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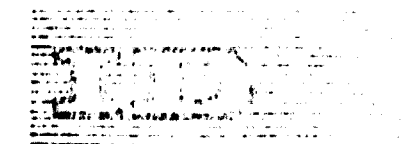
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THE FEDERAL INSTITUTE ON PRODUCTIVITY OF YUGOSLAVIA :
A CASE STUDY

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THE FEDERAL INSTITUTE ON PRODUCTIVITY OF YUGOSLAVIA

A CASE STUDY

INTRODUCTION

It may seem a little odd and even presumptuous to present the case of a governmental productivity institute to managers of industrial research organizations. But UNIDO has asked for it, probably because industrial research may and sometimes must be considered as one of the many interrelated and interdependent parts of the big effort to raise the level of national productivity in industrializing countries. Another reason might have been knowledge of the fact that during the seven years of its existence the Federal Institute on Productivity was that agency of the Yugoslav Government which, besides other tasks, had to create general understanding for and some specific elements of a rapid but balanced development of industrial research in the narrower sense of this notion.

Founded in 1954, the Federal Institute on Productivity existed till to the end of 1960. Its heir and successor is the Yugoslav Institute for Productivity, which is not a government agency, but an independent organization, which sells its services to industry, and specializes in the field of management consultancy.

This paper shall, thus, confine itself to the seven years of activity of the Federal Institute on Productivity.

1. A SHORT HISTORY OF THE FEDERAL INSTITUTE IN PRODUCTIVITY.

1.1 Legal status.

The Federal Institute on Productivity was established in early January 1954, as the "Institute for research in the Field of Labour Productivity" within the framework of the Federal Bureau for Economic Planning. The Institute became independent on October 28, 1957, when the Federal Executive Council passed a by-law concerning the establishment and abolition

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of certain agencies of the Federal Administration ("Sluzbeni list FNRJ", No 45, 1957), whose third article reads as follows :

"The Federal Institute on Productivity is being established as an agency of the Federal Executive Council in order to carry out research in the field of productivity and to prepare studies and proposals for the Federal Executive Council and its other agencies.

The Institute is headed by a Director, who is nominated and dismissed by the Federal Executive Council".

The second act in connection with the legal status of the Institute was a Decree of the Federal Executive Council of October 20, 1959, by which the role and scope of the Federal Institute on Productivity were defined in a more detailed way.

1.2 Staffing.

As soon as the Institute was established it became clear that there were no sufficient number of sufficiently skilled staffs in the country, capable to solve successfully the manifold tasks of the new institution. Hence, staffs had to be developed systematically, either within the Institute itself, or abroad, in developed countries. Due to this dual approach the initial staffing has been completed within a relatively short period and the Institute was not unsuccessful in its first actions.

At the same time assistance had to be extended to half a dozen new institutions, which in the six republics of Yugoslavia and some districts, started dealing with problems of productivity. They were initiated and then fostered by the Institute especially through training of their staffs.

Staffs of the Federal Institute on Productivity as well as of the republican institutions have been trained in two ways :

- through seminar and courses held by Yugoslav and foreign experts within the country and
- through shorter or longer fellowships abroad.

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Not taking into account participations at international and regional conferences and short seminars, the following arrangements have been made from 1954 to 1960 :

- for the Federal Institute : 22 people abroad, about 73 months,
- for the republican productivity institutions : 19 people abroad, about 99 months,
- for applied research and some other institutions : 74 people abroad, about 187 months.

Civil servants from the Federal Institute, employees of the corresponding republican institutions, as well as managers and scientists from research institutes studied during these fifteen man-years abroad, among some other topics, primarily the following ones :

- organization of applied research in industry,
- measurement and analysis of labour productivity,
- business organization,
- business administration,
- scientific management,
- operations research,
- work standards,
- statistical quality control,
- standard costs and budgetary control,
- industrial physiology and psychology,
- organization of productivity centers and methods for decentralization of their activities,
- vocational training of workers.

Most of the personnel, though was trained through courses at home, held by Yugoslav and foreign lecturers, on the basic aspects of productivity and industrial research, of which little has been known, and not even that much applied by the enterprises. Courses were organized by the Institute, while experts were engaged from scientific, educational and other institutions in Yugoslavia or - through the Federal Technical Assistance Agency - from abroad. To meet the requirements of modern

pedagogics, according to which students are not supposed to be mere "listeners" to, but active participants in courses, the Institute invited to each one course or seminar only a limited number of carefully selected participants. Their numbers varied usually between 15 and 20.

