an enterprise we mean nothing else than the sum of values for all the data items to which we have access for the enterprise concerned. Normally, of course, we will not have complete access so we will have a degree of access less than 1.0

Using the above approach, we can obtain measures not only for degrees of access to financial data of individual enterprises but also for complete sectors of the productive process. With such a measure the nation can monitor the effectiveness of its gathering of source data for its cybernetic information system and can identify where there are significant

(*).-Regular financial reports to corporate management (3)

gaps that need to be filled by extensions to its powers and systems of data requisition.

It is clear that when we talk of the above approach it is understood that this kind of access can only lead to control if the government which tries to implement it has suitable mechanisms with which to process such information and knows what to do with it.

From this view it is neçesary to analyse several aspects usually linked with this kind of mechanism(cybernetic mechanism). Those aspects could be categorised as follow:

1.- The definition of the information's users within the host-country.

2.- The reliability of the information which is supposed to be gathered and processed by the system.

3.- The effects of this information on actions, beliefs and plans of the users.

The idea of the cybernetic mechanism that we are refering to, even when it actually can be categorized as a simple information system, shows all the typical constraints of any cybernetic organization, so let us briefly start with a discussion of the information's users.

When we head-lined this point as "What should the host-state know about its TNCs" we were making an implicit assumption that the host-state, apart from being represented by the government of the considered nation, must also represent the nation as a whole.

In our analysis we are considering a nation to be a cybernetic organization, which is one that contains distributed control and an ability to adapt and envolve mechanisms to face disturbances and threats to its continued existence. This means that at bottom the mass of the people must find through the nation's activities an expression of their personal aims, desires and beliefs. It is only when the population is so integrated that we can expect to obtain

timely and effective adjustment to changing conditions and expect to overcome attempts of destabilization. Thus a cybernetic information system assumes the cooperation of the mass of the population for its effectiveness, it cannot hope to succeed in any political system that denies the populace free expression of its will.

The behaviour of the TNCs as we have pointed out in chapter III, could sometimes be against the interest of the people and cons uently against the interest of the nation as a whole. Therefore the government who makes decisions (within the context of development) for the people and not for the TNCs, can sometimes be, in its turn, against the behaviour of the TNC. So if our proposal in this "information system" is to use as input, the information which is produced by the TNCs, then the obvious aspect to be considered in this analysis is the reliability of the information to be gathered and processed by the system.

The reliability of information is a complex problem to be considered in any cybernetic information system. As we know, information can be manipulated and at the end of the day inaccurate information can lead to wrong decisions.

A cybernetic organization must minimise this as far as it can. So the question is how can our information system improve the reliability of the information produced by and recived from the TNCs.

It is not easy to point out what should be done in terms of technical procedures in order to guarantee the accuracy of the financial information, market information, or production information which normally is written down in Balance sheets, Income statements or in any statistical analysis made by an enterprise.

This problem is exemplified by the hard work which has to be done by governments to improve the accurracy of the financial information received from its tax payers, and by the efforts it must make to counteract the many ways in

which the tax payer and especially enterprises breake rules in order to manipulate their financial information (Income statements etc) and avoid tax.

However apart from any suitable control that could be implemented to improve the reliability of information the main guarantee of its trustworthiness is the people themselves, the people involved in the production of company information: the employees who make the calculations, the workers who can watch the production of the factory, and in general the people who, even when working in a TNC, are aware of their committment to the nation's interests.

But to gain the solidarity of the people in this kind of control requires that hard work be done in the political and social fields. Hence, only a democratic government with very clear ideas about progress and development and capable of stimulating the support of the people in this sort of activity, can be successful in the implementation of the cybernetic mechanism we are talking about.

The third aspect to be considered in the implementation of this cybernetic mechanism is the effect of the information on action and plans of the users. This will be discussed at the end of the section 5.1.3 which describes a cybernetic organization.

Before ending this section we should re-consider the role of the sort of basic financial data that the "goods and services information system might supply.

What we have done is try to describe a way in which the government could identify, say in percentage terms, the quantity of information obtained from the TNCs.

However, this information alone doesn't make any sense as far as control over the behaviour of the TNCs inside the host-country is concerned.

We said earlier that the identification of the information and its relative value that must be obtained

in order to determine the measure of access to information required deep research. But as well as these problems there are other problems relating to, for example, overcentralisation when gathering information, its management, the information processing capacity of the organization(we have been calling "government") in charge of the system, and the means of communicating and filtering the information, which have been intentionally avoided in this analysis.

Therefore, we have to be perfectly clear that there remain many further problems to be solved before we can talk properly of the nation gaining control over the TNCs.

We are aware that these remaining problems are very complex and require a huge amount of work. In particular in this phase the effect of information in terms of the user's decision-making processes will have to be defined.

5.1.2.- The cybernetic change toward sovereignty

In the previous parts of this chapter(5.1.1), we have tried to explain how important, for the decision-making process of any government it is to know the quantity of information that it must know from its reality and the quantity that is actually known.

We pointed out as well, that perhaps no strategy of development would be successful (for the underdeveloped countries which have resources) if at first a strategy of control of information is not planned and executed.

However, the execution of such a strategy would mean changes, and these changes do not occur either continuously or spontaneously but are induced discretely. So they could possibly be measurable and controllable.

> "The most fundamental concept in cybernetics is that of 'difference', either that two things are recognisably different or that one thing has changed with time" said W.Ross Ashby(4).

Thus, all the changes which we are going to refer to in this point, even when they do not mean a difference between two things, represent two different states of the same thing.

Each one of these changes can be linked together, so there might be several steps in a chain of changes that we believe have to be planned and executed by the government before it can reach the situation where it could be successful in carrying out any strategy of development.

The first step in this chain of changes must be the transition of a state with a lack of information or no information at all from its reality(the four subsystems), to a state with full, or nearly full, information from the same reality. We already discussed such a transition in part 5.1.1.

Thus the first change should be:

Actual information ⟶ Expected information

This change could be measurable, as we pointed out, but it does not occur in a spontaneous way and this means that somebody has to lead it.

We have mentioned that such a change must occur in the four subsystems in which we have divided the reality of an underdeveloped(rich) country. The actual and expected information from these subsystems are:

First:

Actual information from the Productive subsystem.....AIPS
↓ ↓ ↓ ↓
Expected informat. from the Productive subsystem.....EIPS

Second:

Actual inf.from the National resources subsystem....AINRS
↓ ↓ ↓ ↓
Expected inf.from the National resources subsystem....EINRS

Third:

Actual information from the Defence subsystem..... AIDS
↓ ↓ ↓ ↓
Expected informat. from the Defence subsystem..... EIDS

Fourth:

Actual informat.from the Social-political subsyst.. AISPS
↓ ↓ ↓ ↓
Expected informat.from the Social-political subsyst.. EISPS

This change, relating to the fourth subsystems, we

suggest can be led by the entity which actually runs the whole system, which is the Government.

The second step of changes that the Government could carry out as well, is to change the expected information into control. So the change should be:

Expected information ⟶ Control

However, to do that, the Government must use an appropiate tool in order to get an effective control. This tool should be a kind of cybernetic organization capable of supporting such control.

In point 5.1.3., we will give a brief description of that cybernetic organization.

The third step in the series, is the transition which occurs,when the Government, having the new power of control,should transform itself into a real sovereign state (in the sense we have pointed out in chapter IV).

Hence, we might say that the Government could convert control into sovereignty and the change should be expressed:

Control ⟶ Sovereignty

The fourth step in the chain of changes, should be therefore performed when the Government as a sovereign state and using a suitable model for its development strategy, can be capable of producing invulnerable decisions. In this case the change could be expressed

Sovereignty + Strategic Development Model ⟶ Invulnerable decisions

In the fifth step, if the Government is successful in executing the invulnerable decisions through the closed

system we will show in point 5.2.2., of this chapter, then it should be able to change the underdevelopment into development. That change could be expressed as:

Invulnerable decisions ——→ Development

Finally, the chain of changes should finish when the development as a system achieves its stability and therefore the Government can consider the information from such a developed economy as actual information without any expectation of additional information. This last change should be expressed:

Development ——→ Actual information

As we can see, in the explanation of these six changes briefly described, the idea of transformation of an underdeveloped economy into a developed economy has been pointed out as a result of a chain of changes which we must suppose have been carried out by the Government.

We ought to notice that such a transformation was defined, not by any reference to any political reason as a cause of the change, but by giving a set of statements and relations of what each state has change into. The transformation showed is concerned with what happens, not with how it happens.

Similarly, it is clear that the ideological conception about what does development mean is a very important factor in relation to such changes. However, though we should know something of who actually carries out the changes and the country's sociol-economic and political characteristics which are going to be changed, this knowledge is not essential in this particular theoretical explanation about cybernetic transformation. So, in this case, all we must know is how the Government acts in its reality; that is, we must know the transformations that it is able to produce.

According to Ross Ashby's theory of change(4), a change can be represented unambiguously as a "transition" which is specified by two states and the indication of which changes to which.

The transition is produced when something is acted on by a factor and is changed to another thing.

> "That which acted on, said Ashby, will be called the 'operand', the factor will be called the 'operator', and what the operand is changed into, will be called the 'transform'. The single transition is, however, too simple. Experience has show that if the concept of change is to be useful it must be enlarged to the case in which the operator can act on more than one operand, inducing a characteristic transition in each".

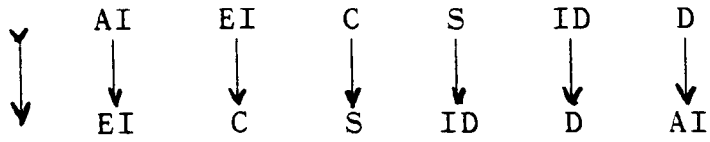
Taking into account Ashby's theory of change, then, we might say that in our example of the six changes,the Government should represent the operator which can act on more than one operand in order to induce a number of transitions, among which are:

Operator	Operand	Transform
1. Government	Actual Inform....AI (underdevelop.Inf.)	⟶ Expected Inform...EI
2. Government	Expected Inf.....EI (cybernetic Org.)	⟶ Control..... C
3. Government	Control..... C	⟶ Sovereignty..... S
4. Government	Sovereignty..... S (Development Model)	⟶ Invul.Decisions...ID
5. Government	Invul.Decisions..ID (Resources + Closed system)	⟶ Development..... D
6. Government	Development..... D	⟶ Actual Inform.....AI

But the more interesting thing that we can find when applying Ashby's approach to our case, is that of the test of "closure".

> Ashby said that "when an operator acts on a set of operands it may happen that the set of transforms obtained contains no element that is not already present in the set of operands,i.e. the transformation creates no new element".

Taking into account this Ashby's view, in the transformation we are analysing(page 200):



every element in the lower line occurs also in the upper.

> "When this occurs", Ashby said, "the set of operands is 'closed' under the transformation. The property of 'clousure' is a relation between a transformation and a particular set of operands; if either is altered the clousure may alter".

Again, it will be noticed that the test for closure is made, not by reference to whatever may be the cause of the transformation but by reference to the details of the transformation itself. So it can be applied even when we know nothing of the cause responsible for the changes.

The other way to test for the closure property is by showing its representation in a matrix.

All the indicated transformations can be represented in a single schema, which shows clearly their mutual relations. If we write the operands in a horizontal row, and the possible transforms in a column below and to the left, so that they form two sides of a rectangle. Taking our particular case, if

we put a "+" at the intersection of a row and column if the operand at the head of the column is transformed to the element on the left-hand side; otherwise we insert a zero. We would have the following matrix:

	AI	EI	C	S	ID	D
EI	+	0	0	0	0	0
C	0	+	0	0	0	0
S	0	0	+	0	0	0
ID	0	0	0	+	0	0
D	0	0	0	0	+	0
AI	0	0	0	0	0	+

In this matrix we can observe that the symbols of the principal diagonal "+" are all equal, thus, and in accordance with Ashby's criterion, the positional relationships of the said matrix corresponds to a closed system.

This fact brings us to state the theoretical assumption that when a politically independent country(analysed as a system) does not possess sufficient resources it has to become an open system in order to survive. If it fails to obtain such resources from the external world, it is then inevitably obliged to exchange sovereignty for the resources which it does not possess.

However, when the situation has changed(from the resources' viewpoint) as is the case with some countries of those we have called "rich underdeveloped", we believe that it is possible to develop closed transformations which by guaranteeing an increment in the level of sovereignty to levels compatible with the development option, could allow the selected development model,to be actually converted into a realisable alternative.

"An unclosed transformation is thus like
a machine that takes one step and then
jams" said Ross Ashby(4)p.2/12.

In our case, the importance of closure will become particularly useful to support the idea that no Latin American transformation(development) is at the moment possible in an unclosed way. It could start taking some steps and then jam (if we applied Ashby's criterion quoted above), so a proposal for a "Latin American closed system" will be explained in point 5.2.3.

5.1.3.- A cybernetic organization

If we interpret the national economy as a dynamic system of a very high complexity, composed of a multitude of parts connected directly or by feedback generated by flows of information from the four subsystems(Productive, National Resources, Defence and Social-Political subsystems) we have pointed out, then we are prepared to understand that nowadays there are no ways to manipulate such complex system and to gain control over its information without making use of a suitable cybernetic mechanism.

> "The tool for handling complexity is organization" indicates Stafford Beer(5). "We shall not succeed in reforming our concept of organization or in creating new institutions that actually work simply by hard work or even hard thought. We need to invoke science, and science offers the means to design complex systems through General System Theory and to devise viable organizations through cybernetics".

According to this point of view and taking the systemic approach as a basic method, it should then be possible to develop a cybernetic organization using modern computer technology and design a national model suitable to explain the behaviour of the four indicated subsystems and to understand the performance of the national economy within the whole country's reality.

We could create a cybernetic mechanism which could even modify the model itself in order to cope with any disturbance from outside and inside the economy.

However, that is not the aim in this work. Instead

of that, we shall concentrate on the idea of how important it should be for any government, and specially for those in rich developing countries, to get control over the information specifically related to the "destabilization" problems.

The concept of destabilization means to make something unstable, thus we must understand that destabilization is only possible if we accept the sine qua non fact that it has to start from something stable.

Therefore, what interests us is to analyse the possibility of developing a cybernetic organization capable of producing the pragmatic information that the nation needs to know in order to overcome difficulties produced when the relatively stable amount of goods and services, or both, produced by any producing units, that is, by a firm or an industry in its economy, begins to become unstable.

Likewise, we are not interested in analysing destabilization when it is produced by bad administration in the producing units or by inadequate conception of economic policies. Instead, we shall consider only destabilization produced by factors exogenous to the economy which means those originating from or due to external causes such as revolutions or counter-revolutions, which should be taken into consideration.

So, from the four subsystem previously pointed out we are going to concentrate our attention only on the Production subsystem.

Any disruption in such subsystem or any restriction in the supply of goods or services to the market in a way that could lead to an economic breakdown should be analysed as a"destabilization action".

Obviously, this kind of destabilization is always promoted for political reasons and its main objective is to overthrow governments. Hence the survival of the government as a system becomes a very important aim in this analysis.

The survival of many systems can be explained using

the cybernetic approach, and specifically the laws of homeostasis.

As we pointed out in the first chapter, we can say, according to S.Beer, that homeostasis is the tendency of a complex system to run towards an equilibrial state and the ultimately stable state to which a system can run(that state where its entropy is unity) is finally rigid and that means the system's death, so if we want the survival of the system, which in our case should be the Government, we need the extra concept of an equilibrium that is not fixed, but on the move.

What causes the stable point to move is the total Government's response to environmental changes, that is the changes that have happened in its four subsystems(National Resources, Defence, Social-Political and Production subsystems) and this kind of adjustment is called adaptation.

The other homeostasis notion that we need to understand in order to analyse the problems of government's survival as a system, is the idea of a"physiological limit" introduced by R.Ashby and emphasised by S.Beer.

If the Government as a system wants to remain running it must keep moving its stable point, but it cannot afford to move it so far or so fast that the system itself can be made to collapse.

The physiological limit then, should be described as the range of action among which the Government can move and keep its rate of change according to a tolerance fixed by its own physiology or structure and without danger of destruction.

Therefore, destabilization action must be understood as any intentional action that deliberately can take the Government system outside its physiological limits and that is precisely the sort of phenomenon that should be detected by the cybernetic organization which we are referring to

In order to understand the kind of cybernetic organization we are talking about, we must turn back to point

5.1.1.(A measure of information in the production subsystem). If the main aim of such cybernetic organization is to satisfy the nation's information requests in relation to its reality, then we have to start by measuring the information that we actually know from such a reality, and the best way to do that could be using the same cybernetic structure that we suppose has been developed in doing what we suggested in point 5.1.1.

So our cybernetic organization should be one capable of facilitating rapid acquisition of the information produced by the 64 economical activities comprised by the production subsystem analysed in point 5.1.1.

Therefore, the electronic data processing system that ought to be made up in order to acquire and measure the quantity of information that the government needs to know from its reality, should be the same system which after being developed could be used for the purposes of the cybernetic organization.

The technical details of such a cybernetic organization, as well as the characteristics of the computer technology it demands cannot be analysed in this work.Only one brief suggestion will be made here, and it is that the successful implementation of this cybernetic organization depends upon the reliability of the information to be processed, the flexibility of the means of communication to be implemented and the qualifications,interests,beliefs and attitudes of the people involved in the organization.

All those limitations have political as well as management connotations and none of them can be avoided by the power of one centralised group of people(as in any isolated government). Hence the participation of the people involved in the periphery (industrial activity or any other source) as well as the distribution of the power of the decision-making process and control over each source become an essential condition for the successful - development of this cybernetic organization.

5.2.- The wartimes alternative

5.2.1.- The cybernetic preparedness to survive

The United States, China, Japan, Germany and the Soviet Union could be the key words for attenmpting a modern measurement of the "balance of power".

However, in the thermonuclear era, the balance of power analysed in terms of the "theory of games", presents completely different characteristics from those which were obtained in the past.

During the 17th Century for example, when Britain "gained" in power, other nations had to "lose", in this case Spain and France, and equally, in the 18th Century, when the United States gained, she did so at the expense of Britain and other nations.

According to that view, the thermonuclear era, or more precisely,the era of "possible apocalypse"(*), presents a scheme of analysis in which the absence of "winners in the game", eventually would transform everyone into "losers", in accordance with the above-mentioned theory. But that is not the thinking of the American strategists who nurture plans for a limited nuclear world, neither the Chinese who are prepared to sacrifice half mankind in pursuit of Peking domination, nor the Japanese who could gain at the expense of the destruction of Europe's production structure. In one word: all of them believe that they could " push the button and win".

Thomas Hobbes(7) defined power ,as "the present possibility of obtaining future goods", in other words, the possibility of controlling the present to guarantee the future (in cybernetic terms).

(*).- Apocalypse: is one of the Jews and Christian writings of 200 B.C. to 150 A.D.marked by pseudonymity,symbolic imagery,and the expectation of an imminent cosmic cataclysm in which Good destroys the ruling powers of evil and raises the righteous to life in a messianic kingdom(6)

Herbert J Spiro(8) taking into consideration Hobbes's definition, suggests that nuclear devices cannot be used as a "means to obtain some goods in the future" and explains that this is precisely due to the comtaminanting effect on future goods which would be entailed in the use of this type of weapon.

When J.K.Galbraith(9) refers to the role of planning in the growth of great corporations, he suggests to us relationship between power and decisions which, in a certain form, would be linked to Hobbes's definition, but with the addition that the organised intelligence, or "technostructure" (*) of which Galbraith speaks, when it plans, directs and controls the behaviour of the organization, certainly establishes a control of the present to guarantee the future, but it always does so under conditions of "profit and growth" and never in other way.

This technostructure has been trained only for this binomial of decisions, and as is well indicated by Galbraith, it is they who really wield the power, it is they who L.Shoup and W.Minter(10) call the "Imperial Brains Trust", and in the final instance, it is they who regulate the political and economic behaviour of the reality in which they operate.

In this way of thinking, if the United States drops nuclear payloads on Soviet Union, say the strategic ones, and the retalation lead to mutual assured destruction(MAD),what could the supposed winner do in terms of power and profit(or profit and growth if you want)with a country"radioactively mortgaged"?

In accordance with the work of nuclear specialists like Alan Martin and Samuel Harbison(11), the radioactively mortgaged country to which we refer would present a population with the following characteristics: people who present somatic injures,that is to say, those who have survived the attack but have been biologically affected by the radiation.

(*).- Technostructure:It embraces all who bring specialized knowledge,talent or experience to group decision-making.

The characteristics of the injury would depend on the intensity of the dose received during the exposure.A dose of 1 Gray(*) would produce nauseas, vomiting and serious damage to the cells which cover the intestinal walls.But doses around 1.6 Gray, produce a whole range of effects which vary from changes in the pigmentation of the skin, blisters, ulceration and loss of hair, through the so-called secondary effects such as the formation of cataracts in the eyes, leukemia and other types of cancer.

A second group of the population would be formed by people who, although they would not present visible somatic injuries, had suffered a deterioration in the cells of their reproductive organs(the gonads).

The effect of the radiation on these cells produces so-called genetic mutations, which would be transmitted from parents to children for generations.

A few lines are sufficient to describe the spine-chilling consequences of a war of this type, and sufficient also, to make us understand the magnitude and importance of peace for the survival of the mankind.

Nevertheless, the crisis which nowadays grips a world dominated by uncertainty, instability, and even the contradictory pressures which are moving in the landscape of international politics, should be analysed from the point of view of their repercussions on world peace.

The views worded by people like Henry A. Kissinger, Zbigniew Brzezinski, Alexander Haig, which we have already quoted, and the most recent ones made by Ronald Reagan, who in October 1981 said:

> "I could see where you could have the exchange of tactical weapons against troops in the field without it bringing either one of the major powers to pushing the button"(12).

(*).- Gray: According to the International Commission on Radiation Units and Measurements(ICRU)The Gray is the units of absorbed dose,and Absorbed dose is a measure of energy deposition in any medium by all types of ionizing radiation.

should call us to the reflection. It seems that they are prepared to carry on a war looking for a political victory and that could mean a limited nuclear war which must be carfully controlled in order to avoid the destruction of their own system.

The cybernetic preparedness to survive could be a way of reflection for those Latin American countries which are convinced that the overcoming of underdevelopment and dependency would unfortunately be linked to solutions which are unachievable, and therefore inexorably to the study of war as historical alternative.

For this reason, when the world trembles in the expectation of a world war, when the European nations begin to dust off their nuclear shelters, when the BBC in London begins to transmit programmes for training people for survival in the event of a nuclear attack(13), when the British Government shows how it could keep making decisions from an underground operation-centre(14), when "integrated battlefield" is now the new popoular word in Nato forces jargon, when developing and training tactics for use in a nuclear war in Europe(15) and when both panic and error begin to play their part as variables in the unleashing of a war(16), we Latin Americans should ask ourselves: could war transform itself into an opportunity for the reconstruction of our nations starting from the idea of a disaster?

The cybernetic reply could be affirmative. Nevertheless, if we think of the unthinkable and try to see war as an option, we should be clear that this option, more than as an alternative which could be established after the occurrence of a phenomenon which should be waited for, rather could transform itself into a historic contingency capable of generating preliminary counter-action, which, within the plan of a political strategy based on preparedness for its arrival could be considered as an possible alternative.

The characteristics of impact of a war on Latin-American reality, apart from the fact that it would be

unpredictable, does not represent the objective of this study, nevertheless, among the reliable unanswered questions, a theoretical circumstance exists, which, in hypothetical terms, would permit us to establish the possible parameters of behaviour of such a reality, on the basis of "limited nuclear war" which we outlined at the beginning of this chapter.

The possible parameters of system behaviour could be classified as follows:

1.- From the point of view of the breaking up of the system.

Latin America, as it was analysed in the previous chapters, forms part of the base of a system. This base is made up of sub-systems which possess political, economic,and technological structures of predictable performance,that is, they operate under conditions determined by rules which fundamentally obey the mechanisms of control established in the summit of the system.

In other words, regulation summit-base(centre-periphery) is possible by virtue of the sequence of the relationship information-prediction-control, that is to say, the regulation obeys the predictability of behaviour of the subsystems, permitted by the"knowledge" of their realities which is communicated to the summit.

Part of this"knowledge" would be subject to deterioration or loss, because of the temporary or permanent interruption of the information, produced by the isolation of the base in times of war.

This circumstance could generate an accelerated "entropy" of the system in its entirety, producing a concentration of its control resources in the more indispensable parts of its structure, abandoning the periphery and permitting in this way the creation of partial or total mutilations of its base, which would mean partial or total independence of the subsystems of the periphery.

2.- From the point of view of the formulation of a strategy of survival.

A breakdown of relations between the periphery and the centre would affect both parts of the system, but its level of incidence on the periphery, owing to dependence, would be greater.

The magnitude of the collapse of the peripheral sub-economies would be a function of the degree of technological dependence and of availability of resources of each nation.

This situation obliges us to pose the following question: Given the assumption that our physical space is not affected by the war, how long would our productive apparatus continue to function after the severing of the "technological umbilical cord"?

A strategy of survival makes itself clear, to prepare ourselves for the war would also be a necessity, with the difference that while the developed world prepares to defend its life system, we ought to prepare ourselves to change our life system.

During one of the many Nato war exercises, simulating the Third World War carried out by the Royal Air Force(RAF) in the Air Operations Centre of Wildenrath in West Germany, the British jornalist, Mick Brown(17) after participating in the combat operations of this warlike nightmare, interviewed one of his compatriots of the R.A.F. Group Captain Danny Lavender. One of the questions was:

"If war broke out would you be fighting to defend an ideology?

"No, only to defend our way of life" he replied.

Interested to know the opinion of a Latin American soldier, two weeks after having seen this programme on London BBC 2, we had the opportunity of meeting another Air Force

Captain of a South American state, and in the middle of a sincere and frank interchange of opinions we asked him:

"If a war broke out would you fight to defend our way of life?

His reply was quite eloquent:

"If I had to do so it would be strictly for reasons of military discipline,but I would be prepared to take the risk of a courtmartial by opposing or rejecting an order which meant I would die for the so-calleddefence of a way of life which for my country has meant nothing but hunger and misery for our people".

Preparing ourselves for war, then, does not mean preparing ourselves to fight, but simply preparing to survive, and this last has technological implications which ought to be studied.

In the middle of the macabre rules for survival, like those which are outlined in the so-called "nuclear family" in times of war(18) and which among other things establishes:

"During the 14 days following a nuclear attack families which remain in their shelters should get rid of their own casualties.The corpses, previously identified with their names and addresses should be covered with plastic sacks or cloths and placed in a visible position outside the shelter".

Amongst the official circulars, distributed to the various national and muicipal organizations:

"When radiological conditions permit movement, district and borough London controllers should assume that one of the priority tasks for their staff, in areas where survivors were to continue

residing, would be to collect and cremate
or inter human remains in mass graves(19)"

Amongst the publications, such as the "Nuclear Survival Handbook"(20) a sort of manual of 370 pages dedicated to the possibility of survival before and after a nuclear attack.

And within a gloomy environment, which for some could presage business or political advantages and for others death and destruction, an irrefutable truth exists, and that is that a vast sector of the European community are beginning to condition their actions in the present thinking in terms of a future war.

For Latin America and the technologically dependent countries this perspective could signify an alternative.

The handling of the perspective of the nuclear destruction ghost as an unwelcome but possible or perhaps inevitable alternative, could transform itself into the impulse which would force many people to think and make decisions in the present stimulated by the prospect of our own future destruction.

5.2.2.- A Latin American closed system

As we pointed out in part 5.1.2., the importance of clousure seems to be particularly useful to support the seemingly unthinkable idea of the possibility of a "economic closed system" as an alternative for transformation and development in some Latin American countries.

Through the history of mankind, countries like China, Japan and Russia were for a long time closed to the rest of the world, but nowadays,the economic interdependence and the advantages of technological interchange make it difficult or rather impossible for any country to subsist as a closed system. Even a whole group of countries like the eastern bloc need the western nations as much as the capitalist bloc needs the communist market.

