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TECHNO-ECONOMIC INTELLIGENCE FOR DEVELOPMENT

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These notes examine one aspect of the problem of acquiring, processing and using economic and technological information for the purpose of policy and decision-making that is intelligence by governments in Third World countries. To a large extent, they have been motivated by the articles and reports written by Stevan Dedijer on the subject of "Intelligence for Development", and presents the point of view of a Third World researcher and policy-maker.[1] Rather than describing what exists or has been done in practice (very little indeed!), these notes offer some speculations on the changing information environment and its implications for future techno-economic intelligence activities in the Third World.

THE INFORMATION ENVIRONMENT OF THIRD WORLD COUNTRIES

A techno-economic intelligence group in a Third World country will usually operate in an unfavorable setting characterized by a generalized lack of resources of all types. The level of understanding and acceptances of these activities by policy-makers is generally low. Rivalries are heightened because of the small size of the technical and political elite, and because access to bureaucratic power is a limited and highly priced good. The international context is changing rapidly: political re-alignments, military alliances and economic activities appear to be in a constant state of turmoil. And last, but not least, of these constraints, the prevalent conceptual frameworks, values and perspectives that are given to the Third World countries from abroad, are generally alien to their indigenous habits of thought and modes of behavior, and are imposed to a large extent through the pervasive influence of international mass media.

The Techno-economic Intelligence Group

With this context in mind, it appears that a techno-economic intelligence group in a Third World country ought to evolve with a dual personality. It should pay attention to the local reality, the local culture, the values and outlook of the general population and of the élites, the nature and evolution of local power struggles and the degree of understanding and acceptance of techno-economic intelligence activities by policy-makers. At the same time it should follow closely the international scene, the frontiers of knowledge in the areas of critical importance to the country, the evolution of the spheres of influence and power in international relations and the possibilities of exploiting to the maximum extent the limited room for maneuver available for autonomous development. This requires some sort of "institutionalized schizophrenia",

in which the international and local components of the personality of a techno-economic intelligence group would evolve independently from one another in organizational terms, although they would be integrated in an organic fashion in the minds and actions of the leaders of the group.

The great expansion of the knowledge-generating activities in the industrialized countries, the growing degree of concentration of resources in scientific research, the increasing extent to which modern technologies are being based on scientific discoveries, and the widespread use of these science-based techniques in the productive system is what characterizes the evolution of the industrialized nations that belong to what has been called the "First Civilization". In contrast, the Third World countries of the "Second Civilization" have not managed to acquire a research base of their own to generate scientific knowledge in a systematic, large-scale, and continuous fashion, to transform this knowledge into production techniques, and to incorporate these new science-based techniques into production. In these countries science, technology and production have grown in an imitative, fragmented, and disjointed way, each being almost totally dependent on the evolution of their counterparts in industrialized countries. The contradictions and conflicts between these "two civilizations" and the process of searching for a "third civilization" are likely to be the dominant features of the evolution of international relations during the next half-century.[2]

The importance of a techno-economic intelligence group in a Third World country can be appreciated only in the face of the huge differences in the capacities to generate, select, absorb and use knowledge. A techno-economic intelligence group involved deeply in the process of development would have to undertake the highly improbable task of acting as the main focus for the gathering, transfer, and processing of critical information for the process of development. This difficult task appears more tractable when the concept of "critical information for development" is given a restricted meaning, adapting a selective approach, limiting the scope of information gathering and processing activities, and organizing them sequentially in accordance with the priorities of the country.

Intelligence and national security

Even though the military aspects of intelligence are most important for the Third World countries involved in actual or potential conflict zones, they are less important to the majority of them. Furthermore, there appears to be a general shift from the purely military aspects of conflict towards economic, social, scientific, technological and even cultural battlegrounds. The newly-emerging arsenal includes the imposition of economic sanctions, the use of the "food weapon", barring the access to technological resources, the use of mass media to conduct sophisticated "cultural battles" of concepts and ideologies, the use of an international forum to engage in "battles of words" in international negotiations, and a variety of more subtle forms of warfare that go well beyond the classical military confrontations. From this perspective, the issue of national defense and national security have been transformed from a strictly military program into a broad multidimensional problem of national intelligence in all spheres and sectors of a country interacting within the world environment.

