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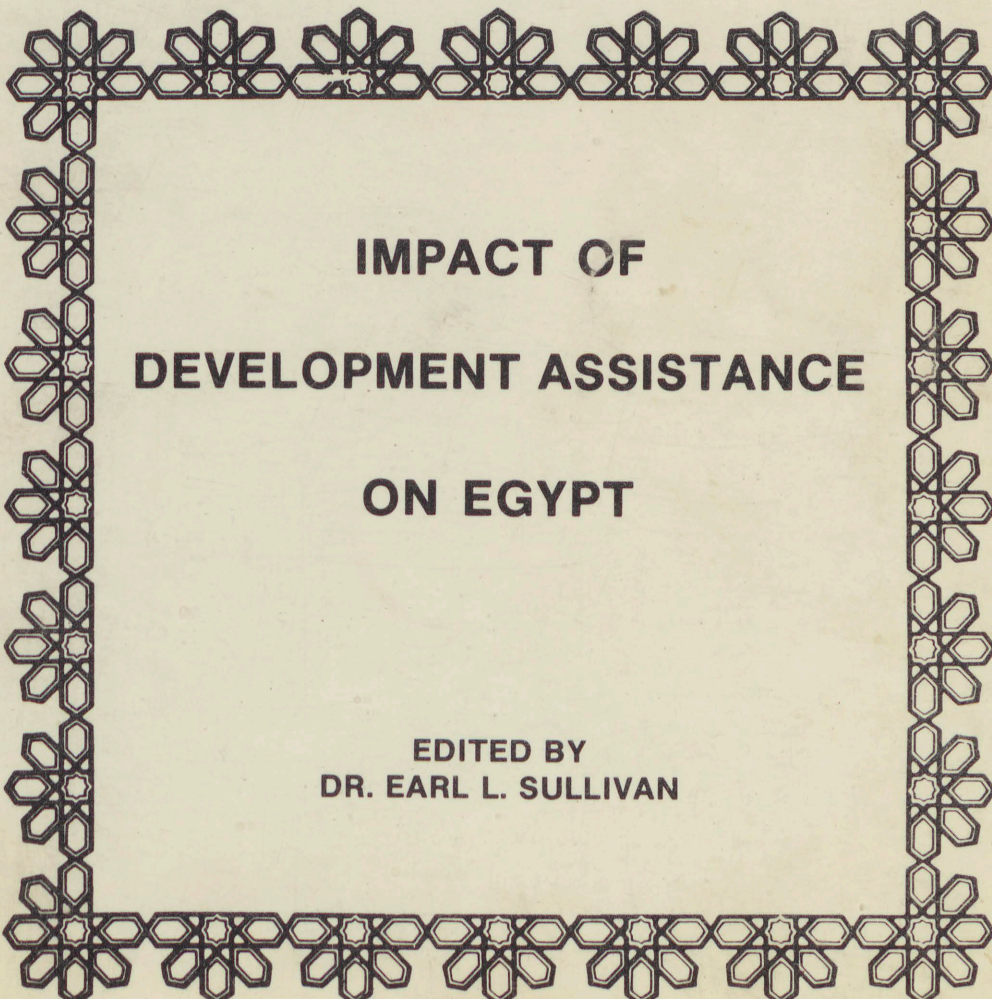
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**CAIRO PAPERS
IN SOCIAL SCIENCE**



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**IMPACT OF
DEVELOPMENT ASSISTANCE
ON EGYPT**

EDITED BY
DR. EARL L. SULLIVAN

The Impacts of Egyptian-American Academic Research:
The CU/MIT Program

by Mohammad El-Sayed Selim

In his "Structural Theory of Imperialism", Galtung argued that one of the major mechanisms of imperialism is the vertical division of labor between the Center and the Periphery Nations. The essence of this division of labor lies in the gap of processing raw material. Such division of labor is not only restricted to economic relations but also applies to scientific ones. According to Galtung, one of the major patterns of this vertical division of labor is the pattern of scientific teams from the Center who go to Periphery nations to collect data (raw materials) for processing in Center universities (factories), so as to be able to send the finished product, a journal, or a book (manufactured goods) back for consumption by the academic center of the Periphery.¹