However, there are some reasons which from a cybernetic point of view should be taken into consideration in order to understand the above mentioned idea.

A closed system,it seems to us could be an alternative specifically suitable for those underdeveloped countries which, having achieved a high level of capital formation(*) as in some Opec countries,have the benefit of a good degree of propensity to invest(**).

Propensity to invest plus raw materials and management should be the "keystone" for any government to keep successfully running its production subsystem, but this situation becomes possible only when the government can enjoy the capability to make decisions in a sovereign way.

(*).- Capital formation: is the process by which money capital is accumulated and converted into capital goods(2).

(**)- Propensity to invest: is the relationship between total income and that part of income not devoted to consumer expenditure(2).

Sovereignty, as we have analysed in this work, does not exist for the underdeveloped states, so the possibility of development, even for those governments which apparently have such a "keystone", will be very remote unless they find the way to eliminate the technologically dependent relationship with the developed world.

What we are suggesting in this chapter as "cybernetic alternatives" could be one way out, but this way out means some kind of isolation from the world technological race, as well as hard work, deep state intervention and a substantial reduction in the standard of living for those who are enjoying the advantages of the "consumer society"(*).

Therefore, when we choose Latin America as one of the places in the world where a closed system should be build, the immediate questions are:

1.- Who could lead the construction of such closed system?

2.- In which country specifically should the system be developed?

Both questions are extremely difficult to answer - perhaps the reader could give his own answer. All we can say is that the idea of a closed system is not only due to theoretical cybernetic reasons but because there is definitely a chance for some keystone countries like Venezuela to be successful in building a closed system together with its neighbouring countries.

In order to consider how such a closed system could be achieved we must suppose a political and economical federation made up of six countries, say Venezuela, the other Andean Pact members and Panama. Let us call this federation Latin American System "LAS"(see annex N°29)

We must remember as well that the "LAS" is a closed system only as far as its possibilities of growth and development are concerned. Therefore, for us it is only a hypothetical example

(*).- Consumer society: is the society where the act of using or buying consumer goods or services is extremely influenced by advertising, fashions and irrationality.

which,without any detailed analysis we hope can be useful to explain the idea of clousure as a cybernetic alternative.

"LAS" is an independent system but it has to face the international political system(see chapter IV),Therefore survival, growth and development become its essential aims.

Survival in this case means the chances "LAS" has of subsisting in spite of all the internal or external disturbances(*) which acting as forces could put pressure on LAS in order to move it from its independent state to its former dependent state.

These "forces" could be called"destabilization forces".Thus LAS,in trying to cope with the destabilization forces,is the survival in question and in our view only a closed system could be successful in coping with such forces.

According to the factors of production(**)available in LAS, its production subsystem can show itself a variety of states; thus LAS, as a dynamic system could survive depending on how strong are its physiological limits(see point 5.1.3), and this in turn depends upon the quality and quantity of its raw material, technology, man power, energy, communications, management, the size of its market, capital etc.

Of these variables, market and technology should be the main problem for LAS, but at the same time they must be as well the main support for its growth and development.

Nowadays, as we pointed out in chapter III,technology and the size of the market have a special relationship. We already know that modern and high technology is being produced only by developed nations and for developed markets, so the

(*) .- Disturbances:"is simple that which displaces, that which moves a system from one state to another"Ross Ashby.page 77(4)

(**).- Factors of production:The traditional classification is into the following groups: Land,Labour,Capital and Enterprise.For some peoples,Enterprise or management might come under the heading Labour.(2)

technology that in a sovereign way (see point 4.1) LAS could buy or deal with, requires a big market and that is precisely what 90 million inhabitants which make up LAS would stand for.

On the other hand, no underdeveloped nation, and that includes LAS, could plan its development(in the way we un erstand such a concept.See point 3.1) thinking in terms of external markets as a basis for its self-sustaining economic expansion, when countries with industrial tradition and good technological backgrounds like England and Italy are losing their external markets because of technological lack of competitiveness. Therefore, only a captive market(*) such as the one we can get through a closed system like LAS, can be the way toward self-sustaining expansion.

(*).- Captive market: is a market strictly reserved to specific buyers and sellers.

REFERENCES AND BIBLIOGRAPHY CHAPTER V

5.- The cybernetic alternatives

5.01.- Pividal,Francisco "Bolivar:pensamiento precursor del antimperialismo"Ediciones Casa de las Americas.La Habana,1977.p.141

5.02.- Taylor,Philip "A New Dictionary of Economics" Routledge & Kegan Paul. London,1980.p.196

5.03.- Brooke, M. & Remmers, L. "The International Firm" Pitman Publishing Ltd. London,1977.p.172.

5.04.- Ashby,Ross "An Introduction to Cybernetics" Chapman & Hall Ltd. London,1970.p.9.

5.05.- Beer,Stafford "Platform for Change" John Wiley & Sons Ltd. London,1975.p.381

5.06.- A Merriam-Webster "Webster's New Collegiate Dictionary" G & C Merriam Co. Massachusetts,USA,1977

5.07.- Hobbes,Thomas Quoted by Herbert Spiro in"World Politics:the Global System" The Dorsey Press.Illinois,USA,1966.

5.08.- Spiro,Herbert J. "World Politics:the Global System" The Dorsey Press. Illinois,USA,1966

5.09.- Galbraith,John — "The New Industrial State" Penguin Books Ltd. London,1979

5.10.- Shoup, L & — "Imperial Brain Trust" Monthly Review Press London,1977

5.11.- Martin,Alan & — "An Introduction to Radiation Protection"Chapman and Hall. London,1979

5.12.- Blundy,David — "Cap the knife soothes Europe's nuclear nerves" The Sunday Times.London,25.10.81 See reference 5.12

5.13.- ITV TV — "Thames Report: Protect and Survive" London,2.3.80

5.14.- ITV TV — "TV Eye: Operation Hot Seat" Hot seat game. London,12.11.81

5.15.- Pringle,Peter — "Training for nuclear war" The Sunday Times.London,3.11.81 See reference 5.15

5.16.- Blundy, David -Washington- — "The computer that keeps declaring war" The Sunday Times.London,22.10.80 See reference 5.16.

5.17.- Brown, M. -BBC 2 TV — "Faces of modern war" showed in Man Alive London,14.10.80 See reference 5.17

5.18.- Home Office "Protect and Survive"
Her Majesty's Stationery Office.
London,1980. See reference 5.18

5.19.- Thompson, E.P. "Protest and Survive"
Bertrand Russell Peace Foundation
Russell Press Ltd.Nottingham,1980
See reference 5.19

5.20.- Popkess, Barry "The Nuclear Survival Hand-book"
Living through and after a nuclear attack.
Arrow Books Ltd.London,1980

Reference 5.12

The Sunday Times 25-10-81.

Cap the knife soothes Europe's nuclear nerves

by Jon Connell, Defence Correspondent, in London and David Blundy in Washington

THE REMARK which sent a nuclear shiver down Europe's spine last week came just after the stuffed shrimp had been served in the White House and Ronald Reagan was at his most relaxed and amiable.

"Mr. President," asked one of the American newspaper editors assembled in the cabinet office for their annual lunch with the president, "I'd like to take you back to strategic weapons in Europe again." It is evident from the transcript that Reagan was uncomfortable about the drift in the conversation. His grammar disintegrated, sentences began, then trailed away. One, however, was coherent enough:

"I could see where you could have the exchange of tactical weapons against troops in the field without it bringing either one of the major powers to pushing the button," said Reagan.

It is, perhaps, evidence of the gap that has opened up between American and European concerns about the nuclear war game that no one listening in the cabinet office that day, nor any of the presidential aides who pored over the transcript later looking for any of the famous Reagan gaffes, spotted anything untoward about the remark.

It was, after all, no more than a restatement of current Nato strategy, first laid out by Henry Kissinger in 1957 and endorsed by defence ministers in Europe and America ever since: this does, in theory, allow for the *possibility* of a limited nuclear war (see right).

What does seem to have changed, however, is the willingness of senior officials in America to discuss that possibility openly. Last week Eugene Rostow, director of the US Arms Control and Disarmament Agency, who will soon be negotiating with the Russians on arms limitations, told The Sunday Times:

"Gradually, reluctantly, they (the Europeans) have begun to realise what the Soviets are doing. Finally we have begun to react. It's leading to a situation in which the Soviets believe they can coerce us. Nuclear blackmail. They are engaging in aggression all over the world."

In response to a question about where a war might begin, he gave this bizarre answer: "The war is going on now. What is the campaign in the Caribbean? What is the Soviet incursion in Ethiopia, the Horn of Africa and all those places? These represent strategic steps towards the strategic goal of enveloping Europe. When that process is complete the Soviets have the control of oil and other raw materials. Why are they devoting so much time to Africa? It's raw materials. And then at that moment there's not much choice. You must never forget that the Russians are chess players. That's not our national game. We play poker."

Against this background Europe has become increasingly jumpy. Governments have begun to worry seriously about the growth of anti-nuclear movements and their impact on the electorate. Reagan's remarks coincided with the run-up to United Nations Disarmament Week, and yesterday massive peace marches were flooding the streets of Rome, Oslo, Brussels, Paris, Madrid and Helsinki as well as London.

To the demonstrators Reagan had merely reinforced suspicions that American strategy is to rely on Europe as the battlefield in a limited nuclear war; that Reagan's hard-line policy towards the Soviet Union, and the deployment of Cruise and Pershing missiles in Britain and on the continent, reinforces this possibility; and that the American decision to develop the neutron bomb, which is designed for Nato use on the battlefield, adds to the likelihood of Europe being sacrificed in a limited nuclear war.

It was the clumsiness of Reagan's statement and his timing rather than what he said that caused such alarm. But then, on Monday, a senior member of America's National Security Council, Major-General Robert L. Schweitzer, broke ranks to make a speech in which he painted a blood-curdling picture of Soviet intentions. "The Soviets are on the move," he warned. "They are going to strike."

Schweitzer was promptly sacked ("He was always off the wall", said one member of Reagan's transition team), but his remarks had done nothing to restore confidence in Washington's grasp of overall military strategy. As one western diplomat put it, the cliché that the US was being run by a pack of trigger-happy cowboys suddenly seemed to contain more than a grain of truth.

Reference 5.15

The Sunday Times 3-11-81

Training for nuclear war

from PETER PRINGLE in Washington

'GENERAL, if early in the battle you begin using the smaller nuclear weapons, say, the howitzers which travel only about nine miles or so, in the confusion of battle and the moving around, how do you avoid hitting your own troops?'

'Well, that's a real problem, and it's one of the realities of our modern-day integrated battlefield.'

This chilling exchange comes in a five-hour CBS Television documentary starting this evening in America. The General who gave the answer is Niles Fulwyler, the commander of the US Army nuclear and chemical agency. The battlefield he is talking about is Europe. For the first time the film shows NATO forces developing and teaching tactics for use in a nuclear war in Europe.

The film is a stark reminder that Western nuclear strategists actually do believe that a limited nuclear war in Europe is possible. 'There are some people,' says the much-decorated General Fulwyler, 'who think, regardless of the cities or anything else, it may be impossible to fight a nuclear war . . . but I don't think that. There are plenty of places that we could use nuclear weapons without hitting cities.'

But, the film points out, in Europe there just aren't that many empty spaces. And if the Russians were to hit Brussels with nuclear weapons, the city of Antwerp could be flattened, too. If they attack The Hague, Rotterdam could go, and if they attack Bonn, Cologne could be destroyed.

Nevertheless, the Allied army in Western Europe, like their Russian foe, train for what they call the 'integrated battlefield,' one in which conventional, nuclear and chemical weapons will be used, perhaps all at once.

Training officers talk dispassionately of 'entire units disappearing in the flash of an eye,' and of soldiers being 'degraded' because of the amount of protective clothing they would have to wear to keep out radiation and chemical agents.

The US Army assumes that radiation, rather than blast, will be the main killer and teaches its troops to calculate the range of the fallout. The rule of thumb is simple. As an officer explains: 'You perceive the brilliant flash of light, and you start counting . . . and you estimate the time that it takes for the bang to reach your location. That is the flash to bang time.' Then you know how much fallout to expect.

Like any military manoeuvres, the integrated battlefield has its element of farce. Consider this exchange from a war game in progress in snow-bound Bavaria.

A large oil drum, packed with an explosive substance that gives off a brilliant flash of light has just been detonated and the referee is quizzing troops in the area. He approaches a tank where all the crew appear to be inside with the hatch closed.

'Hey, tank commander, come on out a minute. Did you recognise anything over that way a few minutes ago?'

'Just a puff of smoke, sir.'

'That's all? Didn't you hear a loud boom, see a brilliant flash of light?'

'Not a flash of light, sir.'

'What would that indicate to you if you saw that . . . a brilliant flash of light?'

'Artillery.'

'What kind of artillery? What's the signs of a nuclear weapon?'

'. . . not familiar with that subject, sir.'

'You're not, huh? Well, that was a nuclear weapon. Your tank is dead.'

The Sunday Times.London 22-10-80

The computer that keeps declaring war

by David Blundy and John Bierman, Washington

A SMALL piece of silicon the size of a penny was identified last week as the faulty computer component that set off a false alarm of a missile attack on the United States on June 3, alerting the entire North American defence command.

Military experts are worried about the lengthy catalogue of failures in the US computer system that warns of nuclear attack —the Worldwide Military Command and Control System, known as Wimex. This is despite reassurances from the man who produced the guilty silicon chip, Gerald Dineen, the assistant secretary of defence. The Defense Department, too, said: "We weren't remotely close to World War Three."

Two leading generals and the joint chiefs of staff in Washington have complained about the constant failures of Wimex. John Bradley, the former chief test engineer on the computer network, says it is so unreliable that senior military officials have learnt to mistrust it. He estimates that there are 10 false alerts for every one that the Press is told of.

The system, he says, is now 10 years out of date. It is slow, cumbersome, and inaccurate. It has mistaken a rolling bank of fog and a flock of geese for a missile attack. The system fails, on average, once every 35 minutes.

Bradley maintains that not only does Wimex keep crying wolf, but in the event of real nuclear attack it would either not be believed or be incapable of efficient response.

He took his complaints to the Department of Defence and then to the National Security Council in the early Seventies. He says that no action was taken except that, in 1977, he was fired from his job. He is now suing the department for wrongful dismissal.

Bradley's statements are supported by the former supreme allied commander in Europe, General Alexander Haig. In November 1976 Haig sent a memorandum to the joint chiefs of staff in Washington which said that Wimex "is generally considered to be inefficient and approaching obsolescence."

Then, in December last year, Wimex was the subject of a scathing report by the General Accounting Office, which acts as watchdog on government agencies. The GAO criticised the Defense Department for failing to provide crucial information and found that Wimex, on which $15 billion has already been spent, so inefficient that it recommended Congress to withhold funds until the faults were rectified.

The incident on June 3, which was repeated three days later, resulted in a "low-level" state of nuclear war alert and warned US nuclear command centres across the world. The alert was

Brown: surprise strike

recognised as false only three minutes and 14 seconds after the alarm had first been raised.

The critical role played by Wimex in the Western defence system was explained in a Pentagon report. It is a network of 35 computers in 27 command centres, and of warning sensors and telecommunications. It is used by the National Command Authorities—which means the President and the Secretary of Defense — to control US forces throughout the world. In case of nuclear attack, the report says, the system should provide early warning, select appropriate retaliatory action, provide means to assess damages to the US, decide the effectiveness of the retaliatory strike against the enemy and then terminate actions to end the war. According to the defence experts World War Three will last at most half-an hour.

Development of Wimex began in 1971 with a directive from the Department of Defense that it must be "the most responsive reliable and survivable system that can be provided with the resources available."

According to the General Accounting Office, however, things began to go wrong as early as 1973 when the test director reported serious failures. A year later an independent study found "major reliability problems." By March 1976, the system was incapable of working for more than an hour at a stretch without breaking down.

The network went fully operational in December 1977, despite a report by the Defense Communication Agency which complained of "repeated system failure, failure during electrical storms or when power systems are subject to voltage and frequency fluctuations."

In December 1979, the GAO concluded yet again that the entire system was "not reliable" and "generally not survivable."

Bradley fears that the Russians must long have been as aware as the Pentagon of the shortcomings of the Wimex system. They may therefore be tempted to risk a first strike. The comment by the defense secretary, Harold Brown, earlier this year is hardly encouraging. He said that a Soviet surprise nuclear strike was unlikely because "prudent planners in Moscow could never be sure that he would not launch our intercontinental ballistic missiles on warning."

The Pentagon's major problem at the moment is that the missiles might be launched because of a faulty computer chip. Bradley points out that an efficient computer system would correct its own mistake within microseconds and would not have to wait for generals to hold a telephone conference.

If, in that June 3 alert, missiles had really been launched from Soviet submarines off the American coast, then it would have taken them only six to eight minutes to reach target. As Bradley says: "In a nuclear war the three minutes and 14 seconds

BBC 2.London 14-10-80

Man Alive – Phantom, Tuesday 9.30 BBC2

Man Alive follows a squadron of Phantom fighters through the dizzying missions of a NATO war exercise. **Mick Brown** descended into the Combat-Operations-Centre at RAF Wildenrath, and reports on the organised nightmare that simulates a Third World War

Faces of modern war

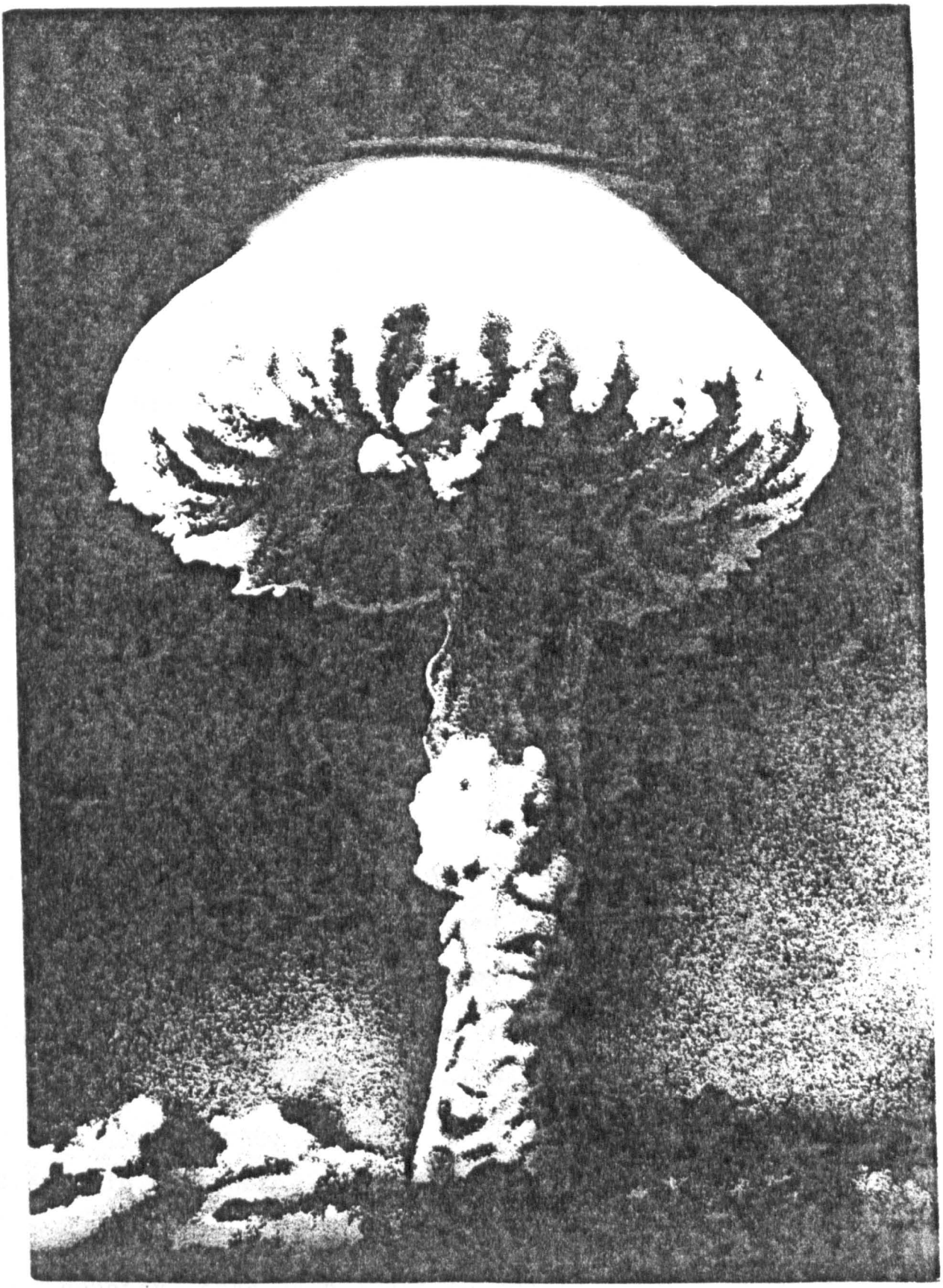
Reference 5.18

Home Office.London 1980

PROTECT AND SURVIVE

This booklet tells you how to make your home and your family as safe as possible under nuclear attack

Reference 5.19 Bertrand Russell Peace Foundation



"When radiological conditions permitted movement, district and borough London controllers should assume that one of the priority tasks for their staff, in areas where survivors were to continue residing, would be to collect and cremate or inter human remains in mass graves.

"Once the initial clearance of corpses has been completed, there would be still a problem of several weeks, and perhaps months, of an above average rate of dying from disease and radiation effects. Nevertheless, a return to the pre-attack formalities should be the objective in the longer term."

Home Office circular No.ES 8/1976, issued on a "need to know" basis to chief executives of Councils.

C O N C L U S I O N S

When we pointed out in the title of this work that it would be "a cybernetic essay in political science", our intention was to apply cybernetic theory to political science. This requires the application of the basic postulates of the theory to the political context of each of the problems studied in this work. In our case the analysis has been located within the referential framework of underdevelopment and dependency theory.

Within this framework, our conclusions, which are basically directed to the Latin American situation, are as follows:

1.- The control of the technology implicit in the productive process of the underdeveloped countries acquired strategic significance for peacetime development and wartime survival. For this reason a huge effort must be made towards the control of this technology.

2.- If in cybernetic terms access to information about a nation's reality is possible for an underdeveloped country, then such a nation should adopt a strategy of changes directed to increase such access to a level where the implementation of development can be successful.

3.- No strategy of development for those underdeveloped countries which have resources would be successful if a strategy of control of information is not planned and executed first.

4.- A cybernetic organization can help a government to deal with destabilization actions. This organization would provide the government with vital information whenever the relative stability of the output of goods and services from a firm or industry was disturbed and threatened to become intentionally unstable.

A N N E X E S

MAJOR COMPUTER COMPANIES PERFORMANCES

IN 1979 (US$m)

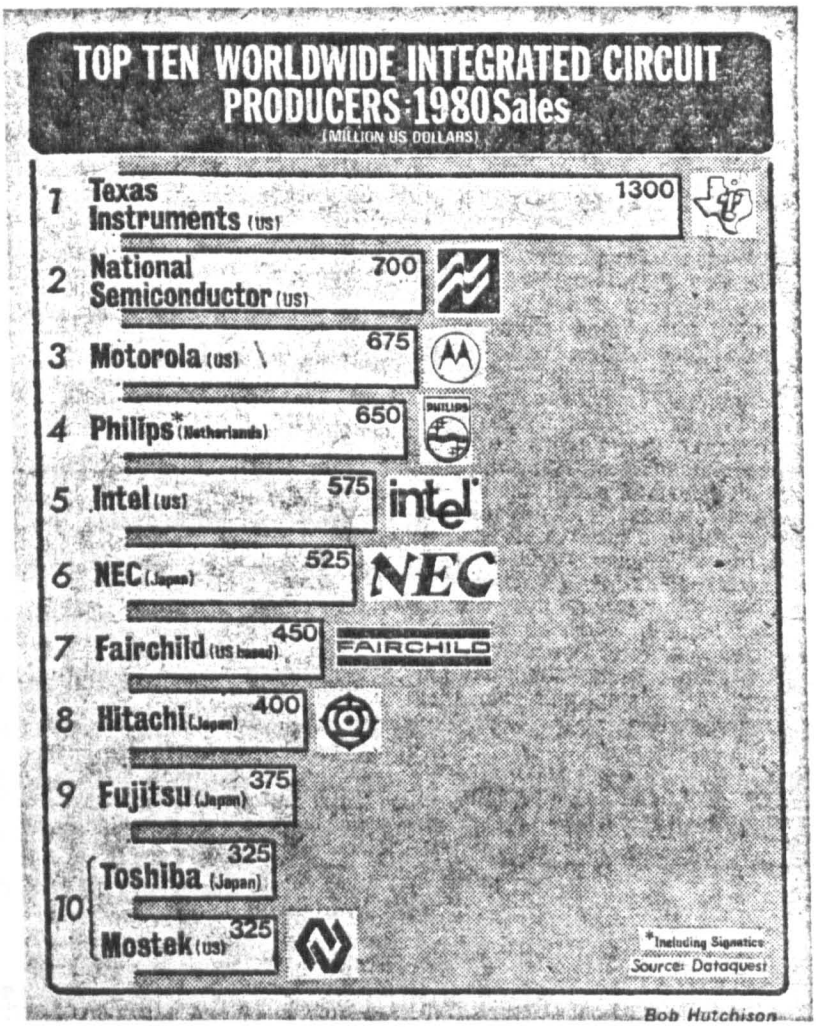
Company	Total revenues	% changes 1978	Net profits	% change 1978
IBM	22,862	8.5	3.001	3.2
Burroughs	2,831	15.1	306	20.6
Control Data	2,300	21.0	124	39.0
Honeywell	4,210	18.7	261	29.3
NCR	3,003	15.0	235	21.1
Sperry Rand	4,586	12.8	259	21.0
ICL*	1,373	23.0	75.9	29.0

* Estimated at exchange rate of £1 = $2.20

Source: "The Computer Industry"
Financial Times Survey
London, March 3 1980

ANNEX N° 1: MAJOR COMPUTER COMPANIES PERFORMED IN 1979

U.S MICROCHIP MAKERS



Annexe Nº 2: U.S. MICROCHIP MAKERS
Source: Financial Times.London 6-11-81

Data Act.

Given in the Palace of Stockholm, May 11th, 1973

We Gustaf Adolf, by the Grace of God, King of Swedes, Goths, and Wends, hereby promulgate, that we, together with Parliament, have thought well fit to enact as follows:

Introductory Provisions

Section 1

For the purpose of this Act

Personal information means information concerning an individual,

Personal register means any register or any other notes made by automatic data processing and containing personal information that can be assigned to the individual concerned,

Individual registered means an individual in respect of whom personal information occurs in a personal register,

Responsable keeper of a register means anyone for whose activity ADP is being carried out, if the register is at his disposal.

Permission etc.

Section 2

A personal register may not be started or kept without permission by the Data Inspection Board.

The first paragraph of this Section does not apply to personal registers established according to a decision by King or Parliament. Before such a decision is taken the Data Inspection Board shall be heard.

Section 3

The Data Inspection Board shall grant permission to start and keep a personal register, if there is no reason to assume that, with due observance of the regulations laid down pursuant to sections 5 and 6, undue encroachment on the privacy of individuals will arise.

At the appraisal whether undue encroachment may arise special attention should be given to the kind and quantity of personal information meant to be included in the register and to the attitude towards the register shown or expected from the individuals meant to be registered.

Section 4

Permission to start and keep a personal register containing information that anyone is suspected of or convicted for a crime or has served a sentence or paid other consequences of a crime or has been subjected to coercive action under the Child Welfare Act, the Temperance Act, the Act on Provision of Psychiatric Treatment in Detention in Certain Cases, the Act on Care of Certain Mentally Retarded Persons, the Act on Measures in Cases of Asociality of Danger to the Public or the Foreigners Act may be granted to a person other than an authority which is by law or statute responsible for keeping a record of such information, unless there are extraordinary reasons for this.