Through a combination of these two ways of training the first Yugoslav experts in matters of organization, management and productivity have been created.

1.3 Finances.

From its establishment on till 1960, the budget of the Institute has been part of the Federal budget of Yugoslavia. This fact had both positive and negative effects. Having the necessary monetary resources, the Institute could initiate actions which at that time were not yet fully understood, so that the enterprises would not have been ready to finance them. The Institute could and did initiate theoretical studies without which sound practice is inconceivable, and the Institute could educate its first staffs.

On the other hand, however, financing from the budget and the status of of civil servants did not attract the very best junior people to join the Institute and did not stimulate them to do their best in its employ. A sound combination of budgetary financing and the establishment of productivity funds, would perhaps have been the best solution.

1.4 The Organizational Structure of the Institute.

With altogether 58 employees, the Institute had in 1960 a Director, two Assistant Directors and the following sections :

- Department for the Management Sciences (including a sector for the management of industrial research).
- Department for Vocational Training.
- Group for the Measurement and Analysis of Productivity.
- Group for Industrial Safety.
- Group for Relationship with other Organizations.
- Secretariat.

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1.5 Equipment.

Over the seven years of its existence the Federal Institute attempted to secure at least part of the equipment, without which it is difficult to conceive of a systematical and efficient action of the sort which circumstances required. Equipment was acquired gradually and according to a preestablished plan, mostly through technical assistance. Audio-visual equipment and a small printing shop became very useful for the proper preparation of seminars and for the publication of leaflets and a journal. Equipment for simultaneous translation was necessary due to the many lectures of non-yugoslav professors and experts.

2. DECENTRALIZATION OF OPERATIONS

There is no country in which a policy aimed at the growth of productivity could be effectuated through the activities of only one, central productivity institute. Schools, universities and scientific institutions as well as chambers of commerce, trade associations and the enterprises themselves have to add their share to the general drive which may eventually lead to a fast and steady increase of productivity.

From its very beginnings the Institute has declared and tried to prove that there can be no successful movement for higher productivity, unless in all republics, in some industrial centers and in greater enterprises more or less specialized bodies concerned with the issues of productivity are not created.

2.1 Bureaus for Productivity of the Republics and Some Other Agencies.

Bureaus for productivity in the six Yugoslav republics have been established on the initiative of the Institute. This process went on gradually, according to availability of staff and other circumstances.

All these productivity agencies in the republics were selffinancing, "profit-making" institutions, except the one in Montenegro, which was a budgeted agency of the state government.

Apart from the activities of these bureaus, which was primarily general

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in its character, we may mention the role of the "Federal Center for Management Education" in Zagreb. This Center functioned as a specialized institution from 1955 onwards, playing a pioneer role in the education of managers of enterprises. It was established upon the initiative and with the active assistance of the Federal Institute on Productivity, as well as a certain number of industrial research institutes. However, it functioned later on as an independent institution. The bureaus for productivity in the republics, as well as the Federal Center for Management Education and the industrial research institutes, were formally independent of the Federal Institute. This did not mean, however, that there was no need for a rationally coordinated utilization of staffs and equipment, and for a close cooperation among them in general. The Institute made efforts to assist the bureaus some research institutes as well as the Management Center in the development of their manpower.

Another form of cooperation were regular consultations of representatives of the Federal Institute, the republican bureaus and some industrial research institutes, as well as the educational center in Zagreb. These consultations took place from time to time and have been attended by representatives of various secretariat (ministries) of the Federal Government.

At these consultations problems of mutual interest were discussed. In addition recommendations and conclusion were formulated which gradually, but persistently layed the groundwork for a systematical coordination of activities of all institutions in the country concerned with industrial research productivity and manpower development.

2.2 Local Bureaus for Productivity and Workers Universities.

During the last three years of the period under consideration, district and local bureaus of productivity and vocational training became more numerous and more important. The Federal Institute felt obliged to cooperate, as far as possible, with these bureaus, holding however the opinion that it was within the competence of the republican bureaus to unite and to promote the corresponding activities on their territory.

Cooperation with district and local bureaus of productivity was being effectuated through lectures, personal contacts, training of individuals in the Federal Institute and other means.

In the period under review, close and successful cooperation with a good number of the so called workers' universities has been initiated by the Federal Institute. Here hundreds of thousands of workers and their representatives in workers, councils and management boards have been acquainted with the basic problems of productivity, the significance and necessity of industrial research and the first principles of organization theory. To this purpose lectures, longer or shorter seminars as well as consultations were held by associates of the Institute. There was such an immense interest in this activity, that the Institute could accept only a minor part of the invitations.

