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Co-operation

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THE LINK BETWEEN INDUSTRY, UNIVERSITIES AND RESEARCH INSTITUTES  
WITH SPECIAL REFERENCE TO THE EGYPTIAN EXPERIENCE <sup>1/</sup>

by

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<sup>1/</sup> The views and opinions expressed in this paper are those of the author and do not necessarily reflect the views of the Secretariat of UNIDO. This paper has been reproduced without formal editing.

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We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche

The Role of the Egyptian University in research goes back to 1925 when the first University namely Foad University was established in Cairo. The Foad or the Cairo University now, has been followed by numerous other Universities until the number of universities now reached eleven. The number of staff involved in research work in those universities amounts to many thousands. Industrialization started on the other hand in Egypt at a later stage. The Egyptian Industry depended mainly on imported production units as well as imported technology. The import of technology was mainly in the form of employing foreign experts and technicians, license and know-how agreements, acquiring patents and the like, disregarding the research facilities available at the Egyptian Universities.

At a later stage, the Egyptian National Research Centre was established. This Centre was designated to be the link between research work and the economy in general and the Industry in particular, just to fill the gap which the Egyptian Universities were not able to fill.

The National Research Centre nevertheless has not realized the intended goal of establishing the required link with Industry. The main reasons for that are summed up in the following:-

- 1) Poor Contacts with Industry and lack of experience concerning industrial activities among the responsables in the centre. Contacts being mainly exercised through the Ministry of Industry itself and not the Industrial Units directly.
- 2) The system of personnel promotion for research workers within the national research centre itself, was closely connected with the acquirement of scientific degrees disregarding the economical return of the research involved. This, together with the absence of a reasonable system of incentives for research workers tackling industrial problems, led to concentration mainly on traditional and academical research work, neglecting industrial problems.
- 3) Lack of experienced supervisors in Industrial research within the National Research Centre.

- 4) Lack of funds dedicated from the Government or from the Industrial enterprises themselves.
- 5) The Governmental system dominating the National Research Centre as well as the Industry, the amount of routine work involved did not help the required link with Industry which requires a certain amount of flexibility and free movement.

At various stages, attempts were made in order to achieve a closer relation between the National Research Centre as well as the Universities and the Industry. Meetings at different levels of responsables in the Centre and the Industry, conferences, permanent or temporary, committees were held and formed for this purpose.

It seems positive as a simple result of all those meetings and discussions that the problem in establishing a close relation between research work in Universities or the National Research Centre and the Industry is finding one or more systems or means of achieving such a link, than continuing to argue about the importance of establishing such a relation.

It is of extreme value to study and evaluate the few cases of success which were observed and which led to a fruitful relation between the Research Centres and the Industry and which ended in fruitful results at the Industrial level. The elements which led to success in those events are the following.

- 1) Awareness at the top management level in industry of the importance of research work in Industrial development. This reflects itself into positive reaction concerning the building of fruitful relations with research centres.
- 2) Adapting a reasonable system of incentives for the research workers which ensures a reasonable financial return for those workers. This is to be borne mainly by the concerned industry. This together with a corresponding change of the system of personnel promotion within the Research Centre so as to allow promotion through Industrial research work, disregarding the pure scientific value of the research, will create a reasonable incentive for research workers to start tackling industrial problems.

3) Success in identifying Industrial problems which can be tackled by research work is a major point to be attained. It has been frequently observed that an Industrial unit can hardly identify among the numerous Industrial problems those problems which can be solved by research work. An Industrial unit can often not do that alone without the help of the Research Institute or Centre. The Industrial Research points in the successful instances of collaboration between Industry and Research Institutes have been identified and selected with close collaboration between the Industrial unit and the research Institute.

4) Field research units proved to be successful in developing the link between research Institutes and Industry. The industrial unit or group establishes its own research unit within the Industry itself. Within this unit young research workers employed by the industry will be trained under the supervision of experienced research workers from the research institutes, on tackling industrial problems and promoting industrial research work.

This growing body within the industry itself will be the future safe guard for the continuity of research work within the industry itself. Facilities available in the research institute should certainly be complimentary to the limited facilities in the growing field research centres.

5) Of vital importance is success into applying the results of industrial research on an industrial scale. Pilot plant facilities enabling the transfer of laboratory results into the industrial scale are thus indispensable.

6) The appointment of a senior Officer from the research institutes by the Industrial unit or Industrial group as a research consultant either on full or part time basis proved often to be a success. This research consultant together with the Industrial personnel will co-operate in identifying the industrial problems which can be solved by research as well as determining the direction of research which will lead to industrial development.

The knowledge available to this research consultant will also help to identify the specific research personnel from the relevant research institutes who would be of most help to Industry in this respect as well as indicating any research work

published or current, related to the industrial research work required by the industry.

- 7) A good start and rather quick results can be achieved by trying to adapt imported technology to local conditions with special reference to local available raw materials through research work.

A very good example of that success is the use of Sugar Cane "Bagas" in pulp manufacture in Egypt, which led to a revolution in this field. Results were reached in close collaboration between the paper mill and the faculty of Engineering of the Alexandria University. Laboratory results were first applied on a pilot scale then on the Industrial Scale successfully.