Permission to start and keep a personal register otherwise containing information about anybody's illness or state of health or information that anybody has received social assistance, treatment for alcoholism or the like, or has been the subject of proceeding under

the Child Welfare Act or the Foreigners Act, may not be granted to a person other than an authority which is by law or statute responsible for keeping a record of such information, unless there are special reasons fo this.

Permission to start and keep a personal register containing information about anybody's political or religious views may be granted only where there are special reasons. This shall not, however, apply to a personal register that an association wants to keep of its own members.

Section 5

When granting a permission to start and keep a personal register the Data Inspection Board shall issue regulations as to the purpose of the register and the personal information that may be included. If there are special reasons the permission may be limited to certain time.

Section 6

If permission is granted to start and keep a personal register, the Data Inspection Board shall, insofar as is needed to prevent danger for undue encroachment on privacy, issue regulations concerning:

1.- the obtaining of information to the personal register,
2.- the carrying out of the ADP,
3.- the technical equipment,
4.- the adaptation of personal information that may be made through ADP,
5.- information to the persons affected,
6.- what personal information may be made accessible,
7.- the issuance of personal information to others and other use thereof,

8.- the keeping and selection of information,
9.- control and security.

Regulations regarding issuance of personal information may not restrict the duties of authorities under the Freedom of the Press Act.

Section 7

What has been stated in sections 5 and 6 about the duty of the Data Inspection Board to issue regulations also applies to personal registers referred to in section 2, second paragraph, if regulations have not been given by King or Parliament.

The Duties of the Responsible Keeper of the Register

Section 8

If there is reason to suspect that personal information in a personal register is incorrect, the responsible keeper of the register shall, without delay, take the necessary steps to ascertain the correctness of the information and, if needed, to correct it or exclude it from the register.

If a piece of information, that is corrected or excluded, has been handed over to a person other than the individual registered, the responsible keeper of the register shall, at the request of the individual registered, notify the receiver concerning the correction or the exclusion. If there are special reasons the Data Inspection Board may exempt the responsible keeper of the register from his duty to notify.

Section 9

If in a personal register there is personal information

which must, with regard to the purpose of the register, be regarded as incomplete, or if a personal register which constitutes a record of persons lacks information of a person who with regard to the purpose of the register must be espected to be included in it, the responsible keeper of the register ought to supplement what is needed. Such supplementary addition shall always be made, if the incompleteness may cause undue encroachment on privacy or risk of loss of rights.

Section 10

At the request of an individual registered the responsible keeper of the register shall as soon as possible inform him of the personal information concerning him in the register. When an individual registered has been thus informed, new information need not be given to him until twelwe months later.

Information according to the first paragraph of this section shall be given free of charge. If there are special reasons the Data Inspection Board may, concerning a certain kind of personal information, permit a fee.

The provision of the first paragraph does not apply to information which, pursuant to law or statute or the decision of an authority, may not be delivered to the individual registered.

Section 11

Personal information in a personal register may not be issued if there is reason to assume that the information will be used for ADP contrary to this Act. If there is reason to believe that personal information will be used for ADP abroad the information may be issued only

after permission by the Data Inspection Board. Such permission may be given only is there is ground to believe that the issuance will not cause undue encroachment on privacy. Concerning prohibition of issuance from authorities of personal information regulations are given in the Act on Restrictions of the Right to obtain Public Documents.

Section 12

Should a responsible keeper of a register cease to keep a personal register the Data Inspection Board must be notified. The Data Inspection Board shall prescribe how the register should be dealt with.

Section 13

The responsible keeper of a personal register and any other person who has concerned himself with it may not without authorization reveal what he has learnt from it about the personal circumstances of an individual.

If personal information has been issued in accordance with such regulations given pursuant to section 6 or 18 that limit the right of the receiver to pass it on, the receiver or any person who in his activity has dealt with the information may not without authorization reveal what he has learnt about the personal circumstances of an individual.

Section 14

Information from an ADP recording, that is used by an authority for the purpose of judicial or administrative proceedings, shall be added to the relevant file in readable form, if special reasons do not speak in favor of an exeption.

Supervision etc.

Section 15

The Data Inspection Board supervises that ADP does not cause undue encroachment on privacy.

The supervision shall be executed in such a way that it does not cause greater costs or inconvenience than is necessary.

Section 16

For the purpose of its supervision the Data Inspection Board shall be granted admission to premises where ADP is carried out or where computers or equipment or recordings for ADP are kept. Moreover, the Data Inspection Board shall have access to documents relating to ADP and may make arrangements for operating the computers.

Section 17

The responsible keeper of a register shall deliver to the Data Inspection Board the information and particulars concerning the ADP which the Board requires for its supervision. What is now said also applies to anyone who handles a personal register on behalf of the responsible keeper of the register.

Section 18

If the keeping of a personal register has caused undue encroachment on privacy or if there is reason to believe that such encroachment will appear the Data Inspection Board may, insofar as needed, alter regulations given before or issue new regulations of the kind referred to in sections 5 or 6. With regard to registers referred to in section 2, second paragraph, the Data Inspection Board may take those steps only if they are not contrary to decisions taken by King or Parliament.

If protection against undue encroachment on privacy cannot be attained by other means, the Board may cancel a given permit.

Section 19

Any person who has dealt with matters concerning permission or supervision under this Act at the Data Inspection Board may not without authorization reveal what he has learnt about the personal circumstances of an individual or about professional or business secrets.

Penalties and Damages etc.

Section 20

Any person who wilfully or by negligence

1.- starts or keeps a personal register without permission under this Act, when such permission is required,

2.- offends against a regulation issued pursuant to sections 5, 6 or 18,

3.- issues personal information in violation of section 11,

4.- offends against the provisions of sections 12 or 13,

5.- gives incorrect information when fulfilling an obligation to inform as stated in section 10,

6.- gives incorret information in a case referred to in section 17, or

7.- offends against the provisions of section 19,

shall be sentenced to a fine or to a term of imprisonment not exceeding one year.

Public prosecution for an offence against sections 13 or 19 may be instituted only if the person aggrieved

requests this or prosecution is called for from a public point of view.

Section 21

Any person who, without authorization, effects access to recordings for ADP or unduly alters or obliterates such information or includes it in a register will be sentenced for data trespass to pay a fine or to a term of imprisonment not exceeding two years, if the perpetration is not punishable by the Penal Code.

Attempt or preparation of a crime referred to in the first paragraph of this section will be punished according to 23rd Chapter of the Penal Code. When the offence, if completed, would have been considered trivial, nobody may be convicted under this paragraph.

Section 22

If a personal register has been started or kept without permission, though such a permission is needed, the register will be forfeit, if that is not manifestly unreasonable.

Section 23

If an individual registered suffers damage because a personal register contains incorrect information about him the responsible keeper of the register shall pay compensation to him. When judging if damage has been caused and assessing the compensation the suffering inflicted and other circumstances of other than a purely pecuniary significance shall be taken into consideration.

Section 24

If the responsible keeper of a register or a person who administers a personal register on his behalf fails to

grant access to promises or documents pursuant to section 16 or fails to give information pursuant to section 17, the Data Inspection Board may impose a money penalty. The same shall be applicable if the responsible keeper of a register does not fulfil his obligations according to sections 8, 9 or 10.

Section 25

Appeal against decisions of the Data Inspection Board may be lodged with the King in Council, The Chancellor of Justice may appeal in order to safeguard public interests.

Interim Regulations

This Act enters into force on July 1st, 1973. The provisions of sections 2-14, 18, 20 points 1-5, 21-23 and 24 second sentence will not be valid until July 1st, 1974.

Notwithstanding the previous paragraph the Data Inspection Board may issue regulations referred to in sections 5 and 6 for any time before July 1st, 1974, if there are special reasons. If anybody offends against such a regulation, the penalty rule of section 20 point 2. shall be applicable. Before July 1st, 1974, the Data Inspection Board may also try applications for permission and issue regulations according to sections 5, 6 or 18 relating to any time after the end of June 1974.

If a personal register, that under this Act may not be Kept without permission, has been started before July 1st, 1974, and an application for permission is made before January 1st, 1975, the register may be kept until the application has been ultimately tried. The kind of personal information included in the register and the

purposes for which the information is used may not be altered or expanded until the Data Inspection Board has bee notified. If any person offends against this the penalty rule of section 20 point 1. will be applicable.

This will have to be obediently observed by all concerned. To make doubly sure We have put Our signature to this with Our own hand and let it be confirmed with Our royal seal.
The Palace of Stockholm, May 11th, 1973.
During the Illnes of His Majesty
My most Gracious King and Lord
Carl Gustaf
(soal)

Lennart Geijer
(Department of Justice)

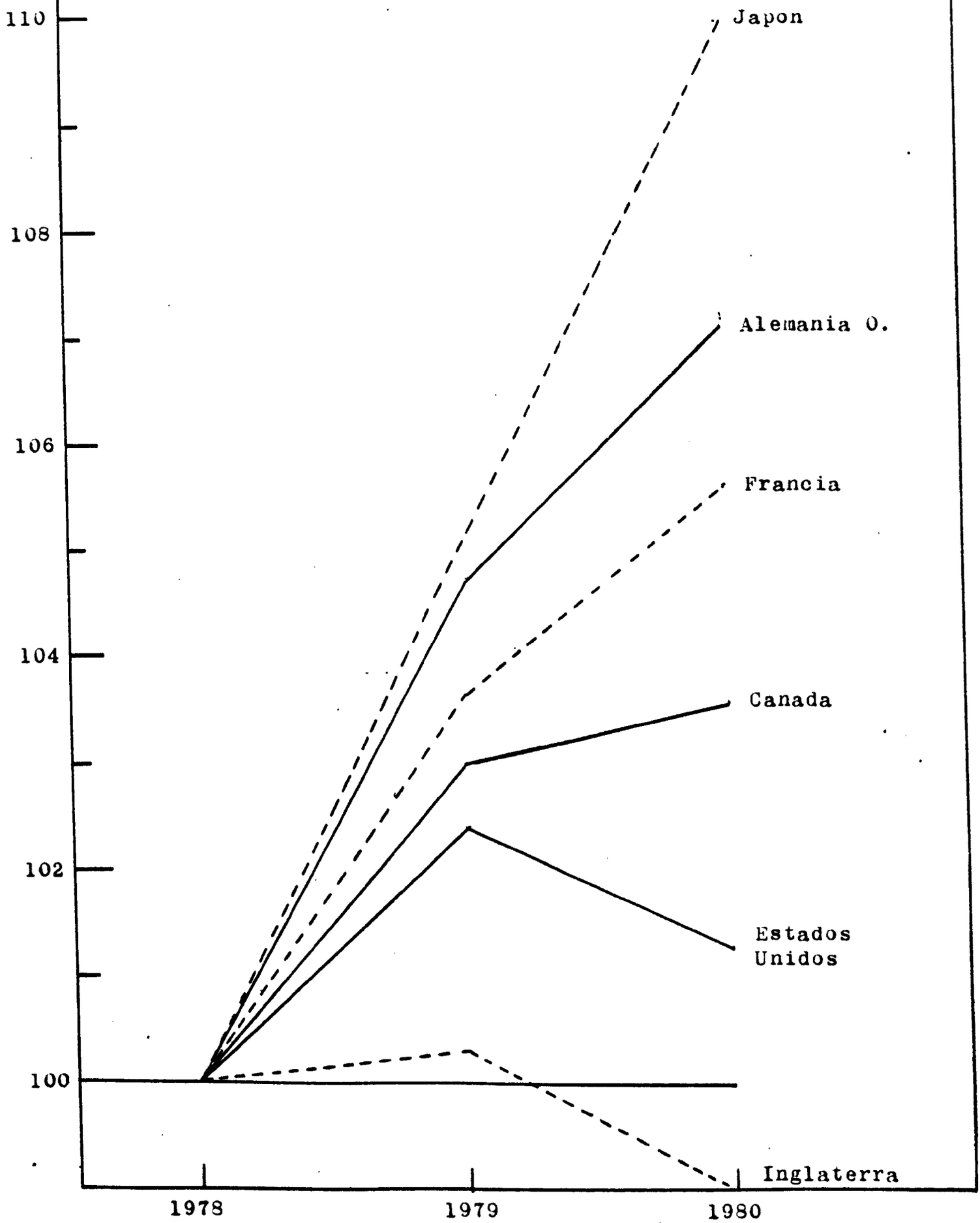
According to regulations given by the King in Council the Data Inspection Board consists of a full-time working chairman and eight other members. Important cases will be tried by the Board, while matters which are not of essential character may be decided by the chairman alone. Routine matters - for example permissions concerning simple registers of members, employees, tenants, insured persons or other customers may be handled by a subordinate official.

Annexe N°4 New communication services

Source:Physics in Technology
Vol.10 N°4 July 4 1979

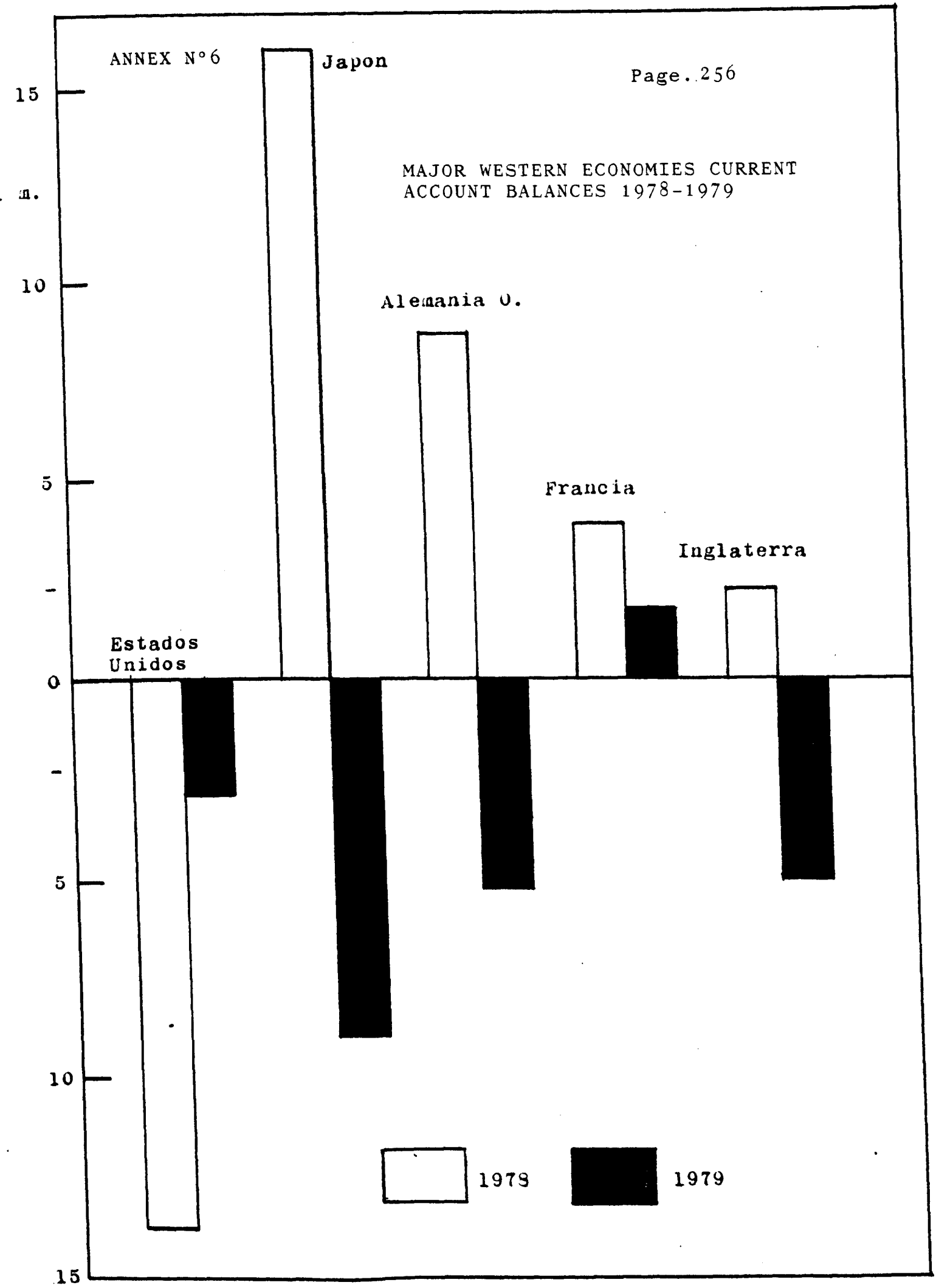
New services	*Receiver*	*Transmitter*	*Transmission media*	*Information mode*
Telephone features	Improved telephone	Improved telephone	Telephone network	Voice
Telecopy	Office telecopier	Office telecopier	Telephone network Data network High-speed links	Alphanumerics, graphics
	Public telecopier	Public telecopier		
Teletex	Text terminal	Text terminal computer	Data network	Alphanumerics
Electronic mailbox systems	Electronic mail station (e.g. display terminal)	Mailbox computer	Telephone network Data network	Alphanumerics
Viewdata	Telephone, TV set, additional equipment	Central data bases	Telephone network	Alphanumerics, graphics
Value-added data networks	Data terminals Computers	Data terminals Computers	Data network	Alphanumerics
Mobile radio	Mobile telephone	Mobile telephone Stationary telephone	Radio transmission Telephone network	Voice
	Data and text terminals	Text terminals	Radio transmission Data network	Alphanumerics
ISDN	Telephone Text and data terminals Computers	Telephone Text and data terminals Computers	Digital telephone network	Voice Alphanumerics
Picturephone	Video-telephone	Video-telephone	Switched broadband network	Voice Moving image
Video conference	Studio	Studio	Broadband link	Voice, moving image
CATV	TV set	Programme distribution centre	Broadband cable distribution network	TV programmes
Two-way CATV	Extended TV set	Programme distribution centre including computer services	Broadband cable network	TV programmes Alphanumerics Images
Teletext	TV set with additional equipment	TV station	Broadcasting distribution network	Alphanumerics, graphics

ANNEX N°5
1978=100



ANEXO Nº 5 : PRODUCTO NACIONAL BRUTO
ANNEX N° 5 : GROSS NATIONAL PRODUCT

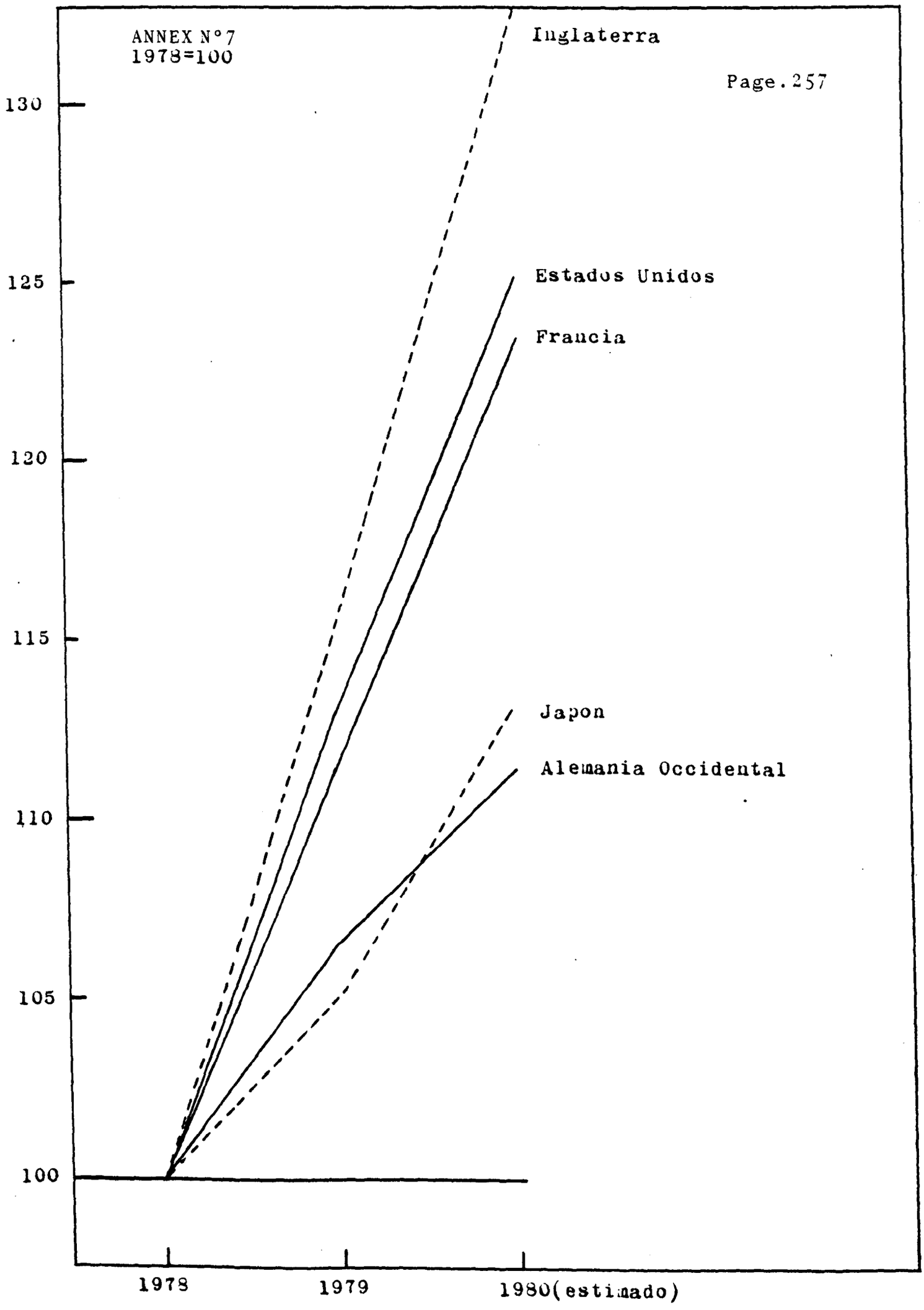
Fuente: The Economist
Mayo 10.1980.



ANEXO Nº 6 : BALANZAS DE CUENTA CORRIENTE

ANNEX N° 6 : CURRENT ACCOUNT BALANCES

Fuente: The Economist Mayo, 10.1980.



ANEXO Nº 7 : INCREMENTO DE PRECIOS AL CONSUMIDOR. Fuente: The Economist Mayo 10.1980.

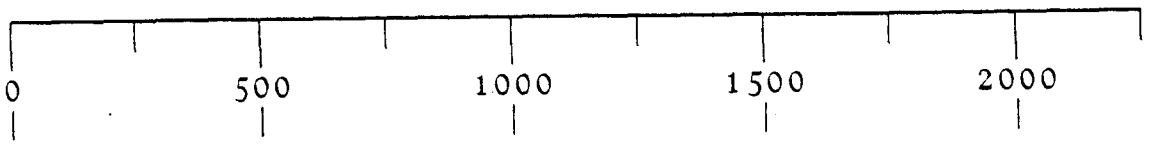
ANNEX N° 7: MAJOR W.E. CONSUMER PRICES 1978-1979.

MAJOR TRANSNATIONAL CORPORATIONS PROFITS 1980

Source: Newsweek May 5 1980

Corporation	Earnings in millions U.S.$	% change from 1979
Standard Oil (Ohio)	450.7	+170%
Exxon	1.925.0	+102
Merrill Lynch	35.1	+ 78
Standard Oil (Indiana)	576.0	+ 65
Texas Instruments	50.3	+ 32
Dow Chemical	230.5	+ 31
United Technologies	92.0	+ 30
RCA	78.7	+ 27
Union Pacific	102.0	+ 21
Abbott Laboratories	46.2	+ 20
General Electric	341.5	+ 13
Alcoa	143.5	+ 12
Xerox	148.4	+ 8
BankAmerica	134.5	+ 4
IBM	681.5	+ 2
Du Pont	244.4	- 2
McDonnell Douglas	43.4	- 4
B.F. Goodrich	20.3	- 23
Citicorp	83.3	- 34
Great Western Financial	13.5	- 41
International Paper	89.0	- 51
Republic Steel	20.6	- 52
Eastern Airlines	3.5	- 73
General Motors	155.0	- 88

WORLD POPULATION BY MAJOR REGIONS 1975-2000



More developed countries

USA, Canada, W. Europe, Japan · Australia and New Zeland

Russia and East Europe

Less developed countries

Africa

China

Other Asia

Latin America

World population

1975 = 4,090 millions

2000 = 6,350 millions

ANNEX N°9: WORLD POPULATION BY MAJOR REGIONS 1975-2000

Source: US Bureau of census, 1977

VENEZUELAN'S BALANCE OF TRADE 1973-1978

(US$ 000)

Year	Import	Export	balance
1973	2,626,000	5,628,000	3,002,000
1974	3,841,000	15,206,000	11,365,000
1975	5,462,000	11,117,000	5,655,000
1976	6,771,860	9,277,907	2,506,047
1977	9,749,070	9,534,100	214,970(-)
1978	10,404,186	9,197,786	1,212,400(-)

Source: Boletin Estadistico N°6 de los Bancos Centrales de los Paises del Acuerdo de Cartagena.

Published by Central Bank of Ecuador Quito.Enero,1980.

U.S.FOREIGN MILITARY SALES AGREEMENTS 1970-1976

(selected countries) (Value in thousands of dollars)

	FY 1970	FY 1971	FY 1972	FY 1973	FY 1974	FY 1975	FY 1976
Libya	5,282	632	2,672	130	12	—	—
Luxembourg	101	85	11	638	21	25	2,940
Malaysia	1,837	98	40,473	1,457	1,414	4,363	—
Mali	5	—	48	—	—	176	—
Mexico	12	437	175	693	411	153	2,053
Morocco	2,439	2,272	7,527	2,441	8,355	299,888	120,820
Nepal	—	11	—	60	2	—	—
Netherlands	7,465	7,038	29,214	35,522	18,986	638,904	19,639
New Zealand	5,294	7,293	3,290	3,279	5,401	4,409	6,004
Nicaragua	82	674	63	134	388	607	518
Niger	—	—	—	—	8	—	—
Nigeria	9,652	25,522	2,409	696	4,403	2,771	1,803
Norway	—	—	21,173	13,297	51,285	458,953	34,868
Oman	4,423	22,490	—	—	—	1,613	229
Pakistan	14	9	5	18,652	11,203	37,368	38,620
Panama	4	—	6	1,615	1,867	258	1,266
Paraguay	2,153	1,479	—	26	12	—	—
Peru	843	1,107	882	24,816	43,332	37	24,024
Philippines	1,055	1,011	468	1,159	4,889	27,279	28,371
Portugal	44,854	14,980	2,565	382	1,677	31,809	1,705
Saudi Arabia	—	—	459,347	1,093,537	1,906,499	2,261	2,502,454
Senegal	2,472	1,938	4	—	—	1,549,944	—
Singapore	1	1	5,504	7,638	12,748	1,422	5,093
South Africa	25,872	108,452	2	1	—	—	—
Spain	—	—	22,742	60,774	151,735	57,652	79,357
Sri Lanka	265	885	4	—	—	—	—
Sweden	4,435	450	1,496	2,012	6,972	782	24,356
Switzerland	21,146	48	11,252	2,412	8,634	49,512	454,735
Thailand	85	—	16,978	1,907	20,603	14,768	89,608
Trinidad/Tobago	—	—	—	—	—	—	—
Tunisia	2,590	1,141	5,099	2,137	737	382	1,673
Turkey	63,749	45,560	124,511	212,740	19,056	78,461	46,532
United Kingdom	241	1,631	1,588	109,496	53,150	31,999	1,997
Uruguay	738	1,636	43,047	1,493	1,207	8,258	6,920
Venezuela	—	—	2	25,341	4,838	45,557	—
Vietnam	—	—	—	1,155	4	—	138,479
Yemen	41	2	104	1,218	2,634	372	631
Yugoslavia	54	16,111	286	700	6	262	8,781
Zaire	38,928	17,717	39,839	99,218	1,383	1,723	35,071
International Organisations					18,215	32,711	

ANNEX N°11: U.S.FOREIGN MILITARY SALES AGREEMENTS 1970-1976

Source: Anthony Sampson
"The Arms Bazar".p.318.