3. COOPERATION WITH OTHER ORGANIZATIONS

3.1 Cooperation with Organizations in the Country.

As long as there have been interministerial "commissions on productivity" within the framework of the executive councils of the Federation and the republics, the Institute cooperated with them closely and most successfully. It cooperated later with the secretariats of labour, industry and education, the Federation, the republics and some districts, with the Central Council of Yugoslav trade-unions, with chambers of Commerce and professional associations.

3.2 Cooperation with Foreign Organizations...

3.2.1 United Nations.

Three major actions have been organized within the framework of the United Nations Technical Assistance Programme.

a) The Establishment of the Federal Center for Management Education.

A specialized agency of the UNO - the International Labour Organization - with which the Institute negotiated during 1954 and 1955, extended assistance : experts, equipment and fellowships.

b) The Establishment of the Experimental Center for Rural Electrification.

The Center was organized in 1954. The United Nations offered, in addition to experts, considerable amounts for the purchase of equipment. This Center was to show, through the application of scientific methods, how modern techniques in general, and electrical appliances in particular, can raise the productivity of agriculture.

c) The Establishment of Center for Instructors of Accelerated Vocational Training.

This was the latest action in the realm of UN assistance. It will be discussed in some length under another paragraph of this paper.

3.2.2. European Productivity Agency.

Throughout 1956 and 1957 negotiations were under way regarding Yugoslavia's incorporation into the European Productivity Agency, which was a relatively independent self-governing body of the Organization for European Economic Cooperation (OEEC). Yugoslavia became an associate member thereof on October 1957. In line with this arrangement, Yugoslavia was entitled to participate in the work of EPA, to propose actions, to discuss proposals and to have a representative in the Governing Body of EPA.

It was the Federal Institute on Productivity which represented Yugoslavia in EPA. Practical cooperation started at the end of 1957 and continued on a larger scale throughout 1958 and 1960. The first period, October-December 1957, proved already rather successful.

We shall now briefly mention the main actions carried out in cooperation with EPA.

d) Seminars.

From October 1957 to the end of 1959: 22 EPA- experts

held 23 seminars in Yugoslavia, which were attended by 441 participants. Seminars lasted altogether 231 days, i.e. 10 days on the average.

e) Management of Applied Research.

The Federal Institute on Productivity initiated and established firm relations with the activities of EPA and OEEC in general, concerning organization and management of industrial research international cooperation in the field of applied research and the periodical confrontation of science policies. It may be said that through these activities the Institute considerably accelerated the development of industrial research in Yugoslavia.

f) Consultations.

During the same period 25 EPA -consultants stayed in Yugoslavia for 309 days, holding consultations on various problems involved in the promotion of productivity.

3.2.3 American Technical Assistance.

During the period under consideration the Institute:

- got and distributed fellowships for 58 Yugoslavs, lasting 182 months altogether,
- made use of services of 8 experts, who spent 8 months in the country,
- got equipment and books, amounting to about \$ 220.000.-

3.2.4 French Technical Assistance.

The Institute used it for a seven months fellowship of 13 Yugoslav industrial engineers, as well as for some shorter study tours in productivity-measurement, documentation-services and ergonomics.

3.2.5 British Technical Assistance.

The Institute financed two fellowships lasting each about 10 months.

3.2.6 Cooperation with National Productivity Centers.

This cooperation had different forms : visits of Yugoslavs to foreign centers, exchange of publications and visits of representatives of foreign centers to the Institute. In the period under review the corresponding contacts have been established with regular national centers in the United Kingdom, Belgium, Czechoslovakia, Holland, Italy, Poland, the Scandinavian countries and Western Germany. Informations were exchanged with the Brazilian, Argentine, Mexican, Indian and Japanese national centers.

4. INFORMATION ACTIVITIES

From its establishment onwards the Institute has devoted utmost attention to information. Much emphasis has been put on systematical information of both the professional and the general public about the concept, the importance and the factors of productivity, as well as on the necessity and usefulness of science, both fundamental and applied.

There existed - and still do exist - incomplete and sometimes even erroneous opinions about productivity, its essence and its importance. That was the reason why the Institute devoted part of its effort to the spreading of correct knowledge about the notion of productivity, and the importance of science.

Lectures, informative seminars, publications and films were some of the means and ways by which the Institute diffused knowledge, laying the groundwork for a proper understanding of the problem, and the launching of fruitful actions.