This pattern of scientific division of labor was acutely embodied in American research projects in Latin America in the 1960s. Following the Alliance for Progress in 1961, the U.S. allocated more funds to promote American scientific research on Latin America. The result was a scramble of American scholars to do research in Latin America in collaboration with their Latin American counterparts. By the end of the decade, the American research offensive in Latin America was a spent force. Relationships between U.S. and Latin American scholars reached their lowest point ever. American scholars were no longer welcomed in most Latin American research institutions. Three factors appear to have contributed to this outcome: i) revelations about U.S. sponsored projects which turned to be facades for gathering data relevant to a U.S. effort to combat Latin-American leftism. The most notorious of these projects were Project Camelot in Chile and Project Simpatico in Colombia², ii) U.S. scholars tended to assume the role of representatives of a superior scientific establishment generously coming to instruct and improve local academic centers,³ and iii) the tendency of U.S. scholars to assign Latin American scholars subordinate research roles and maintain full control over the data collected, sometimes shipping the data back to the U.S. without leaving a copy in the researched country.⁴ Further, there was a deliberate attempt to carry out research from a purely American perspective and to Americanize the Latin-American research establishment.

The second wave of U.S.-sponsored research in foreign countries occurred in the 1970s, in Egypt. With the normalization of U.S.-Egyptian relations in 1974, U.S. granting organizations allocated considerable funds to promote U.S.-Egyptian academic research. Between 1975 and 1982, the U.S. Agency for International Development (U.S.A.I.D.) committed \$198.4 million to support 13 research-oriented programs on various developmental issues in Egypt. Some of these programs were purely conducted by Egyptian research institutions. U.S.A.I.D. provided the funds and monitored the progress of the research processes. In other programs, the collaboration of American and Egyptian scholars was required. American and Egyptian joint research teams were formed to conduct research on a particular problem related to the adaptation of technology in Egypt. Perhaps the most important of these programs have been the Applied Science and Technology Research Program, the University Linkages Program, and the Development Planning Studies Program.

The first program was initiated in U.S. fiscal year 1977 with total obligations until 1982 of \$24.4 million. The primary participants in this program were the Egyptian Academy for Scientific Research and Technology and the U.S. National Academy of Science. The program encompassed various projects related to the creation of a national information network, the use of biogas for the development of rural areas, the concentration of raw phosphate, and bentonites.

The University Linkages Project (ULP) was initiated in U.S. fiscal year 1980 with total obligations until 1982 of \$27.5 million. In 1980 a new organization, the Foreign Relations Coordination Unit (FRCU) was established under the Supreme Council of Universities. The FRCU has been serving as the coordinator of all procurements for the Egyptian universities and functioning as a granting agency funding applied research. It set up the ULP as a research granting mechanism. The ULP has been sponsoring applied research by Egyptian scholars at various Egyptian universities provided that they collaborate with their American counterparts.⁵

Finally, in the U.S. fiscal year 1977, the Development Planning Studies Program was initiated with total obligations until 1982 of \$15.8 million. The primary participants in this Program were Cairo University (CU) and the Massachusetts Institute of Technology (MIT).

The objective of this paper is to review the mechanisms and achievements of the latter Program with a view of identifying its impacts upon the research process at CU and the process of technology adaptation in the Egyptian society at large. The choice of the program is justified by three basic considerations. 1) From the vantage point of the methodology of impact assessment, there are two basic prerequisites for assessing the impact of a program: the program should have goals sufficiently well-articulated to make it possible to identify measures for goal achievement and the program should have been sufficiently well-implemented so that there is no question that its critical elements have been delivered to appropriate targets.⁶ These prerequisites are present in the case of the CU/MIT Program. The Program has defined clear objectives and has been in operation for eight years. 2) Among the three programs in which American scholars were involved, this program has been subjected to severe criticism from some Egyptian radicals. It was argued that the projects sponsored under this program have had a negative impact upon CU in particular and the Egyptian society in general. The participation of American scholars in the program was also a subject of a major controversy. We will look at this controversy and attempt to assess the validity of some of its arguments. 3) The writer has had some experience with the program as a CU faculty member and an investigator in one of its early joint research projects.