U.S.FOREIGN MILITARY SALES AGREEMENTS 1970-1976

(selected countries) (Value in thousands of dollars)

	FY 1970	FY 1971	FY 1972	FY 1973	FY 1974	FY 1975	FY 1976
Worldwide	945,547	1,568,802	3,297,421	5,772,189	10,562,412	9,662,811	8,368,527
Argentina	10,827	12,496	15,056	16,445	8,421	15,689	12,093
Australia	53,784	57,884	117,210	25,948	31,759	166,697	411,854
Austria	1,324	3,739	2,398	2,453	4,456	7,587	8,781
Bahrain	—	—	—	—	—	18	—
Belgium	4,345	2,993	4,514	6,167	11,082	738,077	6,522
Bolivia	44	5	32,575	37	122	795	1,134
Brazil	2,458	17,845	268	14,962	71,288	27,090	10,610
Burma	7	86	37,248	223	118	21	82
Canada	52,167	28,617	6,252	90,353	106,985	96,839	65,752
Chile	7,523	2,898	75,419	14,977	76,001	49,324	13
China (Taiwan)	35,118	65,043	5,397	202,439	87,846	144,385	1,193,012
Colombia	158	2,168	34	1,247	1,083	992	1,370
Costa Rica	—	—	13,381	—	—	237	23,602
Denmark	6,596	15,928	16	10,964	21,325	367,783	39
Dominican Republic	—	31	4	82	31	2	2,099
Ecuador	20	315	—	—	—	14,960	67,271
Egypt	—	—	*	—	—	—	728
El Salvador	—	11	10	52	388	418	118,840
Ethiopia	6	—	—	—	7,426	22,100	160
Fiji	—	—	—	—	—	—	1
Finland	—	1	63	8,543	12	1	1
France	3,402	5,979	7,455	—	22,504	6,131	4,429
Gabon	—	—	—	—	—	211	—
Germany	245,022	176,908	875,751	220,285	231,436	299,682	194,221
Ghana	51	*	—	—	187	16	1
Greece	29,171	24,535	180,176	56,825	458,121	214,595	82,981
Guatemala	464	7,586	2,057	3,359	854	909	3,621
Haiti	—	—	—	—	291	84	441
Honduras	—	—	27	5,269	681	291	732
Iceland	—	*	436	46	—	—	—
India	2,094	856	46	*	2,617	8,142	3,266
Indonesia	*	18	*	148	148	48,955	3,101
Iran	113,081	397,563	522,128	2,138,143	4,280,652	2,570,296	1,301,287
Ireland	*	12	228	197	16	21	32
Israel	44,416	413,518	409,871	196,102	2,468,340	861,061	919,478
Italy	36,142	23,441	76,569	64,421	47,847	44,885	24,680
Jamaica	8	9	3	7	42	74	6
Japan	21,223	10,607	42,223	51,459	58,749	29,353	34,642
Jordan	28,826	16,282	18,863	6,096	61,538	80,923	434,145
Korea	—	393	8,764	1,592	98,840	228,932	625,877
Kuwait	—	—	*	53	29,001	377,812	139,617
Lebanon	—	187	194	5,210	9,747	295	315
Liberia	1,177	—	—	1,315	370	449	145

ANNEX N°11: U.S.FOREIGN MILITARY SALES AGREEMENTS 1970-1976

Source: Anthony Sampson
"The Arms Bazar".p.317

SAUDI ARABIA GOVERNMENT EXPENDITURE AND REVENUE 75-80

(SRbn)

Year	Expenditure		Revenue		Surplus/ Deficit
	Actual	Budget	Actual	Budget	
1975-1976	81.7	110.9	101.9	95.8	+28.2
1976-1977	128.0	110.9	135.9	110.9	+ 7.9
1977-1978	138.0	111.4	141.0	146.5	+ 3.0
1978-1979	147.4	130.0	132.8	130.0	-14.6
1979-1980*	200.0*	200.0*	220.0	220.0*	+20.0*

* Estimates

Source: Based on published and unpublished official Saudi statistics included in article by James Buxton showed in Financial Times Survey "Saudi Arabia". London, 28th April 1980

ANNEX N°12:SAUDI ARABIA GOVERNMENT EXPENDITURE AND REVENUE.

VENEZUELA GOVERNMENT EXPENDITURE AND REVENUE
1973-1978

(US$ 000)

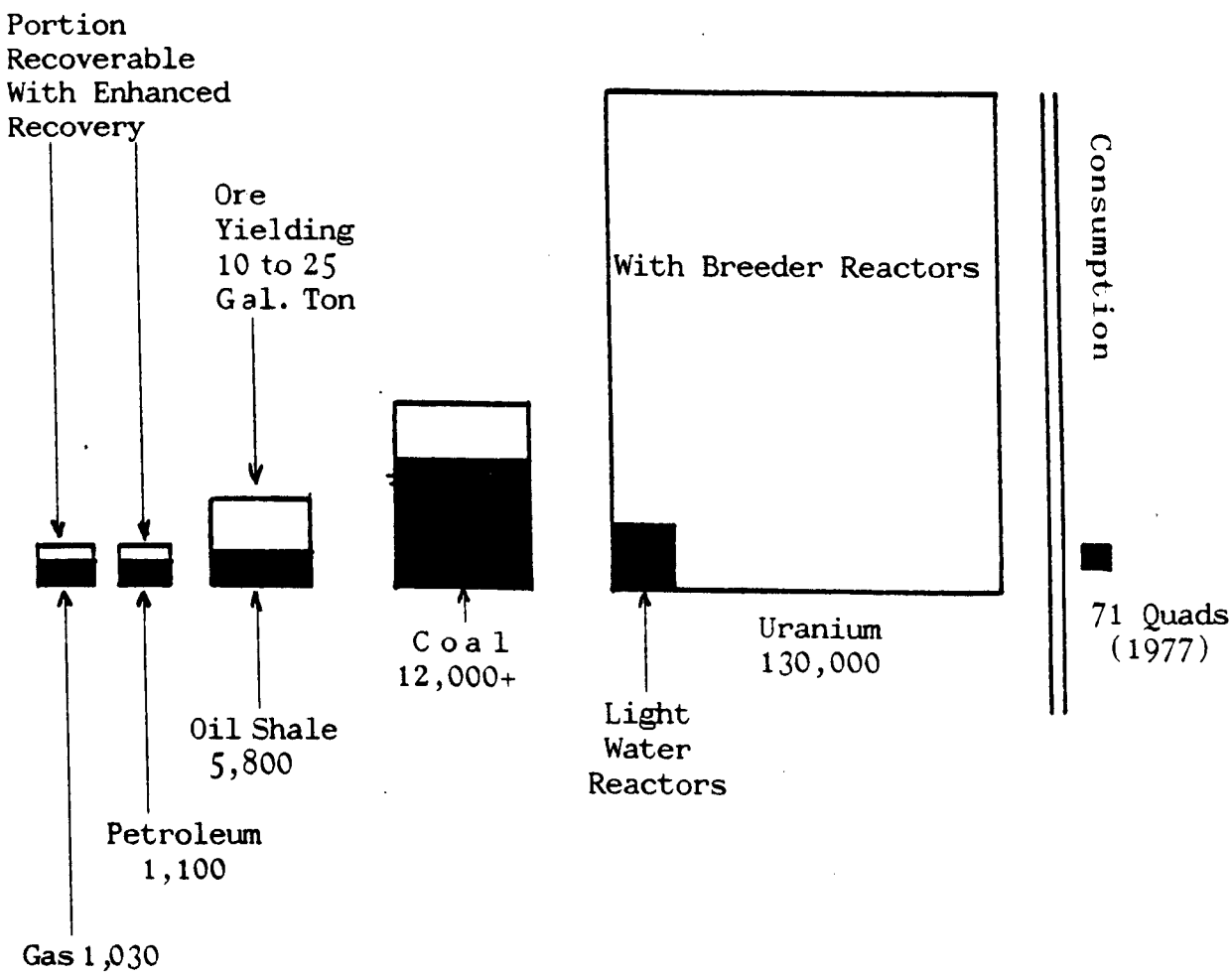
Year	Expenditure	Revenue	Surplus / Deficit
1972-1973	3,741,395	3,397,442	+ 343,953
1973-1974	9,918,605	9,191,163	+ 727.442
1974-1975	9,511,163	9,305,814	+ 205,349
1975-1976	8,867,442	9,053,256	- 185,814
1976-1977	9,412,558	11,603,256	-2,190,698
1977-1978	9,326,977	11,290,930	-1,963,953

Source: Statistics from "Boletin Estadistico N°6 de los Bancos Centrales de los Paises del Acuerdo de Cartagena". Published by Ecuador's Central Bank. January,1980

ANNEX N°13:VENEZUELA GOVERNMENT EXPENDITURE AND REVENUE 73-78

USA ENERGY AVAILABLE FROM DOMESTIC RESOURCES
VERSUS ANNUAL DOMESTIC CONSUMPTION 1977

Available Supply in Quads(10^{15}BTU)
U.S.Consumption in 1977



Source: A National Plan For Energy Research, Development & Demonstration, ERDA-48(1975). Included in the Antony Sutton book "Energy the created Crisis"

ANNEX N°14: USA ENERGY AVAILABLE FROM DOMESTIC RESOURCES

Series E 123-134. Wholesale Prices of Selected Commodities: 1800 to 1970—Con.

[In dollars per unit]

Year	Wheat	Wheat flour	Sugar	Cotton, raw	Wool	Cotton sheeting	Coal, anthracite	Steel rails	Nails	Copper	Turpentine	Brick
	123	124	125	126	127	128	129	130	131	132	133	134
	Bu.	*100 lb.*[1]	*Lb.*	*Lb.*	*Lb.*	*Yd.*[2]	*Ton*[3]	*100 lb.*[4]	*50 lb.*[5]	*Lb.*	*Gallon*[6]	*1,000*
1945	1.664	3.181	0.054	0.226	1.102	0.153	11.89	42.94	2.850	0.120	0.794	15.89
1944	1.664	3.184	.055	.212	1.188	.145	11.47	40.00	2.550	.120	.776	14.29
1943	1.440	3.170	.055	.206	1.182	.142	10.80	40.00	2.550	.120	.668	13.43
1942	1.189	3.448	.055	.193	1.195	.141	10.31	40.00	2.550	.120	{ .619 / *.706* }	13.21
1941	.992	4.752	.049	{ .139 / *.146* }	1.091	{ .115 / *.121* }	10.01	40.00	2.550	.120	.617	12.59
1940	.871	4.307	.044	.104	.966	.085	9.55	40.00	2.550	.115	.371	12.13
1939	.755	3.872	.046	.095	.823	.079	9.14	40.00	2.461	.112	.314	12.05
1938	.777	4.364	.045	.087	.691	.076	9.44	41.79	2.575	.102	.294	12.00
1937	1.201	5.606	.047	.114	.971	.107	9.37	41.89	2.773	.131	.387	12.05
1936	1.123	5.441	.048	.121	.881	.097	9.74	36.63	2.229	.097	.438	11.74
1935	1.040	6.197	.049	.119	.723	.110	9.59	36.38	2.628	.089	.500	11.77
1934	.932	5.755	.044	.123	.817	.109	9.64	36.38	2.623	.087	.529	12.00
1933	.724	4.633	.043	.087	.663	.088	10.06	39.33	2.089	.073	.463	{ 10.53 / *9.19* }
1932	.494	3.104	.040	.064	.459	.062	10.88	42.38	2.050	.058	.431	9.54
1931	.606	3.570	.044	.085	.621	.072	{ 11.40 / *12.77* }	43.00	1.978	.084	.447	10.02
1930	.900	4.865	.047	.135	.763	.105	12.72	43.00	2.191	.132	.473	10.10
1929	1.180	5.794	.051	.191	.987	.125	12.89	43.00	2.667	.184	.550	10.73
1928	1.324	6.406	.056	.200	1.159	.135	{ 13.00 / *10.91* }	43.00	2.676	.148	.565	13.00
1927	1.372	6.686	.058	.176	1.107	.120	10.95	43.00	2.638	{ .132 / *.130* }	.621	13.88
1926	1.496	7.252	.055	.175	1.152	.123	11.48	43.00	2.750	.138	.930	16.46
1925	1.670	7.678	.055	.235	1.392	.147	11.19	43.00	2.820	.141	1.013	14.70
1924	1.232	5.980	.074	.287	1.407	.161	11.37	43.00	2.989	.131	.912	17.04
1923	1.112	5.353	.084	.293	1.379	.163	10.88	43.00	3.035	.145	1.171	19.81
1922	1.213	6.130	.059	.212	1.238	.129	10.60	40.69	2.610	.134	1.150	17.34
1921	1.326	7.034	.062	.151	.828	.131	10.53	45.65	3.056	.126	.681	15.21
1920	2.455	11.580	.127	.339	1.604	.288	9.50	53.83	4.187	.180	1.734	21.85
1919	2.418	10.695	.089	.325	1.775	.232	8.27	49.26	3.518	.191	1.210	15.96
1918	2.159	10.302	.078	.318	1.815	.235	6.86	56.00	3.600	.247	.594	11.93
1917	2.296	10.551	.077	.235	1.568	.145	5.94	40.00	3.633	.294	.488	8.89
1916	1.329	6.091	.069	.145	.845	.088	5.57	33.33	2.596	.275	.491	8.04
1915	1.250	5.612	.056	.102	.707	.068	5.33	30.00	1.746	.173	.459	6.05
1914	.939	4.125	.047	.121	.593	.080	5.32	30.00	1.679	.134	.473	5.53
1918	{ .877 / *.953* }	3.847 / *4.308*	.043	.128	{ .562 / *.589* }	.084	5.31	{ 30.00 / *28.00* }	1.819	.157	.428	6.56
1912	1.049	4.686	.051	.115	.647	.081	5.28	28.00	1.740	.164	.470	6.76
1911	.984	3.984	.053	.130	.647	.088	5.00	28.00	1.804	.125	.679	5.89
1910	1.097	4.691	.050	.151	.686	.084	4.81	28.00	1.888	.129	.683	5.72
1909	1.200	5.451	.048	.121	.738	.075	4.82	28.00	1.917	.131	.491	6.39
1908	.990	4.291	.049	.105	.716	.078	4.82	28.00	2.100	.133	.453	5.10
1907	.907	3.988	.047	.119	.718	.084	4.82	28.00	2.117	{ .208 / *.213* }	.634	6.16
1906	.793	3.615	.045	.110	.718	.080	4.86	28.00	1.958	.196	.665	8.55
1905	1.010	4.543	.053	.096	.759	.076	4.82	28.00	1.896	.158	.628	8.10
1904	1.039	4.826	.048	.121	.686	.080	4.83	28.00	1.906	.131	.576	7.49
1903	.790	3.592	.046	.112	.655	.068	4.83	28.00	2.075	.137	.572	5.91
1902	.741	3.489	.045	.089	.577	.063	4.46	28.00	2.104	.120	.474	5.39
1901	.719	3.309	.051	.086	.545	.063	4.33	27.33	2.365	.169	.373	5.77
1900	.704	3.349	.053	.096	.659	.062	3.92	32.29	2.633	.166	.477	5.25
1899	.711	3.382	.049	.066	.623	.054	3.65	28.13	2.388	.177	.458	5.69
1898	.885	4.145	.050	.060	.615	.054	3.55	17.63	1.438	.119	.322	5.75
1897	.795	4.861	.045	.072	.496	.059	3.74	18.75	1.485	.113	.292	4.94
1896	.641	3.620	.045	.079	.394	.062	3.56	28.00	2.925	.110	.274	4.06
1895	.600	3.231	.042	.078	.377	.059	2.98	24.83	2.118	.108	.292	5.31
1894	.559	2.750	.041	.070	.445	.060	3.54	24.00	1.652	.095	.293	5.00
1893	.677	3.283	.048	.083	.564	.068	4.17	28.13	1.992	.109	.300	5.83
1892	.788	4.122	.044	.077	.612	.065	3.94	30.00	2.190	.115	.323	5.77
1891	.962	4.905	.047	.086	.686	.073	3.46	29.92	2.467	.131	.380	5.71
1890	{ .893 / *.865* }	4.652 / *6.039*	.062 / *.063*	.111 / *.115*	.716 / *.733*	.073 / *.067*	3.35 / 3.92	31.78	{ 2.965 / *2.00* }	.158	{ .408 / *.414* }	6.56
1889	.895	6.540	.080	.107	.735	.067	4.04	29.25	2.00	.138	.461	7.00
1888	.886	6.120	.071	.103	.680	.069	4.21	29.83	2.03	.168	.398	6.52
1887	.769	5.817	.059	.103	.733	.068	4.05	37.08	2.30	.113	.358	7.40
1886	.797	6.119	.062	.094	.740	.064	4.00	34.52	2.27	.110	.395	7.58
1885	.864	6.275	.064	.105	.713	.067	4.10	28.52	2.33	.111	.351	6.36
1884	.913	7.043	.068	.106	.805	.069	4.42	30.75	2.39	.138	.328	6.52
1883	1.038	7.735	.087	.106	.860	.075	4.54	37.75	3.06	.159	.432	8.14
1882	1.198	9.020	.095	.122	.905	.079	4.61	48.50	3.47	.185	.518	[11] 7.58
1881	1.154	8.895	.097	.113	.955	.080	4.53	61.08	3.09	.183	.476	[11] 7.50
1880	{ 1.057 / *1.253* }	8.895	.099	.120	1.028	.081	4.53	67.52	3.68	.215	.383	6.94
1879	1.223	8.632	.086	.104	.718	.076	2.70	48.21	2.69	.186	.315	5.26
1878	1.252	9.101	.092	.113	.748	.074	3.22	42.21	2.31	.166	.298	4.89
1877	1.685	10.806	.111	.117	.910	.080	2.59	45.58	2.57	.190	.362	4.94
1876	1.320	9.898	.106	.130	.870	.084	3.87	59.25	2.98	.210	.371	5.71
1875	1.403	10.218	.107	.150	1.045	.099	4.39	68.75	3.42	.227	.345	7.00
1874	1.517	10.728	.106	.170	1.153	.109	4.55	94.28	3.99	.220	.396	7.44
1873	1.787	11.498	.112	.182	1.198	.128	4.27	120.58	4.90	.280	.497	8.02
1872	1.780	12.141	.124	.205	1.568	.135	3.74	111.94	5.46	.356	.618	9.96
1871	1.581	10.245	.131	.170	1.068	.125	4.46	102.52	4.52	.241	.549	9.31

See footnotes at end of table.

ANNEX N°15: WHOLESALE PRICES OF SELECTED COMMODITIES: 1800-1970

Source: Statistics of U.S., Colonial Times to 1970
U.S. Commercial Department, Washington, 1975

Series E 123–134. Wholesale Prices of Selected Commodities: 1800 to 1970—Con.

[In dollars per unit]

Year	Wheat	Wheat flour	Sugar	Cotton, raw	Wool	Cotton sheeting	Coal, anthracite	Steel rails	Nails	Copper	Turpentine	Brick
	123	124	125	126	127	128	129	130	131	132	133	134
	Bu.	100 lb.[1]	Lb.	Lb.	Lb.	Yd.[2]	Ton[3]	100 lb.[4]	50 lb.[5]	Lb.	Gallon[6]	1,000
1870	1.373	9.281 / 5.029	0.135	0.240	0.898	0.140	4.39	166.79	4.40	0.212	0.427	8.40
1869	1.651	5.725	.162	.290	.905	.153	5.31	132.25	4.87	.243	.458	11.33
1868	2.541	7.912	.163	.249	.888	.160	3.86	158.50	5.17	.230	.510	12.08
1867	2.844	9.164	.159	.316	1.133	.174	4.37	166.60 / 88.12	5.92	.254	.639	10.85
1866	2.945	7.920	.166	.432	1.313	.236	5.80	86.75	6.97	.343	.810	11.44
1865	2.160	7.706	.207	.834	1.660	.370	7.86	98.62	7.06	.393	1.525	9.67
1864	1.942	8.062	.235	1.015	1.770	.513	8.39	126.00	7.85	.470	2.978	8.27
1863	1.640	5.690	.146	.672	1.515	.342	6.66	76.87	5.18	.339	2.024	6.41
1862	1.390	5.165	.113	.312	.938	.176	4.14	41.75	3.47	.219	1.574	4.16
1861	1.425	4.965	.090	.130	.828	.093	3.39	42.37	2.75	.223	.883	3.88
1860	1.495	5.190	.096 / .075	.110	1.025	.082	3.40	48.00	3.13	.229 / .262	.423	4.49
1859	1.435	5.110	.088	.121	1.093	.080	3.25	49.37	3.86	.261	.481	5.00
1858	1.325	4.295	.087	.122	.825	.078	3.43	50.69	3.53	.260	.460	3.93
1857	1.675	5.785	.118	.135	1.020	.085	3.87	64.25	3.72	.301	.453	4.21
1856	1.755	6.420	.098	.103	1.048	.072	4.11	64.37	3.92	.312	.401	4.29
1855	2.435	8.760	.072	.104	.658	.072	4.49	62.87	4.10	.297	.427	4.31
1854	2.210	8.945	.067	.110	.913	.075	5.19	80.12	4.76	.302	.556	4.89
1853	1.390	5.780	.072	.110	1.070	.074	3.70	77.25	4.85	.291	.593	5.42
1852	1.105	5.005	.070	.095	.818	.066	3.46	48.37	3.13	.235	.452	4.63
1851	1.075	4.520	.075	.121	.855	.066	3.34	45.62	3.28	.205	.353	4.69
1850	1.275	5.550	.074	.123	.833 / .400	.073	3.64	47.87	3.71	.215	.334	4.85
1849	1.240	4.510	.069	.076	.861	.064	3.62	53.87	4.00	.215	.338	3.85
1848	1.175	5.960	.067	.080	.843	.066	3.50	62.25	4.25	.215	.370	----
1847	1.365	6.685	.077	.112	.852	.078 / 8.50	3.80	69.34	4.50	.232	.402	----
1846	1.085	5.060	.085	.079	.823	8.45	3.90	----	4.50	.235	.450	----
1845	1.040	4.935	.059	.056	.851	8.10	3.46	----	4.75	.237	.505	----
1844	.975	4.670	.062	.077	.400	7.67	3.20	----	4.50	.215	.395	----
1843	.981	4.855	.057	.073	.805	7.92	3.27	----	4.25	.212	.338	----
1842	1.140	5.570	.046	.079	.820	8.57	4.18	----	4.75	.227	.386	----
1841	1.185	5.585	.060	.095	.442	8.92	5.79	----	5.25	.250	.319	----
1840	1.055	5.295	.058	.089	.891	9.26	4.91	----	5.50	.245	.266 / .276	----
1839	1.245	7.300	.068	.134	.512	9.22	5.00	----	6.12	.245	.327	----
1838	1.920	7.956	.069	.101	.851	9.60	5.27	----	6.00	.255	.320	----
1837	1.775	9.140	.070	.133	.424	10.56	6.72	----	6.00	.270	.295	----
1836	1.780	7.495	.090	.165	.586	10.50	6.64	----	6.00	.270	.550	----
1835	1.220	5.855	.078	.175	.539	8.62	4.84	----	6.00	.255	.548	----
1834	1.058	4.980	.071	.129	.488	8.53	4.84	----	5.50	.235	.471	----
1833	1.193	5.565	.072	.123	.490	8.74	5.23 / 6.82	----	5.00	.230	.415	----
1832	1.260	5.770	.065	.094	.475	9.28	10.21	----	5.80	.225	.365	----
1831	1.185	5.710	.058	.097	.535	10.00	7.08	----	5.60	.222	.292	----
1830	1.070	4.985	.070	.100	.390	10.24	9.05	----	5.50	.220	.292	----
1829	1.245	6.452	.076	.099	.345	9.44	10.72	----	7.10	.235	.360	----
1828	1.218	5.580	.086	.103	.370	8.99	10.92	----	7.50	.247	.376	----
1827	.992	5.140	.085	.093	.390	9.17	11.34	----	7.08	.262	.365	----
1826	.940	4.810	.082	.122	.495	9.94	10.92	----	6.76	.297	.302	----
1825	.920 / .868	5.130 / 5.11	.093 / .115	.186	.585 / .530	10.52	9.16 / .250	----	7.21	.304 / .308	.455 / [12] 2.679	----
1824	1.103	5.61	.118	.148	.550	9.80	.300	----	7.33	.252	2.556	----
1823	1.854	6.84	.120	.114	.717	14.50	.325	----	8.87	.268	2.642	----
1822	1.248	6.58	.122	.143	.750	15.00	.325	----	9.80	.283	2.543	----
1821	.880	4.78	.114	.143	.750	16.00	.325	----	9.80	.300	2.219	----
1820	.928	4.71	.123	.170	.750	16.00	.317	----	9.80	.290	2.368	----
1819	1.344	6.89	.153	.240	.825	16.50	.358	----	9.67	.302	2.877	----
1818	1.981	9.97	.148	.240	.892	16.99	.327	----	9.60	.293	3.542	----
1817	2.406	11.72	.158	.265	.750	17.96	.322	----	10.90	.275	2.902	----
1816	1.942	9.80	.184	.295	.975	19.47	.360	----	12.83	.304	3.088	----
1815	1.565	8.57	.215	.210	1.333	20.00	.597	----	12.50	.449	4.478	----
1814	1.482	8.11	.220	.150	3.312	22.68	1.134	----	11.25	.600	6.665	----
1813	1.622	8.94	.205	.125	[11] 2.750	21.60	.919	----	8.50	.504	3.088	----
1812	1.774	9.34	.142	.105	----	19.04	.412	----	8.50	.463	2.425	----
1811	1.846	10.06	.129	.155	----	19.04	.370	----	9.33	.556	3.228	----
1810	1.796	9.65	.125	.160	----	21.58	.369	----	9.50	.428	3.937	----
1809	1.248	6.86	.127	.169	----	25.17	.295	----	9.50	.449	3.835	----
1808	1.000	5.53	.120	.190	----	22.50	.276	----	9.50	.455	3.052	----
1807	1.808	7.12	.120	.215	----	20.69	.297	----	9.50	.506	2.548	----
1806	1.379	7.27	.125	.229	----	21.83	.323	----	9.50	.520	2.979	----
1805	1.953	10.07	.140	.230	----	21.27	.399	----	10.50	.505	3.610	----
1804	1.357	8.21	.138	.200	----	19.21	.293	----	10.50	.480	3.502	----
1803	1.173	6.85	.122	.150	----	16.00	.280	----	10.52	.450	3.625	----
1802	1.193	6.90	.114	.190	----	16.00	.280	----	11.65	.509	2.981	----
1801	1.835	10.40	.118	.440	----	17.35	.303	----	10.67	.500	2.667	----
1800	[9] 1.819	10.03	.134	.240	----	17.38	.309	----	10.67	.526	[13] 2.560	----

NA Not available.

[1] Beginning 1942, per 100 pounds; for prior years, per 196-lb. barrel.
[2] Beginning 1847 (in regular type), per yard; for prior years, "per piece"; see text.
[3] Beginning 1825 (in regular type), per ton; for prior years, per 80-lb. bushel.
[4] Beginning 1947, per 100 pounds; for prior years, per gross ton.
[5] Beginning 1961, per 50 lb.; for prior years per 100 lb.
[6] Beginning 1825 (in regular type), per gallon; for prior years, per 31½-gal. barrel.
[7] 11-month average.
[8] July through December.
[9] January through July.
[10] May through December.
[11] January through April.
[12] July price.
[13] January price.
[14] December price.
[15] June through December.