4.1 Lectures on productivity, organization theory and applied science.

They were being held regularly, from 1954 to 1960. Designed for the broad public, they were delivered in many towns and industrial centers and usually followed by consultations with local representatives of enterprises and professional organizations.

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Upon these occasions practical actions, aimed at the increase of productivity and introduction of research and development in the respective region, town or enterprise used to be discussed. The effects of these lectures and consultations fully justified the efforts and sacrifices that have been made. During the period under consideration these lectures were attended by tens of thousands of people, all over the country. It is no overstatement to say that, as a result of this action a better atmosphere has been created, what helped the development of industrial research.

4.2 Informative seminars.

This was the other way in which collectives and individuals became acquainted with general and specific problems of productivity and of industrial research. There were six-days seminars on the ways and methods of setting up and managing R.& D. departments on the essence and importance of productivity, on methods for measurement and analysis of productivity, on business management, industrial engineering, work standards, human relations, organization theory etc. All those topics were explained in an understandable way, accompanied by films and almost always followed by discussions.

4.3 Informative seminars on job evaluation.

They aroused great interest, as did seminars on meritrating. These seminars were preceded by thorough preparation, since ways had to be found and agreements to be reached with trade-unions and workers councils about the basic principles of these techniques in order to commence the action with clarified viewpoints.

Although broadly conceived and properly effectuated, this action did not produce the expected results. We still hold the opinion that these seminars were useful, -----

but it was then too early for general consent and rapid introduction into the enterprises.

4.4 Publications

The monthly edition "Produktivnost" ("Productivity") dates back to 1955. This was and still is the only Yugoslav magazine devoted entirely to productivity problems, both from a theoretical and practical point of view. Issues came out rather regularly and were distributed gratuitously. From the beginning of 1959 onwards, the magazine was printed. It contained original articles, translations and reviews, dealing with the theory and practice of management and productivity in industry, agriculture and other sectors of the economy, with R. and D. in general and the management of research specifically. Non-periodical publications. Throughout the seven years of the Institute's existence, 92 monographs of different size and significance have been published.

These publications comprise studies on productivity measurement, vocational training, the organization of scientific research for industry, industrial relations and industrial engineering, as well as demographic analyses, analyses of productivity trends and some translations among which there was also the well known ILO publication: "Introduction to Work Study" to which a four-lingual dictionary of work-study terms in Serbo-Croatian, English, French and German has been added.

4.5 Library

The acquisition of books and periodicals for the library was financed partly out of the budget and partly out of technical assistance money. Although not great, the library represents a well assorted fund of knowledge, covering both domestic and foreign theoretical and technical literature in the field of organization, management, productivity and applied research.

The library organized a "questions and answers" service.

Since the Institute had connections with international sources of technical and economic information, it could be expected that enterprises would make use of this service, which was altogether gratuitous and could have been of great importance. Experience showed, however, that in spite of considerable effort and time spent for lectures and seminars describing this activity of the Institute, many of the enterprises do not yet realize how important technical and general information may be.

4.6 Films

In 1957 the Institute got some 40 films covering management and productivity subjects. During the next two years more films were bought. Thus, the Institute disposed of about 80 films.

Apart from collecting and translating good foreign pictures, the Institute had to produce its own films which would serve as illustrations at seminars and lectures, mirroring the conditions and needs of Yugoslav enterprises.

The first home-made films of the Institute date back to 1955 and 1956. Their titles were: "Work Study", and "Work Simplification in a Veneer factory". At the same time, a film dealing with materials handling was made, including parts of an Austrian film. Although not perfect, these first three films have been usefully added to lectures and courses. They are still in demand.

Next came the following three films:

"Biological, legal, and Organizational and Management Aspects of the Export of Plums" (1958)

"Noise - a Difficult Problem" (1959)

"The White Town" (1959)

This modest production of home-made films was completed with translations and adaptations of foreign films.

In order to spread knowledge concerning the proper use of audio-visual devices, the Institute organized short seminars in 1956.

With a well-equipped photographic laboratory having an apparatus for the synchronisation of sound films, conditions have been created for useful work in the field of audio-visual aids.

5. HUMANPOWER DEVELOPMENT

Training and education are problems of high priority in each policy aiming at the increase of productivity. The need for training is omnipresent, but particularly strong in developing countries where it is often the common denominator of many difficulties.