The Technological Planning Program

In January 1977, the Technology Adaptation Program of the MIT entered into an agreement with CU to establish a collaborative research program under the auspices of the Development Planning Studies Program of the U.S.A.I.D. The objective of the program - the CU/MIT Technological Planning Program (TPP) - was to bring both universities to pool their resources in order to undertake joint research on developmental problems in Egypt with a view towards ultimately establishing a permanent institutional basis for utilizing Egyptian academic expertise in solving these problems. The TPP rested on the assumption that if tripartite teams of academics from MIT and CU, together with

practitioners from a development-oriented agency research a development problem jointly, certain aspects of technology could be adapted to solve this problem. More importantly, institutional change would occur in CU and the development agency, improving their capabilities to do joint research in the future. This would include the creation of a permanent institution - independent of MIT - for utilizing Egyptian academic expertise and reducing the rate of brain drain in CU, train enough CU faculty to plan and administer development-oriented research and increase the appreciation by governmental officials for applied research. The role of MIT in this process was perceived as a temporary one leading to the realization of these objectives. In other words, the Egyptian-American research venture was conceived as a two-phase process. The first period was experimental, in which teams from CU, MIT, and the agencies would select development-oriented research issues, lay down an investigative plan, determine a solution, and assess the results. If the end result of this phase proved to be fruitful, the parties would move to consolidate the initial venture by establishing a permanent research unit which would be called upon by various ministerial departments to investigate specific problems. In this phase, the MIT would play the role of an occasional consultant. It was hoped that this process would be replicated by other Egyptian universities.

The first phase began in January 1977 when a group of MIT faculty visited CU and found faculty that shared their research interests. Together, they identified topic areas in which proposals could be developed and then discussed these topics with Egyptian ministries. Proposals were reviewed by the TPP Executive Committee and thirteen were selected for funding. Proposals were assessed according to their relevance to development, the involvement of tripartite teams (CU, MIT, and a ministry), their capability of showing results within a year, and their potential for expansion in the next phase into a more general planning framework for the Ministry involved. The funded projects dealt with various areas such as electricity-generating techniques, housing, plastics, asphalt, stochastic models for Nile flows, water resource planning, groundwater, inter-city transport, economic planning, rural communications, and labor migration. Later on, six projects were also approved for funding.

The projects were funded mainly by U.S.A.I.D. under its Development Planning Studies Program. Support was also received from non-American sources. For example, the International Telecommunications Union paid \$10,000 to the rural communications project. Egyptian ministries also contributed cash and basic facilities to seven projects.

The nineteen research projects resulted in specific findings related to technology adaptation for development. For example, the Engineering Applications for the Plastics Industry Project resulted in a device for the reduction of pollution by plastics factories which was adopted by the industry. Other projects created data bases which proved to be useful to Egyptian ministries in taking some basic decisions. In addition, they generated various academic activities at CU most of which were fairly new to the academic community of the university. Among these activities, one may point out to the following: i) educational exchange programs through which Egyptian participants went to MIT for research training and degree granting programs, ii) mini-research projects designed to encourage the participation of CU faculty in research for public and private sectors, iii) fellowship programs at the post-doctoral and doctoral levels for faculty and graduate students of CU designed to foster research on developmental issues, iv) industrial internships which provided CU faculty with opportunities to become familiar with the operations

of the ministries and public enterprises, and v) conferences, workshops, seminars, and short courses focused on the deliberation of the research findings.

Development Research and Technological Planning Center

The success of the TPP encouraged CU to move to the institutionalization phase of the program. In 1979, CU decided to establish the Development Research and Technological Planning Center (DRTPC) as an autonomous research unit. The TPP was incorporated into the DRTPC as a special research program. The DRTPC's research policies are determined by its Board of Directors. The Director of the DRTPC implements the decisions of the Board and coordinates the activities and the resources of the Center. The DRTPC has also created an elaborate technical and administrative infrastructure which provides various services to the CU community. The library maintains an up-to-date record of the DRTPC publications and basic statistical information on Egypt. The DRTPC has also acquired a computer system capable of supporting up to thirty simultaneous users.

During the first five years of its operations, the DRTPC sponsored twenty seven research projects. They dealt with a wide spectrum of issues such as the structural planning of the new communities, the cement market in Egypt, education information systems, the financial and managerial system of the Family Planning Organization, development of pharmaceutical chemical systems, Performance of paraffinic asphalt-cements in road construction, and the Sinai community. All the projects were investigated and administered by CU faculty with limited American participation. Further, all were funded by Egyptian institutions except for a few which were funded by international organizations, foreign universities, and the U.S.A.I.D. Thus, the DRTPC has gained some self-sustaining indigenous capabilities independent of the MIT and the U.S.A.I.D.

In addition to the research projects, the DRTPC began a New Initiative Program. The program includes post-doctoral and doctoral fellowships, ministry internships, mid-career academic programs for ministry personnel, mini-research projects, short course packages, and a research support system.