ANNEX N°15: WHOLESALE PRICES OF SELECTED COMMODITIES: 1800-1970

Source: Statistics of U.S., Colonial Times to 1970
U.S. Commercial Department. Washington, 1975

Series C 120–137. Immigrants, by Major Occupation Group: 1820 to 1970—Con.

[except: 1820–1831 and 1844–1850, years ending Sept. 30; 1833–1842 and 1850–1865, years ending Dec. 31; 1832 covers 15 months ending Dec. 31; 1843, 9 months ending Sept. 30; 1851, 15 months ending Dec. 31]

Year	Total [1]	No occupation	Professional	Commercial	Skilled	Farmers	Servants	Laborers	Miscellaneous
	120	130	131	132	133	134	135	136	137
1898	229,299	90,569	1,347	5,959	33,145	16,243	23,656	52,531	5,849
1897	230,832	91,624	1,732	7,159	33,161	22,560	23,739	46,198	4,659
1896	343,267	123,196	2,324	6,174	46,807	29,251	38,926	91,262	5,327
1895	258,536	92,193	2,029	5,814	43,844	18,055	35,960	61,430	4,711
1894	285,631	113,247	1,791	6,032	49,736	21,762	29,653	56,732	6,677
1893	439,730	209,767	2,362	837	51,145	34,070	(2)	114,295	[2] 27,254
1892	579,663	255,832	2,932	2,683	63,128	51,630	(2)	171,483	[2] 31,975
1891	560,319	248,635	3,431	11,340	54,951	36,398	32,596	167,290	5,678
1890	455,302	195,770	3,236	7,602	44,540	29,296	28,625	139,805	6,668
1889	444,427	208,761	2,615	7,359	50,457	28,562	30,220	111,809	4,044
1888	546,889	243,900	3,360	7,597	59,985	29,335	27,310	170,273	5,129
1887	490,109	224,073	2,882	8,032	52,403	30,932	27,510	140,988	3,389
1886	334,203	157,952	2,078	6,237	36,522	20,600	20,198	86,853	3,763
1885	395,346	211,730	2,097	6,707	39,817	27,585	20,213	83,068	4,129
1884	518,592	277,052	2,264	7,691	55,061	42,050	24,249	106,478	3,727
1883	603,322	322,318	2,450	8,280	62,505	39,048	27,988	136,071	4,662
1882	788,992	402,835	2,992	10,102	72,664	61,888	23,010	209,605	5,896
1881	669,431	355,670	2,812	9,371	66,457	58,028	19,342	147,816	9,935
1880	457,257	217,446	1,778	7,916	49,929	47,204	18,580	105,012	9,397
1879	177,826	81,772	1,639	5,202	21,862	15,507	6,804	36,897	4,243
1878	138,469	62,622	1,510	4,475	16,531	14,843	6,157	26,656	5,675
1877	141,857	63,316	1,685	4,667	21,006	13,188	5,158	25,482	7,155
1876	169,986	71,111	2,400	4,963	24,200	14,536	6,49[illegible]	38,847	7,486
1875	227,498	106,723	2,426	5,029	33,803	16,447	10,579	46,877	5,614
1874	313,339	155,122	2,476	5,641	38,700	28,775	12,427	65,895	4,303
1873	459,803	239,307	2,980	7,593	48,792	36,983	16,259	104,423	3,466
1872	404,806	213,959	1,905	7,156	44,967	38,159	11,108	85,934	1,618
1871	321,350	172,215	2,247	5,553	33,577	27,042	13,814	65,936	966
1870	387,203	207,174	1,831	7,139	35,698	35,656	14,261	84,577	867
1869	352,768	181,453	1,700	8,837	33,345	28,102	10,265	88,649	417
1868	282,189	150,983	1,398	8,556	32,197	25,046	6,561	59,151	297
1867	343,162	182,794	2,288	14,706	44,097	32,626	7,715	57,419	517
1866	359,957	202,456	2,242	15,827	41,091	30,302	8,883	58,629	527
1865	297,898	161,580	1,743	12,700	36,622	20,012	9,231	45,247	364
1864	221,565	106,656	1,120	9,473	26,542	13,857	15,623	48,041	248
1863	199,611	99,039	1,173	7,590	24,155	12,348	9,103	46,198	205
1862	114,463	62,860	788	7,774	11,986	9,265	3,683	17,752	355
1861	112,702	60,760	668	7,683	11,601	11,668	739	19,413	170
1860	179,691	93,925	792	11,207	19,342	21,742	1,415	31,268	----
1859	155,509	78,228	858	12,495	24,628	16,323	1,291	21,696	----
1858	144,906	71,320	662	10,217	18,742	20,506	1,142	22,317	----
1857	271,982	153,963	570	12,114	26,062	34,702	1,322	43,249	----
1856	224,496	130,647	462	11,101	18,797	24,722	1,748	37,019	----
1855	230,476	117,603	780	14,759	17,463	34,693	2,598	42,580	----
1854	460,474	235,216	699	15,173	36,468	87,188	3,357	82,873	----
1853	400,982	223,890	722	12,782	20,806	56,322	3,938	83,022	----
1852	397,343	223,861	572	11,502	27,176	58,023	942	75,267	----
1851	474,898	257,376	938	14,983	36,297	59,095	3,739	101,970	----
1850	315,334	188,931	918	6,400	26,869	42,873	3,208	46,640	----
1849	299,683	157,657	972	8,509	32,021	39,675	3,671	62,179	----
1848	229,483	118,528	517	8,407	24,705	31,670	4,433	46,223	----
1847	239,482	126,005	703	4,218	25,895	43,594	3,198	35,869	----
1846	158,649	91,132	592	4,189	13,250	27,944	3,849	18,193	----
1845	119,896	65,055	542	5,049	10,857	19,349	2,492	16,552	----
1844	84,764	49,848	755	3,960	9,476	9,881	1,174	9,725	----
1843	56,529	32,842	578	3,226	6,093	8,031	413	5,346	----
1842	110,980	60,526	744	4,976	14,553	12,966	1,264	15,951	----
1841	87,805	46,197	541	5,267	11,111	12,843	923	11,423	----
1840	92,207	47,805	481	5,811	10,811	18,476	183	9,640	----
1839	74,666	37,985	584	5,692	10,026	12,410	99	7,870	----
1838	45,159	24,627	459	4,005	5,675	6,667	42	3,684	----
1837	84,959	52,011	522	3,893	8,483	10,835	120	9,095	----
1836	80,972	50,684	472	3,879	8,879	8,770	39	8,749	----
1835	48,716	28,786	487	3,875	6,005	6,117	599	2,897	----
1834	67,948	45,906	561	3,021	7,190	7,160	1,286	2,874	----
1833	58,925	30,944	459	4,913	12,800	6,618	82	4,109	----
1832	61,654	33,840	176	5,424	10,333	8,502	56	3,323	----
1831	23,880	15,218	183	2,368	2,383	2,685	115	928	----
1830	24,837	19,363	186	1,427	1,745	1,424	22	720	----
1829	24,513	15,535	252	2,661	2,579	1,264	337	1,885	----
1828	30,184	18,066	331	2,326	3,868	2,542	421	2,623	----
1827	21,777	12,415	262	2,076	3,056	2,071	186	1,761	----
1826	10,908	7,478	190	1,943	2,129	1,382	70	716	----
1825	12,858	7,031	204	1,841	1,416	1,647	69	650	----
1824	9,627	4,965	187	1,920	1,227	918	13	381	----
1823	8,265	4,247	179	1,427	1,268	800	6	338	----
1822	8,549	4,802	161	1,431	1,397	884	20	414	----
1821	11,644	6,670	204	1,441	1,533	1,249	94	453	----
1820	10,311	6,836	165	933	1,090	874	139	334	----

[1] returning citizens.

[2] Servants included with "Miscellaneous" (series C 137).

ANNEX N°16:USA IMMIGRANTS BY MAJOR OCCUPATION GORUP:1820-1970

Source: Statistics of U.S.,Colonial Times to 1970
U.S.Commercial Department.Washington,1975

Series C 120–137. Immigrants, by Major Occupation Group: 1820 to 1970

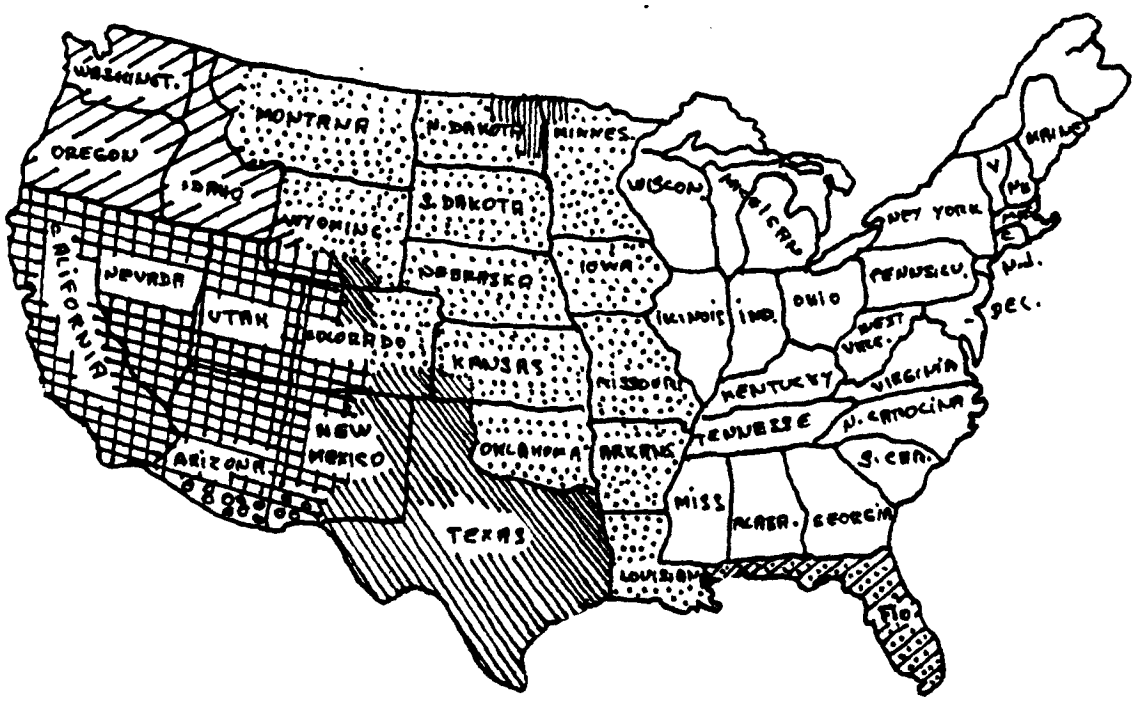
[For year ending June 30, except: 1820–1831 and 1844–1850, years ending Sept. 30; 1833–1842 and 1850–1865, years ending Dec. 31; 1832 covers 15 months ending Dec. 31; 1843, 9 months ending Sept. 30; 1851, 15 months ending Dec. 31]

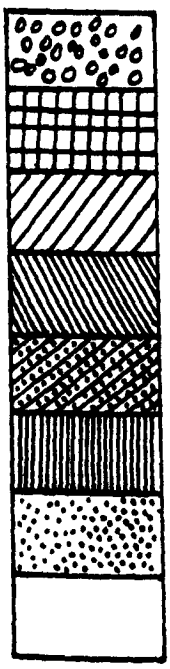
	Total	Professional, technical, and kindred workers	Farmers and farm managers	Managers, officials, and proprietors, exc. farm	Clerical, sales, and kindred workers	Craftsmen, foremen, operatives, and kindred workers	Private household workers	Service workers, exc. private household	Farm laborers and foremen	Laborers, exc. farm and mine	No occupation
	120	121	122	123	124	125	126	127	128	129	130
1970	373,326	46,151	3,639	5,829	16,517	46,622	10,479	9,272	4,332	14,148	216,137
1969	358,579	40,427	3,687	5,356	17,448	43,266	16,822	10,461	5,224	13,062	202,826
1968	454,448	48,753	2,727	9,436	29,090	56,819	25,419	16,411	6,002	14,374	245,417
1967	361,972	41,652	3,276	7,974	19,783	34,595	17,406	12,832	5,277	10,129	209,047
1966	323,040	30,039	2,964	6,773	22,676	30,725	10,558	10,541	4,227	9,830	194,707
1965	296,697	28,790	1,833	7,090	29,779	31,676	9,706	10,743	2,638	8,556	165,886
1964	292,248	28,756	1,732	6,822	30,015	31,811	8,451	10,396	3,988	9,127	161,150
1963	306,260	27,930	1,776	5,986	28,094	32,444	9,522	9,392	9,463	16,062	165,591
1962	283,763	23,710	1,589	5,554	26,304	30,148	9,690	9,414	10,801	17,614	148,939
1961	271,344	21,455	3,002	5,363	25,198	30,967	8,811	8,399	4,799	15,694	147,656
1960	265,398	21,940	3,050	5,309	24,386	34,135	8,173	8,812	3,914	12,838	142,841
1959	260,686	23,287	2,187	4,688	21,475	36,552	7,465	9,641	2,729	11,937	140,725
1958	253,265	22,482	2,221	4,646	22,140	31,518	7,521	7,362	2,511	11,100	141,764
1957	326,867	24,489	3,506	6,127	25,897	46,338	11,457	8,761	4,585	21,826	173,881
1956	321,625	18,995	5,727	5,814	23,413	44,950	15,347	7,922	9,050	27,807	162,600
1955	237,790	14,109	4,446	5,114	18,060	34,218	11,824	6,512	5,486	17,518	120,503
1954	208,177	13,817	3,848	5,296	16,018	32,151	8,096	5,203	1,622	10,061	112,067
1953	170,434	12,783	3,393	5,025	15,171	26,975	6,852	4,390	1,538	5,369	83,938
1952	265,520	16,496	10,566	5,968	16,724	42,315	9,653	6,418	6,289	8,969	142,122
1951	205,717	15,269	10,214	5,493	14,098	34,041	7,243	5,292	4,972	5,481	103,614
1950	249,187	20,502	17,642	6,396	16,796	41,450	8,900	4,970	8,976	5,698	122,362
1949	188,317	13,884	8,937	6,014	14,797	27,964	6,990	3,937	933	6,192	98,669
1948	170,570	12,619	4,884	6,207	15,298	23,816	6,389	4,350	946	4,826	91,235
1947	147,292	10,891	3,462	5,886	13,961	19,306	4,922	3,882	442	2,831	81,709
1946	108,721	6,198	947	3,616	8,378	8,826	2,464	2,153	189	1,473	74,477
1945	38,119	2,852	497	1,457	3,715	4,511	1,495	1,047	225	886	21,434
1944	28,551	2,616	349	894	2,368	3,533	1,125	811	203	1,030	15,622
1943	23,725	2,695	235	988	1,840	2,587	770	707	164	681	13,058
1942	28,781	3,518	254	2,305	1,638	2,061	872	740	92	493	16,808
1941	51,776	6,232	356	5,640	2,837	3,513	1,503	829	129	732	30,005
1940	70,756	6,802	847	7,415	4,361	5,710	2,891	949	252	2,120	39,409
1939	82,998	7,199	1,186	8,929	4,794	6,532	5,420	1,979	415	2,070	44,474
1938	67,895	5,418	1,508	5,408	3,119	5,697	5,919	1,794	609	2,411	36,012
1937	50,244	4,130	852	3,422	2,126	3,996	3,213	1,426	378	1,904	28,797
1936	36,329	2,564	535	1,782	1,449	2,490	1,944	1,056	324	1,195	22,990
1935	34,956	2,244	593	1,347	1,024	2,689	1,418	1,390	408	1,355	22,488
1934	29,470	2,101	425	1,207	933	2,267	805	1,216	233	1,154	19,129
1933	23,068	1,615	292	690	600	1,821	550	933	134	887	15,546
1932	35,576	2,100	403	1,331	919	2,053	1,232	1,063	254	1,157	25,064
1931	97,139	4,120	2,743	2,384	4,229	9,555	9,740	3,125	3,422	4,806	53,012
1930	241,700	8,585	8,375	4,620	14,414	32,474	29,073	6,749	13,736	18,080	105,594
1929	279,678	8,792	8,309	4,709	15,354	36,437	31,841	6,820	19,849	27,873	119,694
1928	307,255	9,332	8,773	5,287	16,344	42,765	28,751	8,846	24,161	37,904	125,092
1927	335,175	9,883	10,324	5,772	20,140	42,394	31,344	10,070	28,698	55,939	125,561
1926	304,488	9,203	9,720	5,374	19,086	38,682	30,587	14,340	17,390	45,199	114,907
1925	294,314	8,942	13,875	5,508	15,363	36,927	26,924	15,399	16,022	36,610	118,744
1924	706,896	20,926	20,320	15,658	27,373	123,923	51,680	29,621	27,492	112,344	277,909
1923	522,919	13,926	12,503	12,086	17,931	87,899	52,223	22,244	25,905	86,617	191,585
1922	309,556	9,696	7,676	9,573	10,055	40,309	44,531	12,340	10,529	33,797	131,050
1921	805,228	12,852	22,282	18,286	18,922	109,710	102,478	24,298	32,400	162,859	301,141
1920	430,001	10,540	12,192	9,654	14,054	55,991	37,197	18,487	15,257	83,496	173,133
1919	141,132	5,261	3,933	4,247	6,524	21,671	6,277	11,571	4,412	18,422	58,614
1918	110,618	3,529	2,583	3,940	4,239	17,501	7,816	6,367	4,538	15,142	44,963
1917	295,403	7,499	7,764	8,329	10,554	38,660	31,885	11,784	22,328	52,182	104,418
1916	298,826	9,024	6,840	8,725	9,907	36,086	29,258	10,989	26,250	56,981	104,766
1915	326,700	11,453	6,518	10,728	9,377	45,591	39,774	11,976	24,723	49,620	116,940
1914	1,218,480	13,454	14,442	21,903	17,933	149,515	144,409	19,621	288,053	228,935	320,215
1913	1,197,892	12,552	13,180	19,094	15,178	139,091	140,218	17,609	320,105	223,682	297,188
1912	838,172	10,913	7,664	14,715	13,782	107,893	116,529	13,580	184,154	137,872	231,070
1911	878,587	11,275	9,709	15,416	14,723	128,717	107,153	11,051	176,003	158,518	246,022
1910	1,041,570	9,689	11,793	14,731	12,219	121,847	96,658	8,977	288,745	216,909	260,002
1909	751,786	7,603	8,914	11,562	8,467	75,780	64,568	5,849	171,810	176,490	221,293
1908	782,870	10,504	7,720	16,410	11,523	106,943	89,942	10,367	138,844	147,940	242,677
1907	1,285,349	12,016	13,476	20,132	12,735	169,394	121,587	13,578	323,854	293,868	304,709
1906	1,100,735	13,015	15,288	23,515	12,226	156,902	115,984	10,439	239,125	228,781	285,460
1905	1,026,499	12,582	18,474	27,706	12,759	159,442	125,473	5,849	142,187	290,009	232,018
1904	812,870	12,195	4,507	26,914	11,055	133,748	104,937	6,400	85,850	212,572	214,692
1903	857,046	6,999	18,363	15,603	7,226	110,644	92,686	11,482	77,518	321,824	199,701
1902	648,743	2,937	8,168	9,840	3,836	71,131	69,913	6,298	80,562	248,399	153,159
1901	487,918	2,665	8,035	8,294	3,197	57,346	42,027	5,352	54,753	162,563	148,686
1900	448,572	2,392	5,488	7,216	2,870	54,793	40,311	4,406	31,949	164,261	134,941
1899	311,715	1,972	3,978	6,815	2,473	38,608	34,120	4,580	17,343	92,452	109,379

ANNEX N°16:USA IMMIGRANTS BY MAJOR OCCUPATION GROUP:1820-1970

Source: Statistics of U.S.,Colonial Times to 1970
U.S.Commercial Department.Washington,1975

TERRITORIAL GROWTH OF THE UNITED STATES





Godsden Purchase 1853

Ceded by Mexico 1848

Acquired by treaty 1846

Annexed from Mexico 1845

Ceded by Spain 1819

Ceded by Great Britain 1818

Louisiana Purchase 1803

Original Territory of the United States

ANNEX N°17: TERRITORIAL GROWTH OF THE UNITED STATES

Source: Peter d'A.Jones."An Economic History of the U.S. Since 1783

EXPORTACION DE PRODUCTOS IMPORTANTES DE LA SUBREGION

A—VALOR FOB

Miles de dólares

AÑO: 1977

PRODUCTOS	TOTAL	Bolivia (6)	Colombia	Ecuador	Perú (5)	Venezuela
TOTAL	**15.565.896**	**719.300**	**2.455.146**	**1.191.565**	**1.665.785**	**9.534.100**
Estaño	*330.793*	*327.600*	—	—	*3.193*	—
Zinc	*171.015*	*44.700*	—	—	*126.250*	*65*
Cobre	*368.710*	*4.100*	*4*	*1.858*	*362.735*	*13*
Plata	*202.332*	*30.800*	—	—	*171.527*	*5*
Plomo	*90.205*	*12.400*	—	—	*77.805*	—
Hierro	*256.228*	—	*800*	—	*84.640*	*170.788*
Petróleo Crudo	*6.519.400*	*67.400*	—	*484.067*	*7.680*	*5.960.253*
Derivados de Petróleo	*3.264.926*	*66.800(8)*	*105*	*17.999*	*45.757*	*3.134.265*
Café en Grano	*1.880.006*	*18.700*	*1.487.401*	*156.572*	*189.242*	*28.091*
Algodón	*205.853*	*17.700*	*116.993*	*199*	*70.840*	*121*
Banano	*196.788*	—	*57.288*	*138.333*	*4*	*1.163*
Azúcar en Bruto	*115.412*	*22.900*	*19*	*9.334*	*82.950*	*209*
Harina de Pescado	*187.360*	—	—	*16.804*	*170.540*	*16*
Productos Pesqueros	*132.342*	—	*22.822*	*56.147*	*36.155*	*17.218*
Otros Productos	*1.644.526*	*106.200*	*769.714*	*310.252*	*236.467*	*221.893*

ANEXO Nº 18 : PRODUCTOS DE EXPORTACION DEL GRUPO ANDINO

Fuente: Boletin BANCEPAC Nº 6

DISTRIBUCION GEOGRAFICA DE LAS EXPORTACIONES

AÑO: 1977

AREA DE DESTINO	TOTAL	Bolivia (6)	Colombia (5)	Chile	Ecuador	Perú	Venezuela
A. VALOR FOB (Miles de Dólares)							
TOTAL	**15.564.996**	**718.400**	**2.455.146**	**—**	**1.191.565**	**1.665.785**	**9.534.100**
1. Grupo Andino	*880.757*	*10.033*	*337.145*	—	*170.054*	*72.362*	*291.163*
2. Otros Países de ALALC	*846.768*	*178.827*	*62.098*	—	*112.843*	*157.651*	*335.349*
3. Mercado Común Centroamericano	*304.075*	*15*	*20.113*	—	*654*	*5.619*	*277.674*
4. Comunidad Económica Europea	*2.083.836*	*163.599*	*833.868*	—	*183.750*	*333.782*	*568.837*
5. Asociación Europea de Libre Comercio	*361.136*	*28.095*	*201.117*	—	*10.240*	*27.731*	*93.953*
6. Consejo de Asistencia Económica Mutua	*341.944*	*50.153*	*83.102*	—	*44.743*	*163.946*	...
7. Japón	*368.214*	*20.466*	*83.506*	—	*19.968*	*200.088*	*44.186*
8. Estados Unidos	*5.269.086*	*253.589*	*640.124*	—	*439.471*	*499.390*	*3.436.512*
9. Otros	*5.109.180*	*13.623*	*194.073*	—	*209.842*	*205.216*	*4.486.426*
B. VOLUMEN (Toneladas Métricas)							
TOTAL	**139.860.385**	**3.474.000**	**2.676.773**	**—**	**7.040.853**	**9.978.149**	**116.690.610**
1. Grupo Andino	*4.066.558*	*40.800*	...	—	*1.222.420*	...	*2.803.338*
2. Otros Países de ALALC	*7.522.753*	*2.905.700*	...	—	*880.979*	...	*3.736.074*
3. Mercado Común Centroamericano	*3.004.415*	...	...	—	*843*	...	*3.003.572*
4. Comunidad Económica Europea	*9.561.498*	*55.700*	...	—	*419.096*	...	*9.086.702*
5. Asociación Europea de Libre Comercio	*1.237.075*	*12.500*	...	—	*24.345*	...	*1.200.230*
6. Consejo de Asistencia Económica Mutua	*1.278.681*	*4.900*	...	—	*153.781*	...	*1.120.000*
7. Japón	*472.055*	*25.700*	...	—	*40.835*	...	*405.520*
8. Estados Unidos	*45.956.654*	*424.700*	...	—	*2.238.811*	...	*43.293.143*
9. Otros	*54.105.774*	*4.000*	...	—	*2.059.743*	...	*52.042.031*

ANEXO Nº 19: DISTRIBUCION GEOGRAFICA DE LAS EXPORTACIONES

Fuente: Boletín BANCEPAC Nº 6

LIST OF MAIN INDUSTRIAL AGREEMENTS BETWEEN EAST AND WEST

Announced	Type of agreement	Agreement on	Cooperation partner East	Cooperation partner West
October 1975	L	VEW buys Soviet electro slag resmelting procedure	Kiev Paton Institute	Vereinigte Edelstahlwerke AG
August 1974	S	Cooperation in vehicle production, production of forestry machinery, ship engines, and transport machinery	Committee for Science and Technology	Volvo
January 1974	C	Industrial design	Litsenzintorg	Raymond Louis-Willian
February 1974	RD	Development of passenger planes, navigation systems, oceanological equipment, and electronics	Committee for Science and Technology	Lockheed
October 1974	RD	Motor vehicle construction, aviation technology, electronics, research equipment, automation, and machine tools	Committee for Science and Technology	Bendix Corp.
October 1974	RD	Exchange of research results	Committee for Science and Technology	Reichhold Chemicals Inc. Gulf Oil Co.
August 1974	RD	Various areas of technology	Committee for Science and Technology	Sperry-Rand Corp.
August 1974	C	Construction of ammonia plants in USSR, delivery of 1 million t superphosphate annually; counterdelivery of ammonia and urea to the USA	not known	Chemico, Occidental Petroleum Corp.
December 1974	C	Publication of books by Russian authors in English, and American authors in Russian	Soviet Copyright Agency (VAAP)	McGraw-Hill Book Publishing Co.
March 1974	RD	Technology for nonferrous metals, hydraulic turbines	Committee for Science and Technology	Allis-Chalmers
November 1974	RD	Processing of crude oil and natural gas, organic chemistry and plastics, environmental protection	Committee for Science and Technology	Universal Oil Products
1973	C	Compressors	Energomashexport	Elliot
1973	RD	Computer technology	Committee for Science and Technology	Control Data Corp.
1973	S	Computer technology	Elektronorgtekhnika	Control Data Corp.
1973	RD	Energy production (steam and gas turbines, nuclear energy)	Committee for Science and Technology	General Electric
1973	RD	Electromedicine and measuring instruments, small computers	Committee for Science and Technology	Hewlett Packard
1973	RD	Exchange of scientific-technical information	Committee for Science and Technology	ITT

ANNEX N°20:

LIST OF MAIN INDUSTRIAL AGREEMENTS BETWEEN EAST AND WEST

Source: Levcik F.& Stankovsky J."Industrial Cooperation between East & West". p.254-256

USA FUNDS USED FOR PERFORMANCE OF RESEARCH AND D. 1974
BASIC RESEARCH, APPLIED RESEARCH, AND DEVELOPMENT

(in US$ 1,000,000)

	(1)	(2)	(3)	(4)	(5)	Total	(6)
Federal government	4,800	8,525	2,130	850	755	17,060	53.2
Industry	-	13,000	90	-	115	13.205	41.1
Universities and colleges	-	-	1,385	-	-	1,385	4.1
Other nonprofit institutions	-	-	205	-	245	450	1.4
Total	4,800	21,525	3,810	850	1,115	32,100	
% distribution performers	14.9%	67.1%	11.9%	2.6%	3.5%		100%

(1).- Federal Government

(2).- Industry

(3).- Universities and Colleges

(4).- Associated FFRDCs

(5).- Other nonprofit institutions

(6).- Percent Distribution sources.