Indeed, as early as the mid-1950s, the Peruvian Center for Higher Military Studies was already advancing the concept of "integral security doctrine", in which national defense and security were closely tied to socioeconomic development. For

example, it was sustained that a country could not be defended adequately from a foreign aggressor unless it had a well-developed economic system to back up any defense undertaking. To a large extent, this doctrine justified the social transformations introduced in Peru during the first years of the Revolutionary Government of the Armed Forces that took power in 1968.

THE EVOLUTION OF A SOCIAL BRAIN

Stevan Dedijer writes about "Babelian indicators of a tidal wave" used to characterize the enormous amount of data that has been put at the disposal of managers, government officers, executives, policy-makers, researchers and in general anybody who is interested in gathering information for decision-making purposes. While the analogy of a "tidal wave" would be accurate for those in industrialized countries, that tidal wave has more the nature of an "avalanche" or 'landslide" that descends suddenly and massively upon the Third World country policy and decision-maker, threatening to bury him or her under a mass of data, most of which is likely to be irrelevant. It would be useful to review the origins of this situation, exploring the ways in which a Third World country techno-economic intelligence group could react to such a mass of suddenly available information and learn to operate effectively in a heavily overloaded information environment.

The last 80 years have seen three stages in the process of change of the information environment. From a first stage in which information sources were rather easy to identify and to gain access to, there was a transition (especially after 1945), towards a situation in which the amount of technical, economic, scientific, political, social and cultural information grew at a rapid pace and special efforts were required to follow the evolution and characteristics of information sources. We are now entering a third stage in which the information overload is so great and the multiplicity of sources has increased to such a large degree, that once again it is possible to identify easily a potential source of information and even to gain access to it without much difficulty. Each of these stages will be analyzed in terms of several analogies.

First era: easy information

In the first stage, the sources of information were scattered relatively easy to identify, and with few interconnections among them. An information gathering and processing organization would operate as what Ashby[3] has called an "iterated system" in which the various interactions between the system and its environment can be dealt with independently from one another. Reaction times to disturbances are short, adaptation responses are fast, and the changes do not pose serious threats to the existence of the system. At this stage the structure of the web of information sources would correspond to what Emery and Trist[4] call "the placid-clustered" environment for an organization, in which it is possible to ignore the interconnections within the environment of a system. Thus at this stage the organization's capacity to process and use information would probably exceed the capacity of the environment to generate it. Using a literary analogy, the typical image of a techno-economic intelligence officer in such an environment would correspond to Somerset Maugham's Ashenden, a British secret agent in the 1920s who has the adequate personal connections with information sources, who does not use technical gadgets, who is mostly interested in human nature, and who employs his personal judgement to assess the validity and relevance of

information. Ashenden's main ability is a capacity to anticipate reactions and to search for interconnections between facts, personalities, and possible future events.

Second era: managed information

During the second stage there is a substantive increase in the generation of information, a multiplication of data sources, and a rapid growth in the amount of information provided to policy-makers, planners and decision-makers. The performance of an organization is governed to a large extent by the advantages gained through the access to privileged information and by the capacity to acquire and process reliable information from specialized services. In this information-sensitive environment the "management of secrecy" (selective withholding of data, protection of information sources, dissemination of erroneous information, etc.) becomes a crucial aspect of competitive strategies. The increased speed of information transmission makes it necessary for organizations to develop short reaction times, which in turn requires the use of computer processing, mathematical models, telecommunication facilities, and the establishment of specialized information processing units.