The Impacts of the CU/MIT Program

The logical starting point in assessing the impacts of the CU/MIT Program is to review the status of development-oriented research sponsored by CU before the initiation of the program. Such a review will establish the extent to which the program has added to the development-oriented research capabilities of CU.

Before the initiation of the CU/MIT Program, development-oriented research in CU was limited and uninstitutionalized. The 1975/76 Annual Report of the President of CU stated that throughout this academic year, CU was engaged in 21 research projects with outside organizations. The total budget of these projects was L.E.2.4 million and \$36,000. These projects were conducted on a contractual bilateral basis between specific research units in CU and outside Egyptian and American research organizations. Further, CU maintained a Research Fund consisting of the 10% overhead cost deducted from the budgets of the joint projects. In 1975/76 the total revenues of this fund were L.E.66,676 and \$10,358 out of which only L.E.20,713 were spent to finance various research projects sponsored by the Faculty of Medicine and the Faculty of Pharmacy. Finally, during the same academic year, the government-supported budget of CU failed to make any appropriations for research.

It is obvious that the overall picture of development-oriented research in CU in 1975/76 was rather disappointing. This was essentially because of the lack of funds, especially foreign exchange funds needed for this type of research and the absence of an institutionalized framework for interaction between CU and Egyptian agencies involved in the development process. The CU/MIT Program represented a significant change in this picture. The program has certain positive impacts upon CU and the Egyptian agencies involved in it. Of these one may point out to the following:

1. Institution-Building:

The CU/MIT Program led to the creation of a permanent institution - the DRTPC - dedicated to applied research on developmental issues. The structure of the DRTPC has been defined and proved, through practice, of being capable of performing various research functions. It provided some members of the CU community with research facilities, sponsored various academic and development-oriented activities which have certainly enriched the research process at CU, and created an institutional framework for the interaction between CU scholars and those agencies interested in upgrading their capabilities. It has also established a model of institutionalized research on development which could be replicated by other Egyptian universities.

2. Development-Oriented Research and Technology Adaptation:

The most important aspect of the CU/MIT Program is that it has accomplished development-oriented research which otherwise would not have been done, and created the mechanism through which such research could be routinized at CU. The mechanism created by the CU/MIT Program and the funds made available by it helped to establish direct links with governmental agencies and to conduct research largely tailored to fit their needs. Through these processes, solutions to specific developmental problems were reached and certain technological innovations were adapted to fit the needs of Egyptian industry, as will be exemplified in a later section.

However, the overall practical utility of the research conducted under the auspices of the CU/MIT Program has not been as far-reaching as it could have been considering the funds invested in it. This can be accounted for by two basic factors: first, because of the involvement of MIT scholars, research was conducted only in English and the English language became the language of communication in all seminars, training courses, and conferences sponsored by the CU/MIT Program. This has created a severe constraint on the ability of outside users to communicate with CU scholars or to relate to the findings of their projects. Secondly, a purely "technologist" conception of technology adaptation has dominated most of the research projects of the CU/MIT Program. Technology adaptation has been viewed as an engineering problem with few socio-economic implications.¹⁰ This is clearly reflected in the distribution of projects funded by the program. For example, the overwhelming majority of the post-doctoral and doctoral fellowships awarded by the program deal with purely engineering problems and administered only by the engineers of CU.¹¹ Outside users were not able to relate to the findings of these projects because their socio-economic costs were not considered.

3. Substantive Knowledge and Research Methodology:

Research projects funded by the U.S.A.I.D. under the auspices of the TPP

and the DRTPC have also led CU faculty to acquire new substantive knowledge. This has been accomplished either through working with MIT faculty or through field research. It is rather difficult to assess the quantity and the quality of knowledge acquired through these processes. However, one may point to some new areas of research which CU faculty have tackled, such as reliability evaluation of electrical power systems, polymer science and technology, plastics engineering technology, stochastic principles, water resource systems, and the socio-economic structure of rural Egypt and its impact upon the communication system. Unlike the Latin-American experience, the data sets generated through the research processes have been stored in machine readable forms which can be used by CU faculty in future research.

Further, new skills in research methodology have been acquired. In addition to the general principles of research management, project scheduling, and project budgeting, some CU faculty have become familiar with various research techniques such as cost-benefit analysis, systems analysis, the Ras method of updating input-output matrices, designing and updating questionnaires, and sampling techniques.