Basic and Applied research.....US$ 12,000,000,000

Development..... " 20,000,000,000

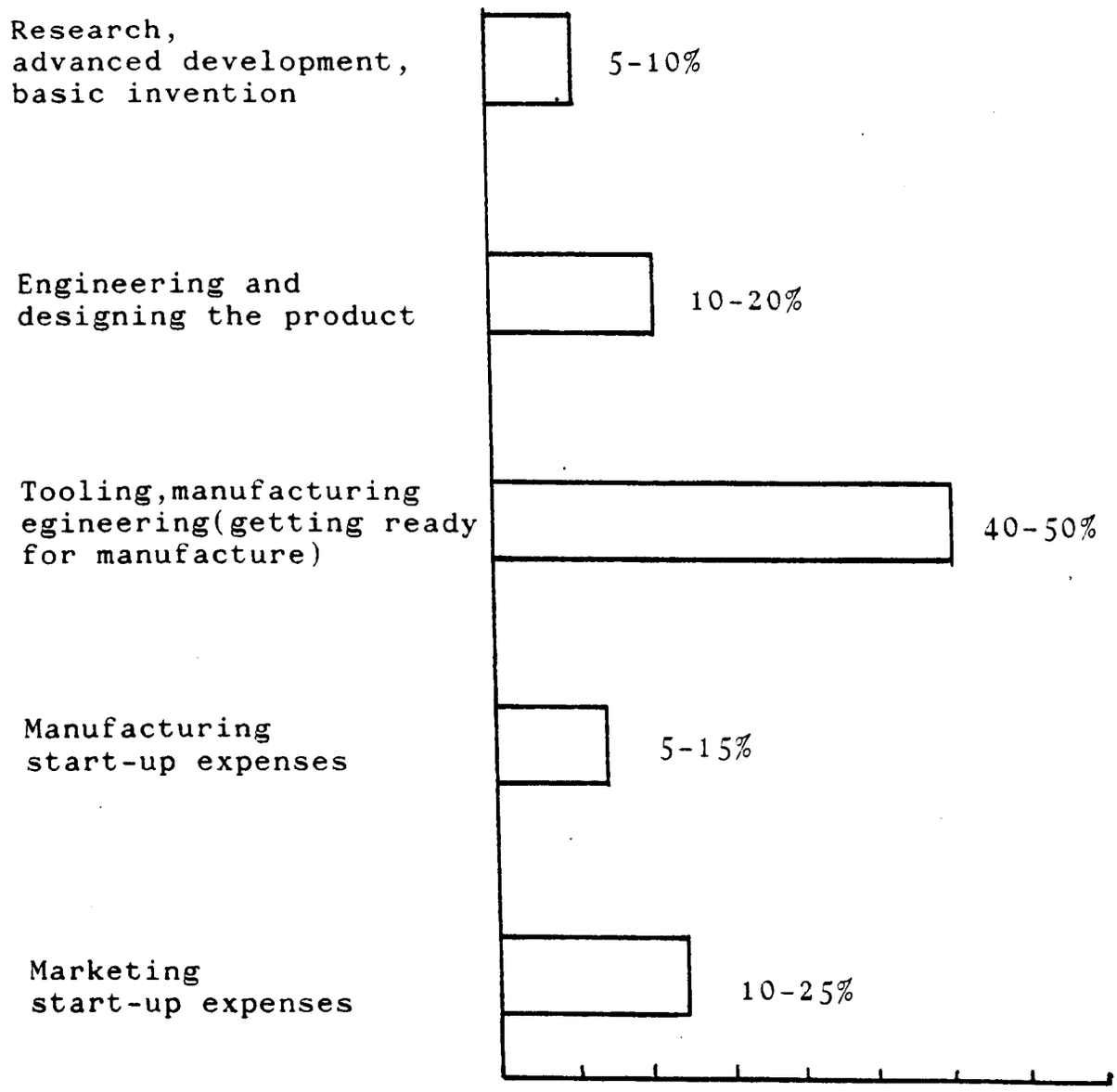
Total.....US$ 32,000,000,000

ANNEX N°21:

USA FUNDS USED FOR PERFORMANCE OF RESEARCH AND D. 1974

Source:Guide to World Science.p.22

DISTRIBUTION OF COSTS IN SUCCESSFUL PRODUCT INNOVATIONS



Source: Charpie, Technological Innovation. included in Graham Jones "The Role of Science & Technology in Developing Countries"

ANNEX N°22:

DISTRIBUTION OF COSTS IN SUCCESSFUL PRODUCT INNOVATIONS

IMPORTACIONES POR SECCIONES DE LA CLASIFICACION NABANDINA

A — VALOR CIF

Miles de Dólares

AÑO: 1977

SECCION NABANDINA	DENOMINACIONES	TOTAL	Bolivia	Colombia	Chile	Ecuador	Perú	Venezuela
	IMPORTACION TOTAL	**16.105.774**	**584.196**	**2.665.811**	—	**1.508.357**	**1.598.340**	**9.749.070**
I.	*Animales vivos y productos del Reino Animal*	*346.574*	*12.541*	*18.655*	—	*7.201*	*40.075*	*268.102*
II.	*Productos del reino vegetal*	*940.554*	*43.428*	*183.469*	—	*44.475*	*151.501*	*517.681*
III.	*Grasas y Aceites,Animales y Vegetales*	*305.731*	*16.873*	*73.184*	—	*39.382*	*44.678*	*131.614*
IV.	*Productos de la Industria Alimenticia*	*433.498*	*10.292*	*105.017*	—	*31.392*	*7.971*	*278.826*
V.	*Productos minerales*	*849.384*	*10.187*	*270.559*	—	*59.900*	*324.479*	*184.259*
VI.	*Productos de las Industrias Químicas*	*1.533.681*	*48.315*	*381.635*	—	*144.776*	*174.147*	*784.808*
VII.	*Materias Plásticas Artificiales*	*604.777*	*19.236*	*118.621*	—	*60.426*	*73.073*	*333.421*
VIII.	*Pieles, Cueros y sus Manufacturas*	*20.758*	*264*	*3.913*	—	*223*	*2.709*	*13.649*
IX.	*Carbón Vegetal y Manufacturas de Madera*	*90.699*	*1.042*	*5.740*	—	*483*	*3.491*	*79.943*
X.	*Materias utilizadas en la Fabricación de papel*	*452.440*	*18.437*	*88.887*	—	*41.515*	*45.248*	*258.353*
XI.	*Materias Textiles y sus Manufacturas*	*409.384*	*23.596*	*69.019*	—	*44.934*	*9.582*	*262.253*
XII.	*Calzado, Sombrerería, Paraguas y Quitasoles*	*16.100*	*741*	*821*	—	*506*	*383*	*13.649*
XIII.	*Manufacturas de Piedra, Yeso, Cemento*	*205.168*	*9.198*	*17.692*	—	*26.916*	*13.899*	*137.463*
XIV.	*Perlas finas, piedras preciosas y semipreciosas*	*56.058*	*1.125*	*2.932*	—	*30.785*	*743*	*20.473*
XV.	*Metales comunes y sus Manufacturas*	*2.058.628*	*78.664*	*220.167*	—	*167.860*	*134.436*	*1.457.501*
XVI.	*Máquinas y Aparatos, Material Eléctrico*	*4.918.708*	*183.027*	*626.131*	—	*460.504*	*385.025*	*3.264.021*
XVII.	*Material de Transporte*	*2.310.658*	*82.989*	*387.082*	—	*303.824*	*151.406*	*1.385.357*
XVIII.	*Instrumentos y Aparatos de Optica*	*414.407*	*13.257*	*69.877*	—	*32.533*	*29.663*	*269.077*
	Otros	*138.567*	*10.984*	*22.410*	—	*10.722*	*5.831*	*88.620*

ANEXO Nº 23 : IMPORTACIONES DEL GRUPO ANDINO

Fuente: Boletin BANCEPAC Nº 6. 1980

DISTRIBUCION GEOGRAFICA DE LAS IMPORTACIONES

AÑO: 1977

AREA DE PROCEDENCIA	TOTAL	Bolivia	Colombia	Chile	Ecuador	Perú	Venezuela
A. VALOR CIF (Miles de Dólares)							
TOTAL	**16.139.478**	**617.900**	**2.665.811**	**—**	**1.508.357**	**1.598.340**	**9.749.070**
1. Grupo Andino	*900.351*	*23.387*	*288.820*	—	*75.045*	*340.773*	*172.326*
2. Otros Países de ALALC	*1.268.970*	*172.149*	*206.877*	—	*105.269*	*133.047*	*651.628*
3. Mercado Común Centroamericano	*47.434*	*850*	*2.234*	—	*4.319*	*729*	*39.302*
4. Comunidad Económica Europea	*3.916.118*	*95.455*	*537.471*	—	*248.199*	*301.202*	*2.733.791*
5. Asociación Europea de Libre Comercio	*647.540*	*24.484*	*106.012*	—	*108.014*	*109.728*	*299.302*
6. Consejo de Asistencia Económica Mutua	*107.454*	*7.459*	*38.170*	—	*11.888*	*20.628*	*29.309*
7. Japón	*1.720.177*	*79.493*	*232.684*	—	*241.700*	*118.160*	*1.048.140*
8. Estados Unidos	*5.885.933*	*182.255*	*931.352*	—	*579.125*	*462.503*	*3.730.698*
9. Otros	*1.645.501*	*32.368*	*322.191*	—	*134.798*	*111.570*	*1.044.574*
B. VOLUMEN (Toneladas Métricas)							
TOTAL	**21.139.178**	**570.000**	**...**	**—**	**2.107.982**	**5.425.176**	**13.036.020**
1. Grupo Andino	*633.907*	*20.900*	...	—	*313.542*	...	*299.465*
2. Otros Países de ALALC	*2.351.946*	*302.300*	...	—	*336.273*	...	*1.713.373*
3. Mercado Común Centroamericano	*90.917*	*200*	...	—	*13.526*	...	*77.191*
4. Comunidad Económica Europea	*2.829.022*	*50.600*	...	—	*106.007*	...	*2.672.415*
5. Asociación Europea de Libre Comercio	*447.978*	*10.300*	...	—	*34.591*	...	*403.087*
6. Consejo de Asistencia Económica Mutua	*116.442*	*6.300*	...	—	*18.527*	...	*91.615*
7. Japón	*1.794.906*	*56.900*	...	—	*238.295*	...	*1.499.711*
8. Estados Unidos	*4.664.905*	*100.400*	...	—	*666.774*	...	*3.897.731*
9. Otros	*2.783.979*	*22.100*	...	—	*380.447*	...	*2.381.432*

ANEXO Nº 24 : DISTRIBUCION GEOGRAFICA DE LAS IMPORTACIONES

Fuente: Boletín BANCEPAC Nº 6.1980

Source: United Nations publication
Sales No. E.78.II.A.5-E/C.10/38
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Table III-64. Receipts and payments of royalties and fees, selected developed countries, a/ 1971-1976

(Millions of dollars)

Country	1971			1972			1973		
	Receipts	Payments	Balance	Receipts	Payments	Balance	Receipts	Payments	Balance
United States	2 545	241	+2 304	2 770	294	+2 476	3 225	385	+2 840
France	397	466	-69	583	587	-4	845	743	+102
United Kingdom	358	300	+58	416	345	+71	494	392	+102
Germany, Federal Republic of	156	425	-269	211	494	-283	223	619	-396
Belgium-Luxembourg	129	169	-40	150	212	-62	206	248	-42
Netherlands	105	117	-12	104	153	-49	142	191	-49
Sweden	75 c/	218 c/	-143	84	226	-142	112	288	-176
Japan	60	488	-428	74	572	-498	88	715	-627
Italy	115	329	-214	89	259	-170	97	304	-207
Canada b/	60	327	-267	...	...	...	94	500	-406
Spain	...	...	...	...	...	...	29	261	-232
New Zealand	13	9	+4	13	13	...	16	17	-1
Austria	8	33	-25	8	41	-33	8	48	-40
Australia	7	73	-66	5	67	-62	6	107	-101

Country	1974			1975			1976		
	Receipts	Payments	Balance	Receipts	Payments	Balance	Receipts	Payments	Balance
United States	3 821	346	+3 475	4 302	480	+3 822	4 366	468	+3 898
France	991	821	+170	...	...	...	...	...	...
United Kingdom	574	465	+109	610	530	+80	...	...	...
Germany, Federal Republic of	275	670	-395	324	834	-510	304	806	-502
Belgium-Luxembourg	224	343	-119	...	...	...	...	...	...
Netherlands	161	237	-76	...	...	...	...	...	...
Sweden	115	395	-280	204	517	-313	175	620	-445
Japan	113	718	-605	161	712	-551	...	...	...
Italy	107	280	-173	...	...	...	...	...	...
Canada b/	...	...	...	...	...	...	...	...	...
Spain	36	314	-278	50	301	-251	61	467	-406
New Zealand	24	14	+10	25	20	+5	20	23	-3
Austria	12	65	-53	...	...	...	...	...	...
Australia	7	95	-88	12	98	-86	...	...	...

Annexe Nº 26 Source:United Nations publication
Sales NºE.78.II.A.5-E/C.10/38
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Table III-62. Estimated foreign-controlled shares of the pharmaceutical industry; selected countries, 1975 a/

(Percentage)

Country and country group	Share of sales (Percentage)
Saudi Arabia	100
Nigeria	97
Belgium	90
Colombia	90
Venezuela	88
Brazil	85
Canada	85
Australia	85
Indonesia	85
Mexico	82
Central American Common Market (1970)	80
India	75
Iran	75
Argentina	70
United Kingdom	60
Italy	60
South Africa	60
Finland (1971)	50
Sweden	50
France	45
Portugal (1970)	44 b/
Turkey (1974)	40
Norway (1971)	36
Germany, Federal Republic of	35
Switzerland (1971)	34
Greece	28
Egypt (1971)	19
United States	15
Japan	13

Source: United Nations Centre on Transnational Corporations, based on United Nations Conference on Trade and Development, Major Issues Arising from the Transfer of Technology to Developing Countries (United Nations publication, Sales No.E.75.II.D.2); Business International, Investing, Licensing and Trading Conditions Abroad (New York, 1976); S. Lall, "The International Pharmaceutical Industry in Less Developed Countries, with Special Reference to India", Oxford Bulletin of Economics and Statistics, August 1974, p.162: Business Latin America, various issues; L.M. Wortzel, "Technology transfer in the pharmaceutical industry" (New York, UNITAR, 1971); "The Mathi Committee on the Indian Drug industry", in Report of the Committee on Drugs and Pharmaceutical Industry (New Delhi, Ministry of Petroleum and Chemicals, 1975); A. Cilingiroglu, "Transfer of Technology for Pharmaceutical Chemicals" (Paris, Organization for Economic Co-operation and Development, 1974); J. Katz, Oligopoli, firmas nacionales y empresas multinacionales (Buenos Aires, Siglo Veintiuno, 1974); M. Mandousson, The Pharmaceutical Industry in Egypt, Ph.D. Thesis, University of London, 1974; United States Department of Commerce, Foreign Direct Investment in the United States (Washington, D.C., 1976); Japan Ministry of Foreign Trade and Industry, Trends in Foreign Capital Enterprises (Tokyo, 1971); L. Schaumann, Pharmaceutical Industry Dynamics and Outlook to 1985 (Menlo Park, Stanford Research Institute, 1976), table 3.

a/ Except where otherwise indicated.

b/ Refers to the market share held by the 15 largest foreign-owned companies out of the total 64 foreign-owned companies.

Annexe No 27 : TRANSNATIONAL CORPORATIONS IN VENEZUELA

JAPAN

Parent Names	Subsidiary or Associate(a)
1-DAY-ICHI SHOJI CO.LTD.	Dai - ICHI Shoji de Venezuela C.A.
2-FUJITA CORP	Fujita de Venezuela C.A.(a)
3-FUJITEC CO.,KTD	Ascensores FUJITEC C.A
4-HITACHI LTD	S.H.Fundiciones C.A. (a)
5-HITACHI LTD	Hitachi de Venezuela C.A.
6-HITACHI LTD	Mayorca-hitachi C.A.
7.ITOH'&CO.,LTD	C.ITOH & Co de Venezuela,S.A.
8-KANEMATSU-GOSHO LTD	Siderurgica Occidental C.A.(a)
9-MARUBENI CORP.	Marubeni Venezuela C.A.
10-MATUSHITA ELEC. IND.CO.LTD	Ntional Corp Venezolane S%A%
11-MATUSHITA ELEC.IND.CO.LTD	Natioanl de Venezuela C.A.
12-MITSUBISHI CORP	Laminal Galvanizadas C.A.(a0
13-MITSUBISHI COUP	Mitsubishi Venezolana C.A.
14-MITSUI & CO.LTD	Mitsui de Venezuela S.S.
15-NISSHO IWAI CO.LTD	Nissho - Iwai de Venezuela C.A.
16-SONY CORP.	Sony de Venezuela C.A.
17-SUMITOMO LIGHT METAL INDS.LTD	Ind.Venez.de Aluminio C.A.(a0

AUSTRALIA

1-WORMALD INTERNATIONAL LTD	Ansui chemical Co.de Venezuela.C.A.

AUSTRIA

1-VOEST-ALPINE AG	Voest-Alpine International Corp.

BELGIUM

1-AGFA-GEVAERT GROUP	Agfa-Gevaert de Venezuela S.A.
2-BEKAERT N.V.,S.A.	Vicson S.A.(a)
3-CINZANO INTERNATIONAL S.A.	Cinzano S.A.(a)
4-ETEROUTREMER S.A.	Eternit Venezolana S.A.(a)
5-INT.DES PIEUX ARMES FRANKIGNOUL	Fundaciones Franki C.A.(a)
6-INSAY E.T.S. S.A.	Electro ETS S.A.
7-L.V.D.CO.P.V.B.A.	L.D.V. Venezolana S.A.
8-MECANIVER S.A.	Templex C.A.(a)

9-PETROFINA S.A.	American Petrofina of Venezuela
10-SAVEMA S%A%	Sabema de Venezuela C.A.
11-WITTOCK VAN LANDEGHEM S.A.	Beltex S.A.(a)

DENMARK

1-THE BERSOE FOUNDATION	Bera de Venezuela S.A.(a)
2-CHRISTIANI & NIELASEN A/S	Construcciones Christ. & Nielsen C.A.
3-DET OSTASIATISKE KOMPAGNI A/S	Bera de Venezuela S.A.(a)
4-Plumrose A/S	Granja Porcina Saguino S.R.L.
5-Plumrose A/S	Ienca

FINLAND

ǂ-KONE OY	Ascemspres H. & S-Kone C.A.

FRANCE

1-AMREP S.A.	Atlantida Amrep S.A.(a)
2-CAMPENON BERNARS S.A.	Empresas Campenon Bernars de Venezuela.
3-LE CARBONE-LORRAINE S. A	Morganite Lorraine de Venezuela C.A.(a)
4-COINTREAU HOLDING	Cointreau de Venezuela S.A.
5-CONSTRUCTIONS METALLIQUES P.	Constructions M.P.de Venezuela(a)
6-CREDIT LYONNAIS S.A.	Banco Provincial SAICA
7-PARTICIPATION DES TISSAGES	Hilos Tubino(a)
8-NOBEL BOZEL S.A.	Venbozel S.A.
9-PECHINEY UGINE KUHLMANN S.A.	Produven S.A.(a)
10-PERNOD-RICARD S.A.	Dubonnet Venezuela S.A.
11-ROUSSEL UCLAF S.A.	Roussell de Venezuela S.A.
12-SAINT-GOBAIN-PONT-A-MOUSSON, CIE.,DE,S.A.	C.A.Venezolana de Inversiones,Investigaciones y Representaciones -CAVIRE-
13-SAUNIER DUVAL S.A.	Calasa S.A.
14-SOLETANCHE S.A.	Soletanche de Venezuela S.A.
15-THOMSON-BRANDT S.A.	
Financiere Elec. de Banque S.A.	
Generale de Radiologie S.A.	C.G.R.Venezuela S.A.

WEST GERMANY

1-BASF AG	
Luchem Corp.-U.S.A.-	
Basf Wyandotte Corp.-U.S.A.-	Wyandotte de Venezuela C.A.
2- Basf Wyandotte Corp.-U.S.A.-	Chemag Lehrmann de Venezuela S.R.L.
3-BAYER AG	
Bayer Foreign Invest.Canada	Bayer Quimicas Unidas S.A.
4- Miles Laboratories Inc.U.S.A.	Industrias Miles Venezolana C.A.
5-DSD-DILLINGER STAHLBAU GMBH	CGI Constructora Gral.de Industtrias C.A.
6-DEUTSCHE LUFTHANSA AG	Lufthansa de Venezuela S.A.
7-DRESDNER BANK AG	
Deutsch-Sudamerikanische B.	Cavendes Sociedad Financiera C.A.(a)
8- Deutsch-Sudamerikanische B.	Venezolana de Desarrollo C.A.(a)
9-GUTEHOFFNUNGSHUTTE A.	K.S.B. Venezolana C.A.(a)
10-KARL O. HELM AG	Helm de Venezuela C.A.
11-HENKEL KG.a A.	Henkel Venezolana S.A.
12-HOECHST AG	Hoechst Remedia S.A.
13- Messer Griesheim GmbH	Messer Griesheim de Venezuela S.A.
14-MANNESMANN AG	
Mannesmann Demag AG	Supervisora de Instalaciones Tecnicas SRL
15- G.L.Rexroth GmbH	Rexroth S.A.
16-NEUE HEIMAT INTERNATIONAL	Promotora Venezolana Alemana S.A.(a)
17-MUNCHENER RUCKVERSICHERUNGS	Munchener de Venezuela C.A.
18-PSB ARNFRIED PAGEL ING.	Pagel Venezuela
19-PELIKAN AG	Paragon C.A.
20-G.M.PFAFF AG	
Pfaff International Corp.USA	Pfaff de Venezuela S.A.
21-SCHERING AG	Farmaceutica Industrial C.A.
22-SIEMENS AG	Osram de Venezuela S.A.
23-TELEFONBAU UND NORMALZEIT L	Tele Norma C.A.(a)
24-TRIANGELER DAMMSTOFFWERK G.	Triaven
25-J.M.VOITH GmbH	Voith de Venezuela S.A.
26-H.VON WICHMANN KG	Autorex Venezolana S.A.(a)
27-OTTO WOLFF IND.ANLAGEN GmbH	Otto Wolff de Venezuela C.A.

ITALY

1-BASTOGI-IRBS S.P.A.	
Sabiem S.P.A.	Corporacion Ascensores S.A.
2-BANCA NAZIONALE DEL LAVORO	Financiera Cavendes S.A.(a)
3-FIAT S.P.A.	Corporacion Ind.Acce.de Vehiculos.C.A.
4-FIAT S.P.A.	Fabrica Ind.Automotores C.A.(FIAV)
5-FIAT S.P.A.	Fabrica de Motores C.A.(FADEMOTOR)
6-FINANZIARIA SIDERURGICA S.P.A.	
Dalmine S.p.A.	
Ponteggi Tubolari D.I.S.p.A.	A.T.Dalmine de Venezuela S.A.
7-GENERALE DI ELECTRICITA SPA	Sud-America de Electrificacion S.A.
8-GENERALFIN S.p.A.	
Codelfa S.p.A.	Consorcio Astaldi Codelfa Colombus
9-Codelfa S.p.A.	Consorcio Astaldi Codelfa Proindu
10-LINEA C COSTA ARMATORI S.P.A.	Linea C
11-ERCOLE MARELLI & C S.p.A.	Ercole Marelli de Venezuela S.A.
12-MONTEDISON S.p.A.	Biofar C.A.
13- Carlo Erba S.p.A.	Carlo Erba S.A.
14- Farmaceutici Italia S.p.A.	Farmitalia de Venezuela S.A.
15-MONTEDISON S.p.A.	General Quimica Venezolana S.A.
16-MONTEDISON S.p.A.	Montedison de Venezuela S.A.
17-ING.C.OLIVETTI & C.S.p.A.	
Olivetti Internat.-Luxembourg-	Olivetti de Venezuela S.A.
18-RIUNIONE ADRIATICA DI S. S.p.A.	Adriatica Venezolana C.A.

NETHERLANDS

1-ENNIA N.V.	Primera Holandesa de Seguros C.A.
2-HAGEMEYER N.V.	Hagemeyer Venezolana C.A.
3-CETECO TRADING AND IND.CORP.	Ceteco de Caracas S.A.
4-CETECO TRADING AND IND.CORP.	Ceteco de Maracaibo S.A.
5-CETECO TRADING AND IND.CORP.	Ceteco Venezuela S.A.
6-CETECO TRADING AND IND.CORP.	Cetra Venezolana S.A.
7-CETECO TRADING AND IND.CORP.	Esmalteria Zuliana C.A.
8-CETECO TRADING AND IND.CORP.	Ind.Venezolana de Componentes Electronicos SA
9-CETECO TRADING AND IND.CORP.	Ind.Artefactos Domesticos C.A.
10-CETECO TRADING AND IND.CORP.	Industrias Regina C.A.

11-CETECO TRADING AND IND.CORP.N.V.	Metalurgica Nacional C.A.
12-CETECO TRADING AND IND.CORP.N.V.	Representaciones Ceteco S.A.
13-CETECO TRADING AND IND.CORP.N.V.	Sony de Venezuela S.A.(a)
14-CETECO TRADING AND IND.CORP.N.V.	Tecnica C.T.C. S.A.
15-CETECO TRADING AND IND.CORP.N.V.	Televisores de Caracas S.A.
16-ROYAL DUTCH SHELL N.V.	Shell Quimica de Venezuela C.A.
17-ROYAL DUTCH SHELL N.V.	Shell Venezuela S.A.
18-NAARDEN INTERNATIONAL N.V.	Naarden de Venezuela C.A.
19-VAN NELLE LASSIE N.V.	Molinos Lassie C.A.
20-PHS.VAN OMMEREN N.V.	Phs.van Ommeren de Venezuela S.A.
21-ROYAL PACKAGING IND.VAN LEER	Industrias Venezolanas Van Leer C.A.
22-ROYAL PACKAGING IND.VAN LEER	Van Leer Envases Valencia C.A.
23-SHV HOLDING N.V.	Servimar C.A.
24-	Lever S.A.

SPAIN

1-ABENGOA S.A.MONTAJES ELECTRICOS	Instalaciones Elect.Mecanicas Abengoa S.A.
2-ACUSTICA ELECTRONICA ROSELSON	Fivox C.A.
3-BANCO DE BILBAO	Banco Exterior C.A.(a)
4-BANCO CENTRAL	Banco Exterior C.A.(a)
5-PEDRO DOMEQ S.A.	Pedro Domeq Venezuela S.A.
6-ESPANOLA DE MONTAJES METALICOS	Empresa de Montajes Metalicos S.A.(a)

SWEDEN

1-AGA AB	AGAVenezolana C.A.
2-AGA AB	Agandina S.A.
3-AGA AB	Soldaduras del Caribe C.A.
4-ASEA AB	ASEA Venezuela S.A.
5-ALFA-LAVAL AB	Alfa-Laval Venezolana S.A.
6-ATLAS COPCO AB	Atlas Copco Venezuela S.A.
7-ELECTROLUX AB	Electrolux C.A.
8-ESSELTE AB	
Esselte Pendaflex Corp.USA	Esselte Pendaflex C.A.
9-SKF AB	SKF Venezolana C.A.
10-SANDVIK AB	Sandvik Venezuela C.A.
11-SIAB BYGGEN AB	Siab International C.A.
12-SKANDIA INSURANCE Co.LTD	Skandia Venezuela S.A.
13-TELEFON AB L.M.ERICSSON	Ericsson C.A.