At this stage information processing and decision-making take place simultaneously. This is the era of management information systems, of computer data networks, of teleprocessing facilities, and of the "information on information" schools of thought. In cybernetic terms the new information environment would correspond to what Ashby has called the "poorly joined system", in which there are many interconnections among the components of the environment and the system. This requires vastly increased information processing capabilities for the organization, to react adequately to changes in the environment. The new information environment would also correspond to what Emery and Trist call the "disturbed-reactive" environment in which it is necessary to take into account not only the interactions between the organization and its environment, but also the changes that take place within the environment itself. From the literary point of view, the typical image of a techno-economic intelligence officer during this period would correspond to that of Ian Fleming's James Bond, a man who can react quickly to unforeseen situations, who is helped by an array of technical gadgets and who has access to the information that allows him to take advantage of the most unusual situations.

Third era: information overload

At present we are entering into a new stage in the evolution of the information environment in which there is an information avalanche. There are many sources for each unit of information and a large amount of redundancy and interconnection in the networks and channels. There will be no need to devise sophisticated strategies for gaining access to data and for preserving secrecy.

With such overload and richly interconnected information networks, it would not be necessary to obtain access to a specific individual source, or to worry about accuracy. There will be ample opportunities to contrast different sources of information, checking them against each other. The "management of secrecy" will become less and less important and there will be a need to devise strategies for competing in a "transparent" information environment. In cybernetic terms, this new environment would correspond to what Ashby called "the richly-joined system", in which every change in a component of the system or its environment affects all the other components, even though, because there are so many interconnections, the effects of a change are attenuated and dampened

by a series of reactions and counter reactions. In a sense, the system acquires a certain immunity to environmental disturbances. In organizational theory terms, this new situation would correspond to what Emery and Trist have called "the turbulent environment", in which the main task of a system is to maintain an unstable equilibrium and to develop organizational response capabilities.

Using again a literary analogy, there would be a return to the traditional concept of an intelligence officer and a reinstatement of old ways of handling information. The image of a techno-economic intelligence officer would now correspond to John LeCarre's George Smiley, a man who knows how to survive in a bureaucratic jungle, who is capable of judging values and motives, who can assess the importance of data, and who has the ability to offer interpretations while facing an information overload.

In a certain sense, the excess of data, the multiplication of channels and sources, and the generalized availability of information create a situation similar to that prevailing during the first stage, when there was relatively little information and sources were easy to identify and gain access to.

NEW STRATEGIES FOR INFORMATION GATHERING AND PROCESSING

This newly emerging information environment raises several interesting issues. For example, the fact that it is possible to put in contact two randomly selected persons through a limited number of intermediaries (around five)[5] shows that it would be rather easy to identify the individuals that generate information on a specific subject. In turn this would make it necessary to alter information gathering and processing strategies. A situation will be reached in which, for all practical purposes, information will become a "free good", or at least a relatively cheap commodity. At that stage it would be more important to develop a capacity for processing information than to devise channels for acquiring it.

In the world of the next twenty years, the capacity to generate information is likely to exceed the capacity to process and use it. As a byproduct of the microelectronics revolution, advances in communication technology will make transmission costs and times negligible, while advances in computer technology will make it possible to attain an intermediate stage of information processing rather easily, thus producing masses of data on almost any specific subject of interest to the techno-economic intelligence officer. As an indication of this trend it is possible to observe the emergence of worldwide institutions specifically designed to interconnect information sources and networks (United Nations and other international agencies, transnational corporations, the scientific community, etc.).

In order to cope with the information environment of the future, a techno-economic intelligence group in a Third World country will have to devise an opportunistic strategy and an eclectic approach to information gathering and processing. It will be necessary to accept that secrecy will not be possible to maintain, that exclusive or privileged information channels will no longer exist, and that most of the masses of data to be acquired is likely to be irrelevant. In this new situation the efforts of a techno-economic intelligence group should be directed towards building up data processing and interpretation capabilities in order to discern trends, detect critical events, anticipate

responses, identify opportunities and threats, and in general to use the increased amount of information to the country's advantage.