4. Impact Upon Egyptian Agencies:

The CU/MIT research projects provided the participating Egyptian ministries and corporations with specific solutions and guidelines for solutions to some of the developmental problems which they used to encounter. For example, the Ministry of Electricity has prepared a guide on the most economical maintenance schedule for generating units. The Ministry of Irrigation has also incorporated the Stochastic Model of Nile Flows into the Master Water Plan, which served as a basis for funding requests to the World Bank. The Ministry of Transportation used the data base of the Urban Transportation Project to test the economics of elevated road construction and the data base of the Inter-City Transport Planning Project to evaluate investment proposals. Further, the CU/MIT research projects have injected some of the participating agencies the attitude of collaboration with academics to attempt to find solutions to the practical problems which constrain their performance. This has been reflected in the numbers of governmental officials and managers of public corporations who take part in these projects, attend the seminars, workshops, and conferences of the CU/MIT projects, and in the willingness of some ministries and corporations to supplement U.S.A.I.D. funding for some research projects and to support new ones. The DRTPC received grants from the Ministry of Higher Education, the Academy of Scientific Research and Technology, the Family Planning and Population Agency, and the Ministry of Planning to investigate specific problems pertaining to their activities.

However, the CU/MIT Program has certain negative sides which tended to limit its utility to the CU community and the participating Egyptian agencies. The most important negative aspect of the program is that it has turned into an elitist venture in which only a few CU faculty take part. A report submitted to the U.S.A.I.D. estimated that approximately 95 CU faculty were involved in the projects of the program between 1977 and 1979. This is almost 5% of the total CU faculty. Further, as a result of the dominance of a technologist paradigm of technology adaptation, the Program has drifted into a monopoly of a handful of the senior members of the Faculty of Engineering of CU and their associates who have become quite familiar with the Cairo-Roston route and the DRTPC salary scales.

This elitist pattern has established a stratification in CU between those who do participate in the CU/MIT Program and those who do not and, as result, has introduced new factors for division and alienation in CU.

It may be argued that elitism has been a tradition in CU long before the advent of the CU/MIT Program. Elitism is a part of the internal dynamics of the CU system rather than an outcome of the CU/MIT Program. The sponsors of the program had no choice but to work through the CU elite because the alternative would have crippled the program. These arguments are partly tenable. The U.S. sponsors of the program had some leverage in the choice of research projects, the establishment of research teams, and the evolution of the program which could have provided them with ample opportunities to reach out for wider sectors of CU faculty and steer the program toward a more open research system. Instead, the program reinforced elitism and gave it new dimensions.

The elitist character of the CU/MIT Program may account for its failure to reduce the rate of temporary emigration of CU faculty to the universities of Arab-oil producing countries. The planners of the program were hoping that it would create research opportunities in CU which could persuade CU faculty to stay. This did not happen. During the 1967/68-1974/75 period almost 13% of CU faculty were on secondment to different Arab universities. During the first three years of the CU/MIT Program, this percentage remained almost the same. By the fourth year of the program, it drastically increased to almost 19%.

Another important negative aspect resulted from the participation of the MIT faculty in the program. Such participation has tended to influence the identification of policy recommendations. The liberal background of the MIT scholars has been reflected in the tendency of most research projects to recommend policies which encourage the privatization of the Egyptian economy. For example, the Housing Project recommended the abolition of cement subsidy and the Rural Communications Project focused mainly on the impact of telecommunications on boosting private business in rural Egypt.

Further, as a result of the participation of the MIT faculty, English became the language of communication in all CU/MIT projects. The DRTPC has kept this tradition. As we pointed out earlier, this has tended to limit the practical utility of the research findings to outside users. It has also alienated the non-English speaking CU faculty from the CU/MIT research projects. Only CU faculty who have good command of the English language can take part in the research projects of the CU/MIT Program.

The Radical Critique of the CU/MIT Program

The CU/MIT Program has been a subject of a major public debate in Egypt. In reviewing this debate, one may identify two basic Egyptian perspectives: liberal and radical. Each perspective begins from certain assumptions concerning the potential benefits of international research cooperation and focuses upon certain aspects of the dynamics and impacts of Egyptian-American academic research in general and the CU/MIT Program in particular.