SWITZERLAND

1-A.E.G. TELEFUNKEN INT. AG.	AEG Telefunken Venezolana S.A.
2-BBC. AG.BROWN,BOVERI & CIE.	Brown Boveri de Venezuela S.A.
3-CIBA-GEIGY AG	Covigal S.A.(a)
4-CIBA-GEIGY AG	Productos CIBA-GEIGY Ltda.
5-DANZAS AG	Danzas Venezolana C.A.
6-DOW CHEMICAL AG	Dow Chemical Latin America S.A.
7-FOSECO HOLDING AG	Foseco Venezolana C.A.

UNITED KINGDOM

1-B.A.T. INDUSTRIES LTD British-Ame.Cosmetics Ltd.	Yardley of London Venezolana C.A.
2- British-Ame.Tobacco Co.	Cigarrera Bigott Sucs., C.A.
3-BICC LTD	Proyelec C.A.(a)
4-BABCOCK INTERNATIONAL LTD	Babcock & Wilcox de Venezuela S.A.
5-BRIDON LTD	Brivensa C.A.(a)
6-THE BRITISH PETROLEUM CO. British Petroleum B.V.-Holland- The Standard Oil Co.USA	Prospect International C.A.
7-THE BURMAH OIL CO.LTD The Rawlplug Co.Ltd.	Rawlplug de Venezuela C.A.(a)
8-COATS PATONS LTD	Coats de Venezuela S.A.
9-COATS PATONS LTD	Cothilca S.A.(a)
10-DAVY CORPORATION LTD Head,Wrightson & Co.Ltd.	Davy Internacional de Venezuela C.A.
11-THE DISTILLERS CO.LTD Tanqueray Gordon & Co.Ltd	Gordon's de Venezuela C.A.
12-EWBANK CONSULTING LTD	Ewbank & Partners(Venezuela)S.A.
13-FOSECO MINSEP LTD	Fosven C.A.(a)
14-THE GENERAL ELECTRIC CO.LTD The English Electric Co.	English Electric Marconi de Venezuela C.A.
15- The English Electric Co.	Marconi de Venezuela C.A.
16-THE GENERAL ELECTRIC CO.LTD	Genalex C.A.
17-GESTETNER HOLDINGS LTD. Gestetner Investments Ltd.	Gestetner de Venezuela S.A.
18-GLAXO HOLDINGS LTD Glaxo Group Ltd	Laboratorios Glaxo de Venezuela C.A.
19-GUARDIAN ROYAL EXCHANGE A	Britanica de Seguros C.A.(a)
20-C.E. HEATH & CO.LTD	Rollins Heath Consorcio de Seguros C.A.(a)

21-HEPWORTH CERAMIC HOLDING	VEN Fordath C.A.(a)
22-IMPERIAL CHEMICAL INDUSTRIES LTD	ICI Kern S.A.
23-JOHN LAING LTD	Laing II C.A.(a)
24-LLOYDS BANK LTD	Banco La Guaira Internacional C.A.(a)
25-MCCORQUODALE & CO.LTD	Industrias Almac C.A.(a)
26-METALOCK (BRITAIN)LTD	Metalock (Venezuela) S.R.L.
27-THE MORGAN CRUCIBLE CO.LTD	Morganite Lorraine de Venezuela C.A.(a)
28-S.PEARSON & SON LTD	
S.Pearson Industries Ltd.	
Midhurst Corp. -USA-	
Camco Inc -USA-	
Camco Cayman-Cayman Inds.	Camco de Venezuela S.A.
29- Camco Cayman-Cayman Inds.	Camco Wireline C.A.
30-THE PLESSEY CO.LTD	Plessey de Venezuela S.A.
31-RECKITT & COLMAN LTD	Atlantis Venezolana C.A.
32-THE SHELL TRANSP. & TRADING CO.	Comercial Agropecuaria S.A.(a)
33-THE SHELL TRANSP. & TRADING CO.	Shell Quimica de Venezuela C.A.
34-THE SHELL TRANSP. & TRADING CO.	Shell Venezuela S.A.
35-SMITH & NEPHEW ASSOC.LTD	Marcas Asociadas Marcasa S.A.
36-STEWART WRIGHTSON HOLDING LTD.	
Stewart W.International Group	
Stewart W.(Overseas Holding)	Matthews Wrightson de Venezuela C.A.
37-ULTRAMAR CO. LTD	Ultramar de Venezuela S.A.
38-THE WELLCOME FOUNDATION LTD	Cooper Venezolana S.A.
39-THE WESTERN UNITED INVESTMENT CO	
The Union International Co.Ltd	Agropecuaria Rosalinda S.A.
40- The Union International Co.Ltd	Industria Envasadora Nacional

CANADA

1-ALCAN ALUMINIUM LTD	Aluminio de Venezuela C.A.
2-CANADA DEVELOPMENT CORPORATION	
Polysar Ltd	Polysar de Venezuela S.A.
3-CANADIAN INTERNAT.POWER CO.LTD	
C.Int.Power Services Ltd	Consultores Occidentales S.A.
4- International Power Co.	La Electricidad de Perija C.A.
5-DOMINION TEXTILE INC	Industria Venezolana de Entretelas C.A.(a)
6-THE MOLSON COMPANIES LTD	
Anthes Imperial Ltd.	
Molanth Holding M.Holland	
Oron Inc. U.S.A.	
The Diversey Corp. U.S.A	Diversey Overseas Corp.
7- The Diversey Corp. U.S.A.	Diversey Venezuela S.A.

8-MOORE CORP.LTD	Formularios y Procedimientos Moore(a)
9-MOORE CORPORATION LTD	Inversiones Moore C.A.
10-NORANDA MINES LTD Canada Wire & Cable Co.	Industrias de Conductores Electricos C.A.(a)
11-THE ROYAL BANK OF CANADA	Banco Royal Venezolano C.A.(a)
12-THE HOUSE OF SEAGRAM LTD Distillers Corp. Ltd	Venezolana Canadiense S.A.
13-THE HOUSE OF SEAGRAM LTD	Corporacion Venezolana Canadiense
14-THE HOUSE OF SEAGRAM LTD	Licorerias Unidas S.A.
15-THE STEEL CO.CANADA LTD	Stelco de Venezuela S.R.L.

UNITED STATES

1-ACCO INTERNATIONAL INC	ACCO Manufacturing C.A.
2-ABBOTT LABORATORIES	Abbott Laboratories C.A.
3-ADDISON-WESLEY PUBLISHING	Fondo Educativo Inter-Americano C.A.
4-AIRBORNE FREIGHT CORP	Pardo y Cia.
5-ALBERTO CULVER CO	Alberto Culver Americas Inc.C.A.
6-ALCON LABORATORIES INC. Alcon Universal Ltd.	Alcon Pharmaceutical C.A.
7-ALLEGHENY LUDLUM INDUSTRY INC. Chemetron Corporation	Gases Industriales de Venezuela C.A.
8-ALLERGAN PHARMACEUTICALS	Allergan de Venezuela S.A.
9-ALLIED CHEMICAL CORP	Aliada Quimica de Venezuela C.A.
10-ALLIED CHEMICAL CORP.	Union Petrolera Venezolana C.A.
11-ALLIS CHALMERS CORP.	American Air Filter of Venezuela C.A.
12-ALUMINUM CO.OF AMERICA	Inversiones Alcoa S.A.
13-AMERICAN CAN COMPANY	Distribuidora Envensa S.A.
14-AMERICAN CAN COMPANY	Dixie Cup de Venezuela C.A.
15-AMERICAN CAN COMPANY	Envases Plasticos Venezolanos S.A.
16-AMERICAN CAN COMPANY	Envases Venezolanos S.A.
17-AMERICAN CAN COMPANY	Gentile Industrias Asociadas S.A.
18-AMERICAN CAN COMPANY	Ind de Productos Terminados Envasados S.A.
19-AMERICAN CAN COMPANY	Inversiones Zeta S.A.
20-AMERICAN CAN COMPANY	Representaciones Envensa S.A.
21-AMERICAN CAN COMPANY	Vasos Venezolanos C.A.
22-AMERICAN CAN COMPANY	Vidrios Domesticos S.A.
23-AMERICAN CYANAMID CO.	Cyanamid de Venezuela C.A.
24-AMERICAN HOMEPRODUCTS CORP.	Ekco de Venezuela S.A.

25-AMERICAN HOMEPRODUCTS CORP	Farmaceutic Ayerst-Royal C.A.
26-AMERICAN HOMEPRODUCTS CORP	Industrias Kolana C.A.
27-AMERICAN HOMEPRODUCTS CORP	Industrias Wyeth S.A.
28-AMERICAN HOMEPRODUCTS CORP	Laboratorios Ayerst-Royal S.A.
29-AMERICAN HOSPITAL SIPPLY C.	American Hospital Supply Corp.de Venezuela S.A
30-AMERICAN MOTORS CORP.	A.M.C. de Venezuela C.A.
31- Jeep Corporation	Jeep de Venezuela S.A.
32-AN-SON CORPORATION	An-Son Drilling S.A.
33-ANSUL COMPANY	Ansul de Venezuela C.A.
34-ARMCO INC	Armco Venezolana C.A.
35-ARMCO INC.	The National Supply Co.of Venezuela C.A.
36-ARO CORPORATION	Aro de Venezuela C.A.
37-ASHLAND OIL INC.	
Ashland Oil Investments Inc	
CDE Company	Negroven S.A.(a)
38- CDE Company	Valvoline Oil Co.de Venezuela C.A.
39- CDE Company	Venezolana de Resinas C.A.(a)
40-ATLANTIC RICHFIELD CO.	Sinclair Venezuelan Oil Co.
41-AVON PRODUCTS INC	Avon Cosmetics de Venezuela C.A.
42-BAKER INTERNATIONAL CORP.	
Milchem Inc.	Milchem Venezuela Corp.
43-BANKAMERICA CORP.	Metro-America C.A.(a)
44-BATTELLE MEMORIAL INSTITUTE	Battelle Memorial Institute C.A.
45-BAXTER TRAVENOL LAB.INC.	Laboratorios Baxter C.A.
46-BEATRICE FOODS INC	Savoy Candy C.A.
47-THE BENDIX CORPORATION	Bendix-Miranda S.R.L.
48- United Geophysical Corp.	Exploradora Venezolana S.R.L.
49-THE BLACK & DECKER MANUFAC.CO.	Black & Decker de Venezuela C.A.
50-BLUE BELL INC.	
Campana Azul S.A.de Mexico	Wrangler de Venezuela C.A.
51-BOOZ,ALLEN & HAMILTON INC.	Booz,Allen & Hamilton de Venezuela S.R.L.
52-BORG-WARNER CORP.	Borg & Beck de Venezuela S.A.
53-BORG-WARNER CORP.	Refrigeracion York S.A.
54-BRISTOL-MYERS CO.	
Blisa Inc.	
Bristol Lab.Int.Panama	Laboratorios Bristol de Venezuela S.A.
55-BRISTOL-MYERS COMPANY	Bristol Myers de Venezuela S.A.
56-BRISTOL-MYERS COMPANY	Clairol de Venezuela C.A.
57-BRISTOL-MYERS COMPANY	Mead Johnson de Venezuela S.A.
58-BRUNSWICK CORPORATION	
Sherwood Medical Industry Inc.	Inyectoplas Venezolana C.A.(a)

59-BUNDY CORPORATION	Bundy Venezolana C.A.(a)
60-BURROUGHS CORPORATION	
Burroughs International Co.	
Burroughs Euro-Africa Inc.	
Burroughs Int.Switzerland.	Burroughs C.A.
61-CBI INDUSTRIES INC.	CBI de Venezuela C.A.
62-CBS INC.	CBS Columbia C.A.
63-CBS INC.	Editorial Interamericana de Venezuela C.A.
64-CPC INTERNATIONAL INC	Aliven S.A.
65-CAMCO INC	Camco de Venezuela S.A.
66-CAMCO INC	Camco Wireline C.A.
67-CAMERON IRON WORKS INC	Cameron Iron Works de Venezuela C.A.
68-CELANESE CORP.	Celifibras de Venezuela C.A.
69-CHAMPION SPARK PLUG CO.	Bujias Ancom C.A.
70-CHAMPION SPARK PLUG CO.	Bujias Champion de Venezuela C.A.
71-CHASE MANHATTAN CORP.	
The Chase Manhattan Bank	Arrendacima C.A.
72- The Chase Manhattan Bank	Banco Mercantil y Agricola
73- The Chase Manhattan Bank	Consorcio Inversionista Mercantil y Agric.
74-CHEMICAL NEW YORK CORP.	
Chemical Bank	
Chemical Int. Finance Ltd.	Financiera Exterior S.A.(a)
75-CHEMTEX INC.	Chemtex de Venezuela S.A.
76-CHESEBROUGH-POND'S INC.	
Chesebrough-Pond's Int.Canada	Chesebrough- Pond's C.A.
77-CHRYSLER CORP.	Chrysler de Venezuela S.A.
78-CHRYSLER CORP.	
Chrysler Comercial.-Mexico-	Chrysler Credit Venezuela S.A.
79-CHUBB CORP.	La Federacion Cia.de Seguros C.A.(a)
80-CITICORP	
Citibank N.A.	Arrendequipos C.A.
81-CLARK EQUIPMENT CO.	Industrial Sabal S.A.(a)
82-CLUETT,PEABODY & CO.INC.	Industrias Jatu S.A.(a)
83-CLUETT,PEABODY & CO.INC.	
Van R. Apparel Corp.	Van Raalte de Venezuela C.A.
84-COLGATE-PALMOLIVE CO.	Colgate-Palmolive C.A.
85-COLGATE-PALMOLIVE CO.	Kendall Venezuela C.A.
86-COLGATE-PALMOLIVE CO.	
Helena Rubenstein Inc.	Helena Rubenstein(Inter Americana) S.A.
87-COMBUSTION ENGINEERING INC	Lummus de Venezuela C.A.
88-THE CONTINENTAL CORP.	
Diner's Club Inc.	Diners Club de Venezuela S.A.(a)

89- Security Reinsurance Corp.	La Venezolana de Seguros C.A.(a)
90-CONTROL DATA CORPORATIO	Servicio Cybernet de Venezuela
91-COOPER INDUSTRIES INC. Gardner-Denver Co.	Gardner-Denver International C.A.
92-COOPER LABORATORIES INC. Cooper Lab.International Inc. Cooper Lab.Int.Ltd.-Bahamas-	Cooper Med.S.A.
93- Cooper Lab.International Inc.	Knox de Venezuela C.A.
94-THE DOW CHEMICAL CO. Dow Chemical.-Holland Antilles-	Tecnica Petroquimica Venezuela C.A.
95- Gruppo Lepetit SpA.-Italy- Administ. de Part. Entrng.	Lepetit de Venezuela C.A.
96-CORE LABORATORIES INC.	Core Laboratories International S.A.
97-CORNING GLASS WORKS Corning Int. Service.-Panama-	Corning Venezuela S.A.
98-COULTER ELECTRONICS INC.	Coulter Electronics S.A.
99-CRANE PACKING CO.	John Crane Venezuela C.A.
100-CROUSE-HINDS CO.	Crouse-Hinds de Venezuela C.A.
101-CROWN CORK & SEAL CO.INC.	Crown Cork de Venezuela C.A.
102-DANA CORPORATION	Arrendamientos e Inversiones Camuri S.A.
103-DANA CORPORATION	Corporacion H.Z.Relianca S.A.(a)
104-DANA CORPORATION	Danaven C.A.(a)
105-DANA CORPORATION	Sidaforjas S.A.(a)
106-DANA CORPORATION	Sidaven S.A.(a)
107-DANA CORPORATION	Victroven S.A.
108-DART INDUSTRIES INC.	Dart de Venezuela C.A.
109-DART INDUSTRIES INC.	Estireno del Zulia C.A.
110-DATA GENERAL CORPORATION	Data General C.A.
111-DEERE & COMPANY	Fanatracto S.A.(a)
112-DIAMOND SHAMROCK CORP	Diamond Shamrock Venezuela S.A.
113-DIAMOND SHAMROCK CORP.	Nopco de Venezuela S.A.(a)
114-DIAMOND SHAMROCK CORP.	Polifilm de Venezuela S.A.(a)
115-DRAVO CORP.	Constructora Dravo C.A.
116-DRESSER INDUSTRIES INC.	Ceramica Carabobo C.A.(a)
117-DRESSER INDUSTRIES INC. Dresser AG.-Liechtenstein-	Magcobar de Venezuela C.A.
118-E.I. DU PONT DE NEMOURS & CO.	Du Pont de Venezuela C.A.
119-THE DUN & BRADSTREET CORP.	Dun & Bradstreet C.A.
120-EG & G. INC. Sealol Inc.	EG & G. Sealol S.A.

121-ESB RAY-O-VAC CORP.	Energia Integral S.A.
122-EASTMAN KODAK CO.	Foto Interamericana de Venezuela S.A.
123-EATON CORP.	Cutler-Hammer International C.A.
124-EATON CORP.	Eaton C.A.
125-EATON CORP.	Ejeven S.A.(a)
126-THE ECHLIN MANUFACTURING CO.	Inversora Sabana S.A.
127-THE ECHLIN MANUFACTURING CO. The Echlin Sales Co.	Echlin de Venezuela C.A.
128-ECONOMICS LABORATORY INC. Economics Lab.Int.Ltd.	Soilax de Venezuela C.A.
129-EMERSON ELECTRIC CO.	Emerson Electric C.A.
130-EMERSON ELECTRIC CO. Skil Corporation Skil Europe Corp.	Skil Venezolana S.R.L.
131-EMHART CORPORATION USM Corporation	Fijaciones Industriales Tucker C.A.
132- USM Corporation	USM Andes S.R.L.
133-ESMARK INC Estech Inc. Estech Specialty Chemical Corp.	Swift Chemical Co. de Venezuela C.A.
134-FMC CORPORATION	Manufacturas Industriales C.A.(a)
135-FMC CORPORATION	Tripoliven C.A.
136-EBERHARD FABER INC	Eberhard Faber de Venezuela C.A.(a)
137-FEDERAL-MOGUL CORP.	Federal Mogul de Venezuela C.A.
138-FELMONT OIL CORP.	Guanipa Oil Corp.
139-FERRO CORPORATION	Ferro de Venezuela C.A.(a)
140-FIRESTONE TIRE & RUBBER CO.	Firestone Venezolana C.A.
141-FIRST NATIONAL BOSTON CORP. The First Nat.Bank of Boston Boston Overseas Fin.Corp.	Arrendadora Industrial Venezuela C.A.(a)
142-FIRST CHICAGO CORP. First Chicago Int.Finance Corp.	First Chicago(Venezuela)C.A.
143-FORD MOTOR CO.	Ford Motor Co. de Venezuela C.A.
144-FRUEHAUF CORP. Kelsey-Hayes Co.	Ruedas de Venezuela C.A.(a)
145-GK TECHNOLOGIES INC.	Industria Venezolana de Cables Elect.C.A.(a)
146-GATES RUBER CO.	Gates Venezuela S.A.
147-GEARHART-OWEN INDUSTRY INC. Go Int.South America S.A.	Go International de Venezuela C.A.
148-GEARHART-OWEN INDUSTRY INC.	Tri-Can de Venezuela C.A.(a)
149-GENERAL BINDING CORP.	General Binding Corp. de Venezuela S.A.

150-GENERAL ELECTRIC CO.	General Electric de Venezuela S.A.
151-GENERAL ELECTRIC CO. Generale di Elettricita	SUD Americana de Electrificacion S.A.
152-GENERAL FOODS CORP.	La India C.A.
153-GENERAL MILLS INC.	Gneral Mills de Venezuela S.A.
154-GENERAL MILLS INC.	Grandes Molinos de Venezuela S.A.
155-GENERAL MOTORS CORP.	General Motors de Venezuela C.A.
156-GENERAL TELEPHON & ELECT.CORP. GTE International Inc.	GTE Electronica Andina C.A.(a)
157- GTE International Inc.	GTE Silvania C.A.
158- GTE International Inc.	GTE Telecomunicaciones C.A.(a)
159- GTE International Inc.	Zinsco de Venezuela C.A.(a)
160-GENERAL TIRE AND RUBBER CORP.	Cauchos General S.A.(a)
161-GENERAL TIRE AND RUBBER CORP.	Nacional Manufactura de Cauchos y Neumat.C.A.
162-GEOSCIENCE TECH.SERVICE.CORP.	GTS de Venezuela C.A.(a)
163-GERBER PRODUCTS CO.	Venezolana de Alimentos C.A.
164-THE GILLETTE CO. Giva S.A. Cia.	Gillette de Venezuela S.A.
165-THE B.F.GOODRICH CO.	B.F.Goodrich Chemical de Venezuela C.A.
166-THE B.F.GOODRICH CO.	Plastics Petroquimica C.A.(a)
167-THE GOODYEAR TIRE & RUBBER	Goodyear de Venezuela C.A.
168-W.R.GRACE & CO.	Productos Darex S.A.
169-GREY ADVERTISING INC.	Grey Advertising de Venezuela C.A.(a)
170-GRIFFITH LABORATORIES USA	Griffith de Venezuela C.A.
171-GROLIER INC.	Grolier Panamericana C.A.
172-GROLIER INC.	Grolier de Venezuela C.A.
173-GROLIER INC. W.M.Jackson Inc.	Editorial Los Andes C.A.
174-GROLIER INC.	Pan American Credit Corp.C.A.
175-GROLIER INC.	Sistemas y Comunicaciones Electronicas C.A.
176-GULF & WESTERN INDUSTRIES INC. A.P.S. Inc.	Plavica-Venezuela C.A.
177- A.P.S. Inc.	Venezuelan Supply(VENSU) C.A.
178- Simmons Co.	Simmons de Venezuela C.A.
179-FRANK B.HALL & CO.INC. Interocean Agency Inc. Agencia Interoceanica	Reaseguros Corsa S.A.
180-HALLIBURTON CO.	Halliburton de Cementacion y Fomento C.A.
181-HAY ASSOCIATED.M.THE HAY GROUP.	Hay y Asociados Consultores de Direccion S.A.
182-H.J.HEINZ COMPANY	Alimentos Heinz C.A.

183-HELMERICH & PAYNE INC.	
Helmerich & Payne Int.Drilling	Helmerich & Payne C.A.
184- Helmerich & Payne Int.Drilling	Helmerich & Payne de Venezuela Inc.C.A.
185-HERCULES INC.	Hercules Andino C.A.
186-HEWLETT-PACKARD CO.	
Hewlett-Packard Delaware	Hewlett-Packard de Venezuela C.A.
187-HONEYWELL INC	Honeywell C.A.
188-HOUSTON NATURAL GAS CORP.	
Liquid Carbonic Corp.	Gases & Chemical International S.A.
189- Liquid Carbonic Corp.	Liquid Carbonic Venezolana S.A.(a)
190-HUGHES TOOL CO.	
Oil Base Inc.	Oil Base de Venezuela C.A.
191-HUGHES TOOL CO.	Hughes Tool Co.C.A.
192-HUGHES TOOL CO.	
B.J.Hughes Inc.	Pacemaker Service C.A.
193-IMS INTERNATIONAL INC.	Data Andina S.R.L.
194-IMS INTERNATIONAL INC.	Interdata S.A.
195-INA CORP.	Inaven C.A.
196-IU INTERNATIONAL CORP.	
IU Intermetal Inc.	Corporacion Chatarraven C.A.
197-IU INTERNATIONAL CORP.	
IU Investment Corp.	Mel-Mix de Venezuela S.A.
198-ILLINOIS TOOL WORKS INC.	Multipack de Venezuela C.A.(a)
199-INGERSOLL-RAND CO.	Ingersoll-Rand de Venezuela S.A.
200-INTERNATIONAL BANKNOTE CO.	B.T.Babbitt de Venezuela S.A.(a)
201-INT.BUSINESS MACHINES CORP.	
IBM World Trade Corp.	
IBM W.T.America,Far East Corp.	IBM DE Venezuela S.A.
202-INT.FLAVORS & FRAGRANCES	Int.Flavors & Fragrances de Venezuela C.A.
203-INTERNATIONAL HARVESTER CO.	Credequipos C.A.(a)
204-INTERNATIONAL HARVESTER CO.	Industria Venezolana de Maquinarias C.A.(a)
205-INT.MULTIFOODS CORP.	
Fabrico Inc.-Panama-	Molinos Nacionales (Monaca) C.A.
206-INTERNATIONAL PAPER CO.	Envases Internacional S.A.
207-INTERNATIONAL SYSTEMS & CONTROLS	
Lang Engineering Corp.	Lang Venezuela S.A.
208- J.F.Pritchard & Co.	Pritchard de Venezuela.C.A.
209-INT.TELEPHONE & TELEGRAPH	ITT de Venezuela C.A.
210-INT.TELEPHONE & TELEGRAPH	
ITT World Directories Inc.	Guia C.A.de Publicidad
211-INT.TELEPHONE & TELEGRAPH	
The Sheraton Corp.	
Sheraton International Inc.	Sheraton de Venezuela C.A.

212-INTERPACE CORP.	Concretera lock Joint Consolidada C.A.(a)
213-IRVING BANK CORP. Irving Int.Financing Corp.	Financiera del Centro C.A.(a)
214-THE ITALIAN ECONOMIC CORP.	Cavendes-Financiera S.A.(a)
215-JOHNS-MANVILLE CORP.	Fibras Aislantes S.A.
216-JOHNSON & JOHNSON	Johnson & Johnson de Venezuela S.A.
217-S.C.JOHNSON & SON INC.	S.C.Johnson & Son de Venezuela C.A.
218-JOSTENS INC.	Jostens S.R.L.
219-KENDAVIES INDUSTRIES INT.INC. Mid-Continent Supply Co. Stratoflex Inc.	Stratoflex C.A.
220-KENDAVIES INDUSTRIES INT.INC. Mid-Continent Supply Co. Cummins Sales & Services	Cummins Sales & Services de Venezuela C.A.
221-KENDAVIES INDUSTRIES INT.INC. Loffland Brothers Co.-Canada-	Loffland Brothers de Venezuela C.A.
222-KENNECOTT COPPER CORP. The Carborundum Co.	Carborundum C.A.
223-KING RANCH INC.	Rio Yaracuy S.A.
224-KING RANCH INC.	Venezolana de Ganaderia S.A.
225-KOPPERS CO.INC.	Koppers Construction(Venezuela)S.A.
226-KORN FERRY INTERNATIONAL	Korn Ferry Int. de Venezuela C.A.
227-KRAFT INC.	Alimentos Kraft de Venezuela C.A.
228-LEVI STRAUSS INC.	Levi Strauss de Venezuela C.A.
229-ELI LILLI AND CO. ELCO Management Corp. Ali Lilly S.A.-Switzerland-	Eli Lilly y Cia.de Venezuela S.A.
230-LITTON INDUSTRIES INC. Litton Business Systems	Monroe Venezolana C.A.
231-JONATHAN LOGAN INC. J.L.Overseas Develop. Corp.	Telmartex C.A.
232-LUKENS STEEL CO.	Lukens Steel de Venezuela S.A.(a)
233-MCCORMICK & CO.INC.	McCormick de Venezuela C.A.
234-J.RAY MCDERMOTT & CO.INC.	J.Ray McDermott(Venezuela)C.A.
235-MCGRAW EDISON CO. Studebaker Worthington Inc. Onan Corporation	Productos Electricos Onan Western C.A.
236-MANAGEMENT ASSISTANCE INC. MAI International Corp.	MAI de Venezuela S.A.
237-MARINE MIDLAND BANKS INC. Marine Midland Bank Marine Midland Int.Corp. Marine Midland Ltd.-U.K.-	Financiera Union C.A.(a)

238-MARRIOTT CORPORATION	
Marriott Int.Inc.	Marriott Venezuela C.A.
239-OSCAR MAYER & CO.INC.	Venezolana Empacadora S.A.
240-MEDTRONIC INC.	Medtronic de Venezuela S.A.
241-MEMOREX CORP.	Memorex Interamericana C.A.
242-MERCK & CO.INC.	
Calgon Corp.	Calgon Interamerican C.A.
243-MERCK & CO.INC.	
Merck Sharp & Dohme-Panamericana	Merck Sharp & Dohme de Venezuela C.A.
244-MERRILL LYNCH INT.INC.	
Merrill Lynch Int.Inc.	
M.Lynch Int.Bank Inc.-Panama-	Merrill Lynch,Pierce & Smith Venezuela C.A.
245-MINNESOTA MINING & MANUFACTURING	Empresa Laboratorios Riker Venezuela S.A.
246-MINNESOTA MINING & MANUFACTURING	3M Manufacturera Venezuela S.A.
247-MINNESOTA MINING & MANUFACTURING	3M Venezuela C.A.
248-MOBIL CORPORATION	
Container Corp. of America	Cartoenvases Valencia S.A.
249- Container Corp. of America	Carton de Venezuela S.A.
250- Container Corp. of America	Cartones Nacionales S.A.
251- Container Corp. Of America	Corrugadora de Carton S.A.
252- Container Corp. of America	Molinos de Carton y Papel S.A.
253- Container Corp. of America	Union Grafica S.A.
254-	Propiedades Sucre C.A.
255-	Socony Paint de Venezuela S.A.
256-	Servicios Tecnicos Mobil C.A.
257-MONSANTO COMPANY	Monsanto Venezuela C.A.
258-J.P.MORGAN & COMPANY INC.	
M.Guaranty Trust Co.of New Y.	
M.Guaranty Int.Finance Corp.	Financiera Valinvenca S.A.(a)
259-PHILIP MORRIS INC.	Tabacalera Nacional C.A.(a)
260-MORTON-NORWICH PRODUCTS INC.	Norwich de Venezuela C.A.
261-MOTOROLA INC.	Motorola Electronica de Venezuela C.A.
262-NCH CORPORATION	National Chemsearch S.A.(a)
263-NCR CORPORATION	The National Cash Register of Venez.C.A.
264-NL INDUSTRIES INC.	Baroid de Venezuela S.A.
265-NABISCO INC.	
Nabisco Int.S.A.-Panama-	Nacional de Galletas Nabisco La Favorita C.A.
266-NALCO CHEMICAL CO.	Nalco de Venezuela C.A.
267-NATIONAL STARCH & CHEMICAL	Adgovenca C.A.(a)
268-NORTON CO.	
Christesen Inc.	Christesen Diamond Products de Venezuela C.A.