- 8) Understanding from the Industrial unit of the nature of research work i.e. there is no exact time or cost limit to end a certain research work accompanied by a certain mutual understanding from the side of the research institute that the economics of a research work is vital to industry, is a major point which should be made very clear to avoid complications during the course of collaboration between research institutes and Industry.

In short we should not talk more about the importance of developing a close relation and links between Universities, Research Organizations and Industries but we should really find the means and ways of doing so. No body can claim that there is only one or more means for achieving that goal. It can not be claimed that one means or another would be applicable at all times and in all conditions. A careful selection of one or more means from the examples given above should be done for each case individually according to the prevailing conditions.

As to the role of UNIDO in establishing and accelerating the required co-operation I might suggest the following:-

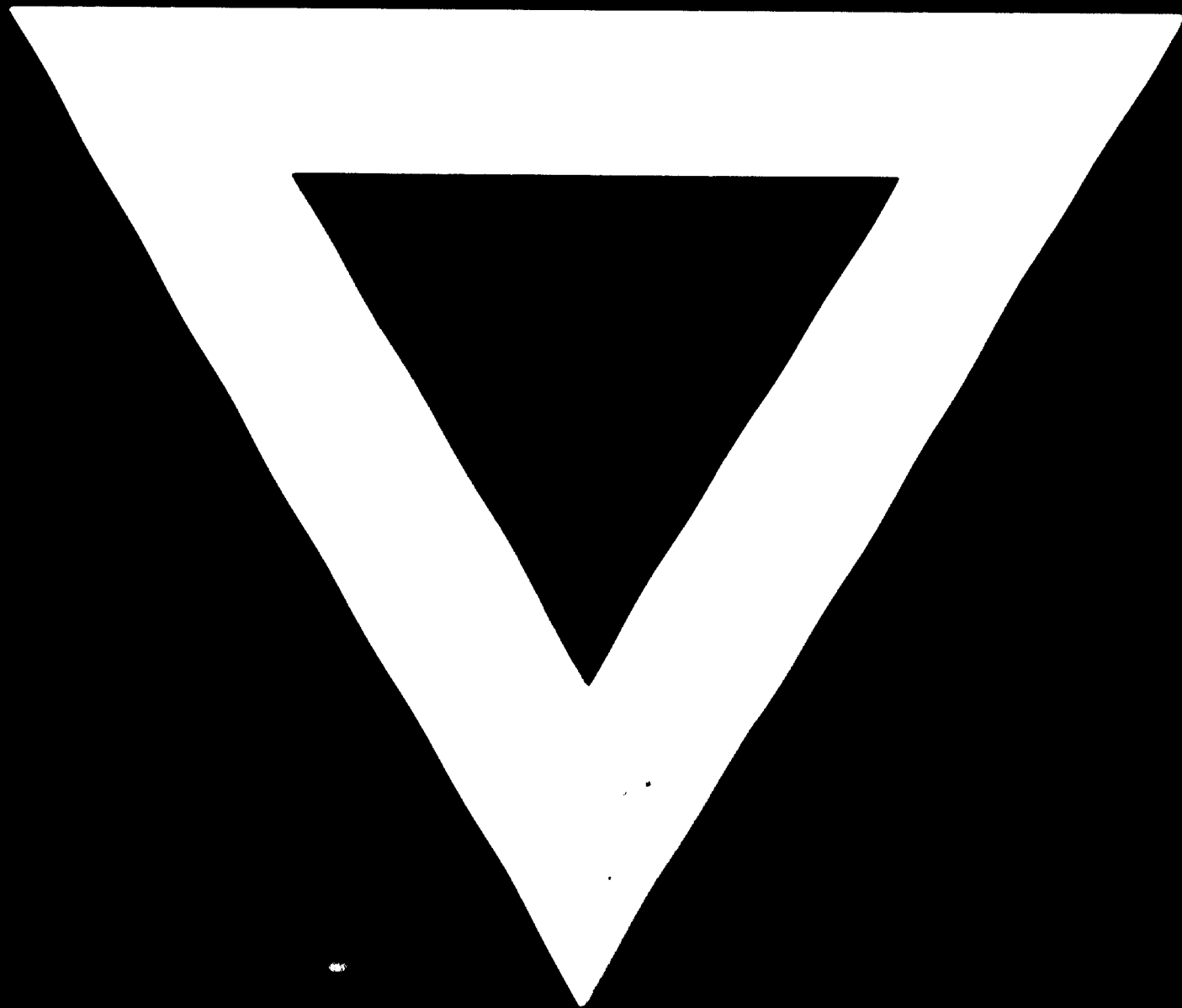
- 1) Participation in meetings organized for responsables in Industry universities and Research Organizations for this purpose to provide information and advise.
- 2) Publishing and circulation of research work related to Industrial activities in developed countries.

- 3) Contributing awards for Industrial research work of particular importance concerning Industrial development.
- 4) Providing experience to Universities and research Centres in Industrial research work in the form of experts in Industrial research, or on the other hand by granting Scholarships for developing countries research workers at industrial research centres in developed countries.
- 5) Helping in acquiring Laboratory and Pilot plant equipment for industrial research purposes, also in adapting imported technology to local conditions through research work.





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