The Federal Institute on Productivity prepared the curricula and got the money for three one-year high level postgraduate courses, designed to train specialists in the fields of Work Study, Operations Research and Business Management. These postgraduate courses have been rather successful.

5.1 Courses and Seminars

This chapter of the present paper is an attempt to select some of the courses and seminars among many, which are characteristic for the activity of the Federal Institute on Productivity and represent pioneer work in the introduction of contemporary methods for the increase of productivity in Yugoslavia. Some of these courses and seminars have been mentioned earlier in this paper. The most successful seminars covered the following fields:

- Motion and Time Study
- Job Analysis and Merit Rating
- Materials Handling
- Marketing
- Packaging
- Sales Promotion
- Setting up and management of R. & D. departments
- Human Relations in Research Institutes
- Planning of Experiments
- Productivity Measurement and Analysis
- Home Economics
- Industrial Psychology and Sociology
- Organization of Enterprises
- Work Standards
- Use of Teaching Aids
- Organization of Personnel Services
- Office Management

Foreign experts have been hired for three one-month seminars and consultations:

- 1 expert for the organization of self-service stores;
- 1 expert for the organization of the meat and meat products market;
- 1 expert for the organization of the milk and dairy products market;
- 1 expert for the organization of the fish market;
- 1 expert for the organization of "Cold chains".

5.2 Vocational training

The backwardness of the Yugoslav economy on the eve of the Second World War and serious disproportions among as well as within some economic branches, together with heavy destructions of the four war years and an increasing demographic pressure, seemed to explain and justify why one fourth, and in some years as much as one third, of the national income has been invested in the reconstruction of demolished and construction of new settlements, in ways of transportation and communication, in hundreds of manufacturing plants.

This period of heavy spending on things had to be followed by "investment in people".

Employment rose parallel with the increase of productive capacity. Total number of workers in 1939 amounted to approximately 1,100,000 or 7 per cent of the population (approximately 15,400,000 inhabitants) while the average for 1958 reached approximately 2,100,000 or 12½ of the population (approximately 18,200,000). Today these figures are higher still.

The transition of individual farmers from inefficient and primitive agriculture to other professions, means an increase of global productivity, even if productivity in our industry, transportation and trade, which are absorbing the surpluses of the agricultural population, is lower per se than in economically developed countries. However, it was high time to devote more attention to the increase of productivity in all economic branches.

There is no need to emphasize that the average levels of skill and education are most important factors of productivity. With no, or not enough, adequately skilled workers and employees, there is no adequate utilization of the means of production and of raw material.

It follows, therefore, that in addition to a considerable improvement of the Yugoslav system of professional education, increasing attention had to be paid to modern methods of accelerated vocational training. These methods are significant for developing countries mainly for two reasons:

- need to train new workers, joining industry without prior professional education;
- need to improve the real qualifications of those already employed.

During the period under review, the Yugoslav economy was supposed to employ approximately 107,000 workers annually. However, during those years the number of newly employed reached 200,000 annually. In addition it should be mentioned that:

- the majority of industrial workers should not be educated through three and four year apprenticeship schemes, even if material resources would be available, because industry and industrial organization of other economic branches do not require very many polyvalent workers of the artisan type;
- vocational training within the factory must be open also to skilled workers and foremen who acquired their knowledge and skill by regular schooling because, owing to the ever quicker development of science and technology, production processes and equipment change frequently and radically.

We would like to add that vocational training of those already employed is not less important than accelerated vocational training of new workers. But the task is tremendous. Towards the end of the period under consideration, the non-private sector of the economy employed approximately 2,000,000 workers, and that :

-	industry	970,000	workers
-	big farms	90,000	"
-	agricultural cooperatives..	110,000	"
-	forestry	30,000	"
-	building and construction..	250,000	"
-	transportation and communi- cations	160,000	"
-	trade and catering	210,000	"
-	handicrafts	170,000	"
-	Public Utilities	40,000	"

Periodical biennial retraining of this work force by 6-day seminars only requires a continuous operation of approximately 1,000 parallel seminars with 20 participants each; a formidable task, which no single institute could properly handle.

It followed the advisability to educate instructors of accelerated vocational training, to prepare teaching aids, books, manuals and films in order to introduce these modern methods into the economy.

Together with the Federal and most republican governments of Yugoslavia with professional associations and economic chambers, the Institute has selected those branches of the economy which seemed to be most important. After careful evaluation, it has been determined that eight centres for instructors of accelerated vocational training shall be created as follows:

- for mining;
- for mechanical engineering;
- for the textile industry;
- for the wood industry;
- for agriculture;
- for the building trades;
- for retail trade;
- for the catering industry.