269-OAKITE PRODUCTS INC.	Oakite de Venezuela C.A.
270-OGILVI & MATHER INT.INC.	Corporacion Publicitaria Nacional C.A.(a)
271-OLIN CORPORATION	Etoxyl C.A.(a)
272-OWENS ILLINOIS INC.	Manufacturera de Vidrios Planos C.A.
273-OWENS ILLINOIS INC.	Owens Illinois de Venezuela C.A.
274-PPG INDUSTRIES INC.	Inveca-Pittsburgh C.A.
275-PAN-AMERICAN LIFE INSURANCE Panarad Inc.	Pan-American de Venezuela de Seguros(a)
276-PANCOASTAL INC.	Pancoastal Inc.
277-THE PARKER PEN CO. Manpower Inc.	Manpower de Venezuela S.A.
278-THE PARSONS CORP. The Ralph M.Parsons Co.	Parsons de Venezuela S.A.(a)
279-PENNWALT CORP.	Penwalt Venezolana C.A.(a)
280-PEPSICO INC.	Distribuidora de Productos la Vienesa C.A.
281-PEPSICO INC.	Pasteleria Vienesa C.A.
282-PFIZER INC. Pfizer Corp.	Pfizer Bioquimicos S.A.
283- Pfizer Corp.	Pfizer S.A.
284-PHELPS DODGE CORP.	Alambres y Cables Venezolanos C.A.
285-PHELPS DODGE CORP.	Corporacion Venezolana del Cobre C.A.
286-PHILLIPS PETROLEUM CO.	
Phillips Investment Co.	Quimica Venoco C.A.(a)
287- Phillips Petroleum Int.Co.	Venezolana Int.de Productos Quimicos C.A.
288-THE PILLSBURY CO.	Milani S.A.
289-THE PILLSBURY CO. Pillsbury Holding(Canada)Ltd.	Molinos Caracas Maracaibo S.A.
290-PLANNING RESEARCH CORP. PLanning Research Corp.Harris I.	DIT Harris C.A.(a)
291-PREMIER INDUSTRIAL CORP.	Premier de Venezuela C.A.
292-THE PROCTER & GAMBLE CO.	Procter & Gamble de Venezuela C.A.
293-PUEBLO INTERNATIONAL INC.	Panificadora Holsum Venezolana C.A.
294-THE QUAKER OATS CO.	Productos Quaker C.A.
295-RCA CORP. RCA International Ltd.	RCA de Venezuela C.A.
296-RALSTON PURINA CO.	Avicola Bejuma C.A.
297-RALSTON PURINA CO.	Avicola Continental C.A.
298-RALSTON PURINA CO.	Corgan de Venezuela C.A.
299-RALSTON PURINA CO.	Empacadora Nuticos C.A.
300-RALSTON PURINA CO.	Purina de Occidente C.A.

301-RALSTON PURINA CO.	Purina de Venezuela C.A.
302-RALSTON PURINA CO.	Reproductora Avicola C.A.
303-RALSTON PURINA CO.	Venezolana de Progenetores de Aves C.A.
304-RAYBESTOS MANHATTAN INC.	
Naja Inc.	Manufacturas Multiples S.A.(a)
305-RAYMOND INTERNATIONAL INC.	
Raymond Int.Builders Inc.	Concretos Industriales C.A.(a)
306- Raymond Int.Builders Inc.	Contratistas del Lago S.A.(a)
307- Raymond Int.Builders Inc.	Empresas Raymond C.A.
308- Raymond Int.Builders Inc.	Equipos del Lago C.A.(a)
309- Raymond Int.Builders Inc.	Raymond-Brown & Root C.A.(a)
310-REICHHOLD CHEMICALS INC.	Resimon C.A.(a)
311-RICHARDSON MERRELL INC.	Laboratorios Richmer C.A.
312-A.H.ROBINS CO.INC.	Laboratorios Ergos S.A.
313-ROCKWELL INTERNATIONAL CORP.	Rockwell Standard de Venezuela C.A.(a)
314-ST REGIS PAPER CO.	Inversiones Ferre C.A.(a)
315-SCHERING PLOUGH CORP.	
Scholl Inc.	
Casama S.A.de C.V.Mexico	Cacene C.A.
316- Casama S.A.de C.V.Mexico	Calzado Confort C.A.
317- Casama S.A.de C.V.Mexico	Ortopedia Nacional C.A.
318- Casama S.A.de C.V.Mexico	Pedica Venezolana C.A.
319-SCHERING PLOUGH CORP.	
S.Overseas Ltd.-Bermuda-	Productos Farmaceuticos de Venezuela C.A.
320- S.Overseas Ltd.-Bermuda-	Schering de Venezuela S.A.
321-SCOVILL INC.	Eaton C.A.
322-G.D.SEARLE & CO.	Laboratorios Quimicos Nacionales C.A.
323-SEARS,ROEBUCK AND CO.	Sears,Roebuck de Venezuela S.A.
324-THE SIGNAL COMPANIES INC.	
Mack Trucks Inc.	
Mack T.Worldwide Ltd.-Bermuda-	Mack Trucks de Venezuela S.A.(a)
325-THE SINGER CO.	Friden S.A.
326-THE SINGER CO.	
Singer Int.Securities Co.	Impulsora Comercial Singer C.A.
327-SMITH INTERNATIONAL INC.	Smith Int.de Venezuela C.A.
328-SMITH INTERNATIONAL INC.	Smith Brocas C.A.
329-SMITHKLINE CORPORATION	
S.Kline & French Int.Co.	Smith Kline & French C.A.
330-SONOCO PRODUCTS CO.	Sonoco de Venezuela C.A.
331-SONOCO PRODUCTS CO	Sonopro C.A.
332-SOUTHERN NATURAL RESOURCES	
The Offshore Co.	Offshore Venezuela C.A.

361-UNITED MERCHANTS & MANUFAC.INC.	Tiendas Milsaldos C.A.
362-UNITED MERCHANTS & MANUFAC.INC.	Venaseta C.A.
363-UNITED MERCHANTS & MANUFAC.INC.	Venchem C.A.
364-U.S.LEASING INT.INC.	Arrendacima C.A.(a)
365-UNITED TECHNOLOGIES CORP.	Ascensores Otis de Venezuela C.A.
366-UNITED TECHNOLOGIES CORP. Inmont Corp.	Inmont de Venezuela C.A.
367-UPJOHN CO. Upjohn Co.S.A.-Panama-	Laboratorios Upjohn C.A
368-VIATECH INC. Lockwood,Kessler & Bartlett	Aeromapas Servenca S.A.(a)
369-WACKENHUT CORP.	Venez.de Seguridad y Vigilancia C.A.(a)
370-WANG LABORATORIES INC.	Wang Latin America S.A.
371-WARNER LAMBERT CO.	Cirsa S.A.
372-WARNER LAMBERT CO. Parke,Davis & Co.	Parke,Davis de Venezuela C.A.
373-WARNER LAMBERT CO.	Schick Interamericana S.A.
374-WESTINGHOUSE ELECTRIC CORP.	Westinghouse de Venezuela S.A.
375-WHEELABRATOS-FRYE INC. The Rust Engineering Co.	Construcciones Venezolanas Rust C.A.
376-WHITAKER CABLE CORP.	Prod.Elect.Phelps Dodge-Whitaker C.A.(a)
377-WYNN'S INTERNATIONAL INC. Wynn Oil Co.	Wynn's de Venezuela S.A.
378-XEROX CORP.	Copicentros C.A.
379-XEROX CORP.	Inversiones San Simon S.A.
380-XEROX CORP.	Xerox de Venezuela C.A.
381-ZAPATA CORP.	Servicios Petroleros Zapata S.A.(a)

The Distribution of companies by country of origin is as follows:

Country	Number	Percentage of total
1.- United States	380	65.51%
2.-United Kingdom	40	6.90%
3.-West Germany	27	4.67%
4.-Netherlands	24	4.15%
5.-Italy	18	3.10%

6.-Japan	17	2.93%
7.-France	15	2.59%
8.-Canada	14	2.41%
9.-Sweden	13	2.24%
10.-Belgium	11	1.90%
11.-Switzerland	7	1.20%
12.-Spain	6	1.03%
13.-Denmark	5	0.86%
14.-Australia	1	0.17%
15.-Austria	1	0.17%
16.-Finland	1	0.17%
Total.....	580	100.00

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Primary industrial sector:

Code	Activity	Code	Activity
110-	Agriculture & Hunting	220-	Crude oil & Nat.gas
120-	Forestry	230-	Metal ore mining
130-	Fisning	290-	Other mining
210-	Coal mining		

Secondary industrial sector:

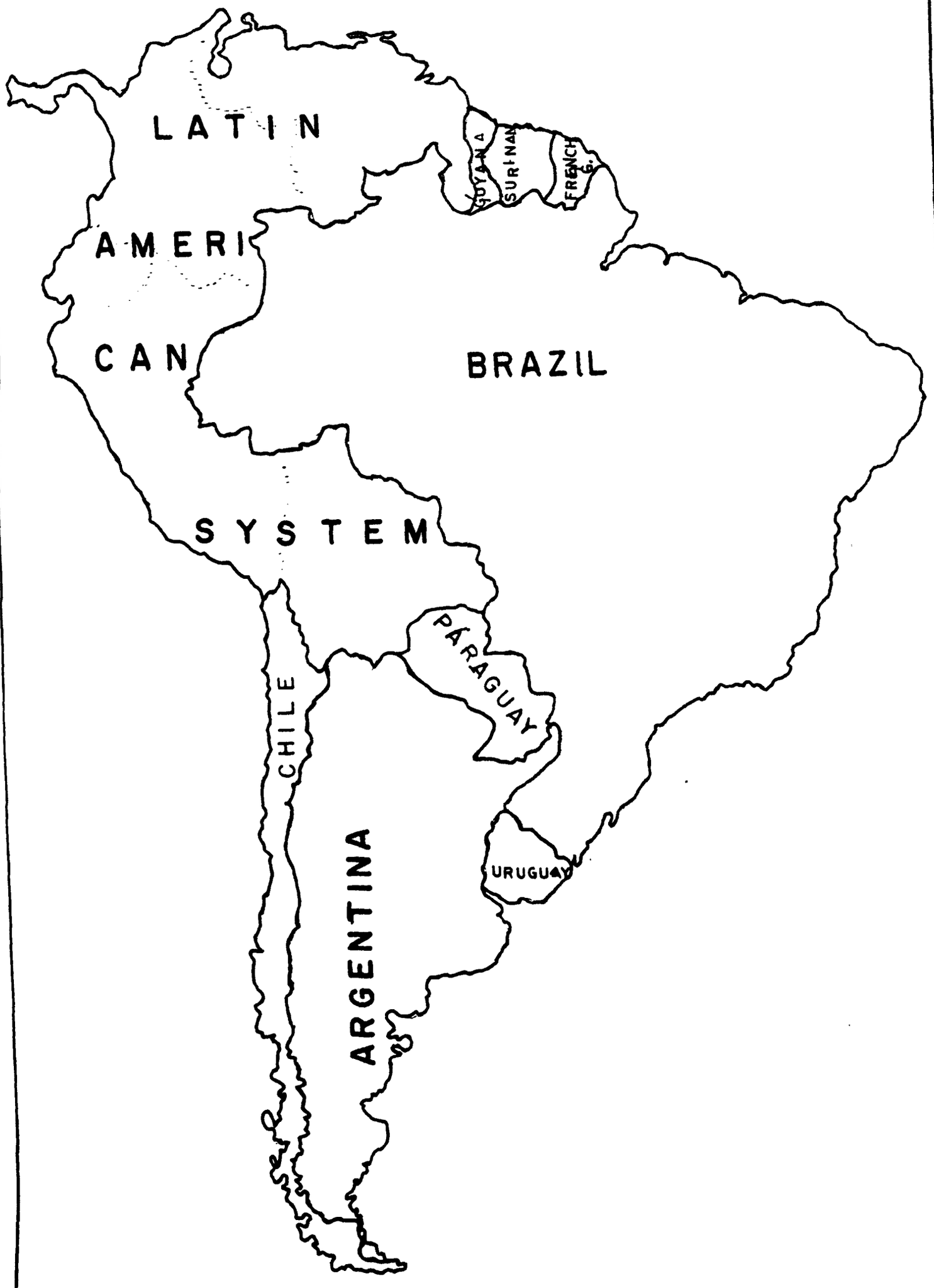
Code	Activity	Code	Activity
311-	Food Manufacturing	354-	Products of oil & coal
313-	Beverages	355-	Rubber products
314-	Tobacco	356-	Plastic products
321-	Textiles	361-	Pottery & Earthenware
322-	Clothing	362-	Glass & glass products
323-	Leather & leather Prod	369-	Cement,concrete,asbestos
324-	Foodwear	371-	Iron,steel & ferro-alloys
331-	Wood & wood products	372-	Non-ferrous metals
332-	Furniture & Fixtures	381-	Metal products
341-	Paper & paper products	382-	Machinery
342-	Printing,Publisning	383-	Elect.Machinery & supplies
351-	Industrial chemical	384-	Transport equipment
352-	Other chemical prod.	385-	Scientific instruments.
353-	Oil refining	390-	Other Manufact.Industries

Tertiary industrial sector:

Code	Activity	Code	Activity
410-	Elect.Gas & S.supply	631-	Operations Rest.& Cafes
420-	Water works & supply	632-	Operations Hotels etc.
500-	Construction	711-	Land transport
611-	Wholesale of cons.goods	712-	Water transport
612-	Wholesale of Prod.goods	713-	Air transport
613-	W.of Motor venic.& Fuel	719-	Services allied to Trnsp.
614-	Commission broking	720-	Communications
621-	Department stores	810-	Financial institutions
622-	Retailing of foods	820-	Insurance
623-	Retailing of textile G.	831-	Real estate
624-	Ret.of furniture	832-	Buisness services
625-	Ret.of hardware etc.	833-	Equipment rental & leasing
626-	Ret.of instruments etc.	920-	Sanitary sevices
627-	Ret.of motor venic.	952-	Laundries
629-	Other retailing		

333-SOUTHERN NATURAL RESOURCES	
The Offshore Co.	
International Shiping Co.	Intesco C.A.
334-SPERRY RAND CORP.	Sperry Rand Venezuela C.A.
335-STANDARD BRANDS INC.	
International Standard B.Inc.	Royal Productos Alimenticios C.A.
336-STANDARD BRANDS INC.	
De E. de Wed J. van Nelle N.	
Van Nelle Lassie B.V.	Molinos Lassie C.A.
337-STANDARD OIL CO.(INDIANA)	
Amoco Int.Oil Co.	Amoco Servicios de Venezuela C.A.
338-STANDARD OIL CO.(OHIO)	Prospect International C.A.
339-STANLEY HOME PRODUCTS INC.	Stanhome C.A.
340-STANLEY HOME PRODUCTS INC.	Stanhome Panamericana C.A.
341-THE STANLEY WORKS	Stanley Venezolana S.R.L.
342-SUN CHEMICAL CORP.	Fuchs & Land-Sun Chemical de Venezuela C.A.
343-SUNBEAM CORPORATION	
Sunbeam Holding Inc.	Oster de Venezuela S.A.
344-SYBRON CORP.	Taylor Instrument C.A.
345-TAPPAN CO.	Climar C.A.(a)
346-TECHNICON CORP.	Technicon Venezuela S.A.
347-TENNECO INC.	
Tenneco Corp.	
Kern County Land Co.	
J.I.Case Co.	J.I.Case International S.A.
348-J.WALTER THOMPSON CO.	J.Walter Thompson de Venezuela C.A.
349-TIDEWATER CORP.	
Tidewater Marine Service Inc.	Equipo Zulia C.A.
350- Tidewater Marine Service Inc.	Tidewater Caribe C.A.
351- Tidewater Marine Service Inc.	Tidewater Marine Service C.A.
352-THE TIMES MIRROR CO.	
Graphic Controls Corp.	Controles Graficos Venezuela S.A.(CGV)
353-TOPFLIGHT CORP.	Topflight de Venezuela
354-TRANS WORLD CORP.	
Hilton International Co.	Hilton International de Venezuela C.A.
355- Hilton International Co.	Inversiones Hilton C.A.
356-TRANSWAY INT.CORP.	
Tropigas Int.Corp.	Tropigas C.A.
357-WILLIAM UNDERWOOD CO.	Diablitos Venezolanos C.A.
358-UNION CARBIDE CORP.	Union Carbide de Venezuela C.A.
359-UNITED MERCHANTS & MANUFAC.INC.	Inversiones Aragua C.A.
360-UNITED MERCHANTS & MANUFAC.INC.	Sudantex de Venezuela C.A.

Annexe Nº 29: A Latin-american closed system.



G E N E R A L B I B L I O G R A P H Y

Ashby, W.Ross — "An Introduction to Cybernetics" Methuen & Co.Ltd. London,1979

Alstine, R.W.Van — "The Rising American Empire" Thames and Hudson. London,1973

Brzezinski,Zbgniew — "Between two Ages" The Viking Press. New York,1971.

Bertalanffy,Ludwig von — "General System Theory" Allen Lane.Penguin Press London,1971

Beer,Stafford — "Platform for Change" John Wiley & Sons Ltd. London,1975

Baran,Paul & Sweezy,Paul — "El Capital Monopolista" Siglo Veintiuno Editores. Mexico,1966

Boarman,P.and Schoolhammer,M. -Editors- — Multinational Corporations and Government".Prager Publisher New York,1975

Boorstein,Edward — "The Economic Transformation of Cuba" Monthly Review Press. London,1968

Bufalo,E.& Paredes,E. "El Pensamiento Critico Latinoamericano" Ediciones Nueva Sociologia. Caracas,1978

Brooke,M.& Remmers,L. "The Strategy of Multinational Enterprise,Organisation and Finance" Longman Group Ltd.London,1970

Brooke,M.& Remmers,L. "The International Firm" Pitman Publishing Ltd London,1977

Cairncross,A.K. "Home and Foreign Investment 1870-1913" The Harvester Press Ltd. Sussex.England,1975

Chossudovsky,Michel "La Miseria en Venezuela" Vadell Hermanos. Venezuela.Valencia,1977

Date,C.J. "An Introduction to Database Systems" Addison-wesley Publishing Co. London,1977.

Elstob,C.Mike "Information Meaning & Knowledge" Brunel University.Cybernetics Department.London,1981

Fleming,D.F. "The Cold War and its Origins 1917-1960" Allen and Unwin. London,1961

Franck,T. & Weisband.E. "Secrecy and Foreign Policy" Oxford University Press. London,1974

Furtado,Celso — "Economic Development of Latin America" Cambridge University Press. London,1970

Galbraith,John K. — "The New Industrial State" Penguin Books Ltd. London,1979

Galeano,Eduardo — "Open Veins of Latin America, Five Centuries of the Pillage of a Continent".Monthly Review Press. London,1974

George,Frank H. — "The Brain as a Computer" Pergamon Press Ltd. London,1971

Guillaumaud,Jacques — "Cibernetica y Logica Dialectica". Titulo original:Cybernetique et materialisme dialectique.Traduccion M.Suarez.Edit.Castilla.Madrid,1971

Gunder Frank,Andre — "Latin America:Underdevelopment or Revolution".Monthly Review Press. London,1974

Gunder Frank,Andre — "Capitalism and Underdevelopment in Latin America".Monthly Review Press London,1969

Goldman,Marshall I. — "The Enigma of Soviet Petroleum" George Allen & Unwin. London,1980

Hacker,Louis — "The Course of American Economic Growth and Development".John Wiley and Sons,Inc.London,1970

Huberman,Leo — "Man's Worldly Goods" Monthly Review. New York,1952

Jenkins,Robin — "Exploitation,The World power structure and the inequality of nations" McGibbon & Kee Ltd.London,1970

Jones,Peter — "An Economic History of the United States since 1783".Routledge & Kegan Paul.London,1964

Jones,Graham — "The Role of Science & Technology in Developing Countries".Oxford University Press.London,1971

Kennet,Mayland — "Sovereignty & Multinational Companies" Prager Publisher New York.USA,1975

Kissinger,Henry A — "Nuclear Weapons and Foreign Policy" Harper & Bros. New York,1957

Krauss,L. & MacGaham, A. — "Computer Fraud and Countermeasures" Prentice Hall,Inc. New Jersey,USA,1979

Kranzburg,M. & Pursell,C. — "Technology in Western Civilization" Oxford University Press London,1967

Khalaf,Nadim — "Economic Implications of the Size of Nations". E.J.Brill,Leiden,Netherlands,1971

Lange,Oskar — "Introduccion a la Economia Cibernetica" Siglo Veintiuno Editores. Mexico,1969

Levcik, F. & Stankovsky,J. — "Industrial Cooperation between East & West".Translated by Michael Vale MacMillan.London,1979

Levi,Werner — "International Politics Foundations of the System".University of Minnesota Press.Minneapolis.USA.1974

Myrdal, Alva — "The Game of Disarmament" Pantheon Books. New York.USA.1978

Mandelbaum,Michael — "The Nuclear Question,The United States & Nuclear Weapons 1946-1976" Cambridge University Press. London,1979

Martin, A & Harbison,S. — "An Introduction to Radiation Protection".Chapman and Hall Ltd. London,1979

Manescu,Manea — "Economic Cybernetics" Abacus Press London,1980

Marina,Manuel — "La Dependencia Tecnologica en los Sistemas de Computacion".UCV.Facultad de Economia.Trabajo de Ascenso en el escalafon docente.Caracas,1973

Marx,Karl — "Capital",A critique of political economy.Lawrence & Wishart.London,1977

Maza Zavala,D.F. "Los Mecanismos de la Dependencia" Fondo Editorial Salvador de la Plaza Caracas,1973

Moray,Neville "Cibernetica"Titulo original:Cybernetics Traduccion T.Mendizabal.Editorial Herder S.A. Barcelona.Espana,1967

Novik, I. & Kasakovsev, V. "Cibernetica Ciencia y Practica" Traduccion:D.Reuter Krull. Editorial Lotauro.Argentina,1967

Nora, Simon & Minc,Alain "L'informatisation de la societe. La Documentation francaise. Paris,1978

Pask,Gordon "An Approach to Cybernetics" Hutchinson.London,1961

Parker,Phyllis R. "Brazil and the quiet intervention" American University Publishers Group Ltd. London,1979

Pividal,Francisco "Bolivar Pensamiento Precursor del Antimperialismo".Ediciones Casa de las Americas.La Habana.1977

Popkess,Barry "The Nuclear Survival Hand-book" Living through and after a nuclear attack. Arrow Ltd. London,1980

Roche, Marcel "Descubriendo a Prometeo",Ensayos sobre Ciencia y Tecnologia en Venezuela y Latinoamerica. Monte Avila Editores.Caracas,1975

Rostow, Walt W. "The World Economy",History and Prospect.The MacMillan Press. London,1978

Sabolo, Y & Trajtemberg, R. "The Impact of Transnational Enterprises on Employment in Developing Countries" R.Newfarmer. Geneva,1976

Sampson, Anthony "The Arms Bazaar",The Companies,The Dealers,The Bribes:From Vickers to Lockheed. Hodder and Stoughton. London,1977

Sampson, Anthony "The Sovereign State,the Secret History of ITT".Coronet Books. London,1976

Sampson, Anthony "The Seven Sisters" Coronet Books London,1977

Shoup, L. & Minter, W. "Imperial Brain Trust" Monthly Review Press. Londo, 1977

Selser, Gregorio "Diplomacia,Garrote y Dolares en America Latina".Editorial Palestra. Buenos Aires, 1962

Solla Price,D.J.de "The structures of publication in science and technology".In Factors in the Transfer of Technology.Edited by Gruber,W. & Marquis D. MIT Press. USA,1969

Spiro,Herbert J. "World Politics: The Global System" The Dorsey Press.Illinois,USA,1966

Sutton,Anthony "Western Technology and Soviet Economic Development".Hoover Institutions Publications 1971.Stanford University Stanford,California,USA,1971

Sutton,Anthony "Energy the Created Crisis". Books in Focus Inc. New York.USA,1979

Texas Instruments "Understanding Digital Electronics" Book with a foreword by Jack Kilby, and developed and published by Texas Instruments Learning Centre.Texas 1978

The Economist Intelligent Unit. "World Outlook 1981. The E.I.U. London,February 1981

The Economist I.U. "Soviet Oil Gas to 1990" The E.I.U. London,1980

Thompson,E.P. "Protest and Survive" Bertrand Russell Peace Foundation Russell Press Ltd. Nottingham, England,1980

United Nations "Transnational Corporations in World Development".Commission on Transnational Corporations. New York,USA,May 1978

Vernon, Raymond "Sovereignty at Bay,The multinational spread of U.S.enterprises" Longman Group Ltd. London,1971

Vaitsos, Constantine — "The Process of Comercialization of Technology in the Andean Pact". Oxford Clarendon Press. London,1974

Wiener, Norbert — "Cybernetics: or Control and Communication in the Animal and the Machine". Massachusetts Institute of Technology.USA,1948

Wolf, Eric — "The Spanish in Mexico and Central America".Included in Economic Development and Social Change. The Natural History Press. New York,1971

Young,John F. — "La Cibernetica"Titulo original: Cybernetics.Traduccion Nestor Miguez. Monte Avila Editores. Caracas,1969