Synthesists and pattern recognizers

Perhaps the most adequate analogies for examining this new situation would come from the science fiction literature. Stanislaw Lem's novel *Chain of Chance* explores the implications of a massive increase in the interactions of the social and material environments, which make it almost impossible to discern a pattern among a variety of small and large interconnected events and impede the design of an adequate interpretation strategy. Extrapolating Lem's ideas it would be possible to say that, regardless of the particular strategy to be followed in acquiring information, a techno-economic intelligence group will probably collect the data it needs, but it would find it difficult to process an interpret it.

Another analogy could be drawn from John Varley's novel *The Ophiuchi Hotline*, where he describes the new profession of "synthesist" (as opposed to the 'analyst")[6]. Varley's "synthesist" scans huge masses of data over a long period of time in order to choose a fraction that merits further study, and which will be processed by specialists assisted by large electronic devices. The training of a "synthesist" is a complex and expensive undertaking, for a person of natural ability must be found, and trained, to establish interrelations, to assess relevance and, in general, to discern patterns among a seemingly incoherent mass of data. John Brunner, in his award-winning novel *Stand on Zanzibar*, also deals explicitly with the abilities of a "synthesist":

> "There were people, extremely top people, whom specialists tended to refer to disparagingly as dilettanti but who dignified themselves with the title 'synthesist', and who spent their entire working lives doing nothing but making cross references from one enclosed corner of research to another."

Brian Aldiss identifies a similar profession, that of "seeker', in his short story "An Appearance of Life" and describes the training process as follows:

> "To qualify as a Seeker, it is necessary to show a high serendipity factor. In my experimental behavior pool as a child, I had exhibited such a factor, and had been selected for special training forthwith. I had taken additional courses in philosophicals, Alpha-numerals, Incidental Terachotomy, Apunctual Synchronocity, Homo-ontogenesis and other subjects, ultimately qualifying as a Prime Esemplastic Seeker. In other words, I put two and two together in situations where other people were not thinking about addition. I connected. I made wholes greater than parts. Mine was an invaluable profession in a cosmos increasingly full of parts."

In the information environment of the future, the techno-economic intelligence officer of a Third World country should be, above all, a synthesist. No longer will he have to worry about devising ways and means of securing access to information, of building privileged channels and of protecting the secrecy of his sources or his information. He will be concerned with the processing of large amounts of data, with checking and comparing various sources to choose the most reliable and least expensive ones, and with establishing interconnections among a variety of issues, problems and events of particular relevance to the country's development.

Considering the slow process involved in the organization of a techno-economic intelligence group and the changes in the information environment that are beginning to take place, it would appear necessary to start in a limited way, undertaking specific techno-economic intelligence tasks that would serve as training exercises for a selected number of professionals. This training process should emphasize the "synthesist" approach, attempting to conform a small and coherent group of individuals with complementary disciplinary skills, who would be able to act as a link between policy-makers and the overloaded information environment of the future. They would articulate the acquisition and processing of information about the international situation and about the events taking place within the country, putting them both in the perspective of the country's short, medium and long-term objectives. The future prospects of the Third World will rest to an increasing degree on the successful establishment of an effective techno-economic intelligence group, however improbable this undertaking may appear at present.

NOTES

[1] See: *IFDA Dossier* No. 29, and Stevan Dedijer's "Intelligence for Development", paper presented at the OECD Seminar on Intelligence for Development, July 1981.
[2] Francisco Sagasti, "The Two Civilizations and the Process of Development", *Prospects*, Vol. X, No 2, pp. 123-139.
[3] W. Ross Ashby, *Design for a Brain*, London: Science Paperbacks, 1966.
[4] Fred Emery and Eric Trist, "The Causal Texture of Organizational Environments", *Human Relations*, Vo1. 18 (1965), pp. 21-32.
[5] For a review of experiments giving evidence on this matter see Eugene Garfield, "It's a Small World After All", *Current Contents*, October 22,1979.
[6] Another dichotomy of this kind is that of "generalist" versus "specialist".