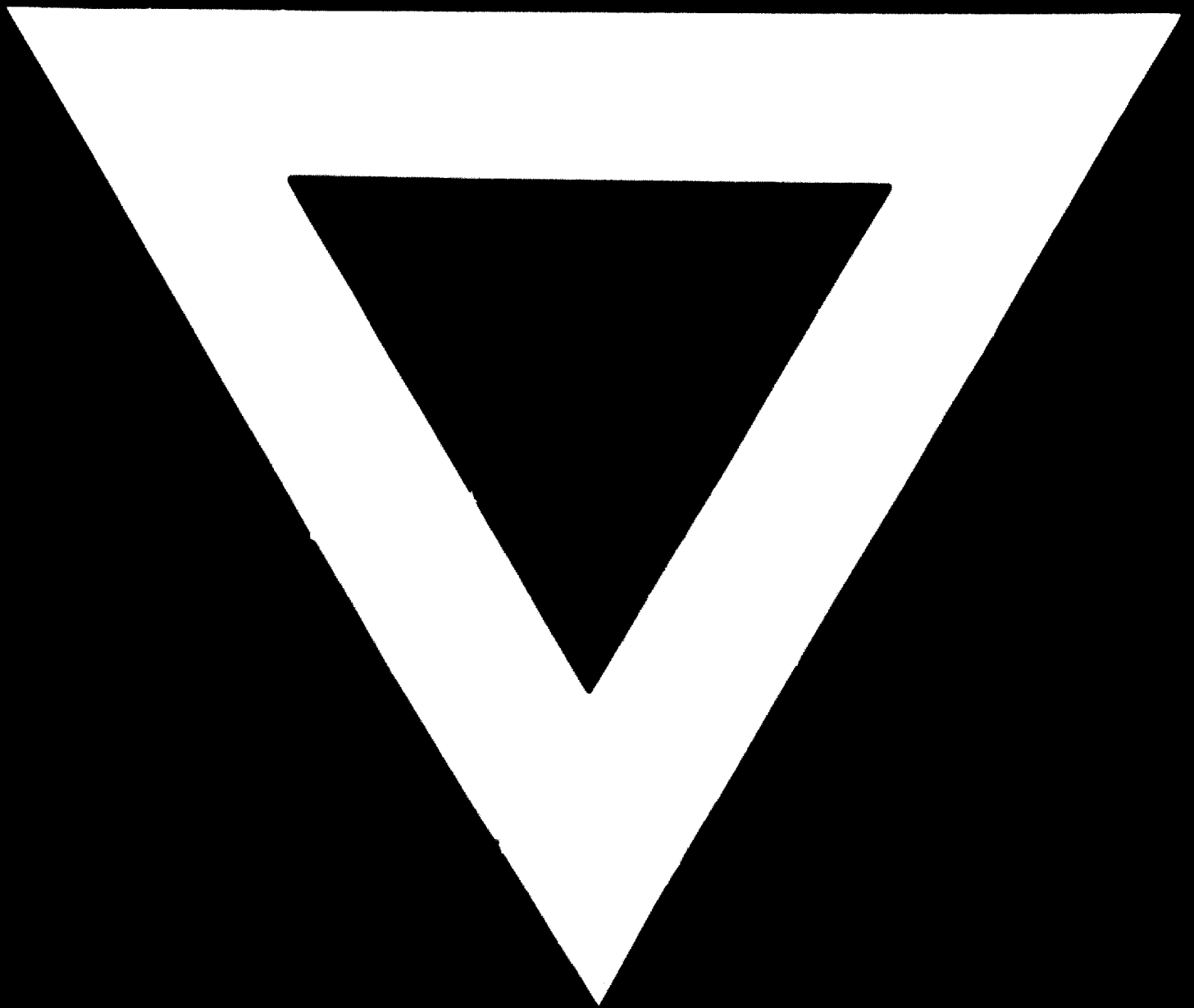
6. INDUSTRIAL ENGINEERING

The Institute organized, in addition to others mentioned earlier in this paper, courses on statistical quality control, the ratio delay method and the evaluation of the level of organization in enterprises; this last method had been tested in approximately 20 Yugoslav enterprises.

The Institute collaborated closely with approximately ten enterprises and introduced, between others, the following methods :

- productivity measurements,
- rational materials handling,
- measurement of reserves by the ratio-delay method,
- statistical quality control,
- standards,
- work study.





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