The liberal perspective recognizes a significant degree of pluralism among American academic institutions and believes that such institutions enjoy a considerable degree of freedom from the American political establishment. It also assumes that certain benefits can accrue from Egyptian-American

cooperation in the field of academic research, and that with some regulations such benefits outweigh any potential costs. The liberals believe that the CU/MIT Program is entirely different from the pattern of U.S. sponsored research in Latin America in the 1960s. Research has been conducted within an institutional framework and Egyptian scholars have the upper hand in the choice of research projects and the set-up of research designs. Further, specific benefits regarding the generation of local data sets and technology adaptation have resulted from the collaboration of Egyptian and American scholars.¹³

The radical perspective is generally less optimistic about the potential benefits of Egyptian-American academic research. It maintains that the major objective of American policy in developing countries is the control of the policy-making process in these countries. Further, when they function in the developing countries, American research institutions serve as tools for the achievement of this objective. The advocates of the radical perspective also contend that in the absence of an Egyptian national research policy, academic collaboration with the Americans will inevitably waste Egyptian academic capabilities and threaten Egypt's national security.¹⁴ A review of these arguments may be in order:

i) Reorientation of Egyptian Scientific Capabilities:

Many Egyptian radicals argue that the CU/MIT Program research projects were not selected within the framework of an overall research policy which identifies the high priority areas of research. Projects were selected simply because there were CU and MIT faculty who were interested in them rather than because of their centrality to technology adaptation in Egypt. Consequently, these projects oriented CU faculty toward low priority areas of research.¹⁵ Further, because of the lucrative salaries paid to the Egyptian participants in the CU/MIT projects, some of them focused on their commitments toward these projects to the detriment of their duties as CU faculty.¹⁶ As a result, it is argued, the scientific capabilities of CU faculty have been wasted.

The radicals are divided on this issue. Those radicals who have an academic background contended that foreign-funded programs, such as the CU/MIT Program, have preserved Egyptian scientific capabilities against the potential of "academic decay". Before the advent of American-funded research, Egyptian academics were highly de-moralized because of the lack of a national policy for scientific research, the reluctance of Egyptian policy-makers to get them involved in practical development activities, and their extremely inadequate salary scales. American-funded research provided Egyptian academics with the resources and institutional framework necessary to do applied research, formulate the preliminary features of a scientific research policy, demonstrate the relevance of academic research to the development of Egypt, and to maintain their standard of living under the condition of galloping inflation. It also provided them with opportunities to travel to the U.S. and to get to know the recent advances in their discipline.¹⁷ As a result, they argue that CU/MIT Program represents an improvement in the status of research in CU after the mid 1970s.

ii) Threats to Egypt's National Security:

Among all arguments raised by the advocates of the radical perspective, the national security argument has been the most controversial. Some radicals argue that the CU/MIT Program has impinged upon Egypt's national security

through the gathering of information on various aspects of the social and academic life and making them available, through the MIT participants, to American policy-makers. This information will be used, it is argued, to increase American ability to manipulate the economic and technological policies of Egypt. They cite projects such as the Rural Communications Project which had gathered information on the socio-economic structure of rural Egypt from a sample of 144 villages as a prime example of the CU/MIT projects which had jeopardized Egypt's security.¹⁸

This view is not widely shared by most Egyptian academics. They contend that Great Powers have the capabilities to gather all types of information outside the realm of joint academic research. Further, most of the information which has been gathered does not differ drastically from what is already known about the phenomena under investigation and available in other Egyptian public sources.¹⁹ They also add that the real issue is not the gathering of the information but how to use the information. American policy makers may use the information to influence Egypt's policies, but Egyptian policy makers could also use the same information to formulate a sound developmental policy.²⁰

Conclusion

The critical issue in the assessment of the impact of the CU/MIT Program is whether or not it has produced more of an effect on CU and the Egyptian society than would have occurred without it. Our review of the status of development-oriented research in CU before the advent of the CU/MIT Program has shown that such research was rather marginal and conducted on ad hoc basis. The program created the mechanism through which development-oriented research could be institutionalized. The funds made available through it helped to accomplish development-oriented research and to solve specific developmental issues of some Egyptian agencies which could otherwise never been done given the indigenous financial capabilities of CU.

Further, the pattern of research established by the CU/MIT Program does not seem to fit the pattern described by Galtung. Although the data of the initial projects were collected under joint Egyptian-American supervision, they were processed and turned into "finished goods" in Egypt mostly by Egyptian teams. The Egyptians have been playing an increasing role in making various decisions related to the research policies of the newly created institution - the DRTPC - and the selection of the projects to be funded by it.

However, the dominance of a technologist conception of development, the use of a foreign language in all stages of research, and the control of the program by the English-speaking top engineers of CU, have tended to limit the utility of the research findings, and created new divisions in CU between those who participate in the program and those who do not.

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