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INTRODUCTORY OBSERVATIONS

In the course of the past decade, the question of designers and of their education has been frequently raised by professional organizations as well as by Chambers of Economy within the framework of secondary and higher education. Consequently, a number of conferences, lectures, symposia, and inquiries into this problem have been organized. Virtually all these and similar discussions resulted in almost unanimous answers stressing the importance of design and of the role of the designer in terms of the development of our culture and economy. All of us agreed on the importance of having good design and of fostering it, and we drew the conclusion that the developing countries were lagging behind in this particular sphere of activity. It was in trying to determine the spot, as it were, within school systems that might provide for the education of designers of industrial products, that we realized that in developing countries, the hierarchy of plastic-art instruction differs from their counterparts in the countries that stand in the forefront of industrial design. That is why the suggested solutions ought to be conceived in such a manner as to harmonize with the peculiarities of individual countries.

A SKETCH OF CONDITIONS IN YUGOSLAVIA

In Yugoslavia, the Academy of Fine Arts, located in Belgrade, represents the sole educational institution where industrial designers are trained at a full four-year university level.

While surveying other specifically Yugoslav circumstances, we realized that our secondary art schools are peculiar to Yugoslavia. They originated from the former schools of arts and crafts; in the post-war period, they tried to approach the industry by changing their names and modifying their syllabi. In many places, nothing else changed. It was on account of the lack of any university level education of the designers that the graduates of these secondary schools were able to get employment fairly easily, whereby the existence of this typically Yugoslav secondary school of design was justified.
What are the weaknesses of the secondary education of industrial designers? First and foremost, students enrolling in secondary art schools are fourteen or fifteen years old. Since the general education that they acquired during their elementary school years proves to be inadequate, it has to be extended into the secondary-level schooling, which leaves too little time for technical subjects.

Some of the existing eight secondary art schools in Yugoslavia tried to solve the problem of time by either prolonging the period of schooling from four to five years, or narrowing the limit of the profession and thus creating specialized and rather restricted orientations.

Because of the foregoing inadequacies of secondary art schools, and also because of an almost total lack of university level training of designers in Yugoslavia, it is quite understandable that it was eventually proposed that some secondary art schools acquire the status of institutions of higher education, specifically, of two-year colleges. The school of design in Ljubljana has been seriously deliberating this possibility.

In my opinion, such a solution would not be a bad one, at least until the advent of four-year university education. Such a two-year college would simply represent a purposeful continuation of the secondary schooling, providing a deepened professional expertise and a broadened knowledge in comparison with that acquired in the secondary school.

However, in case the two-year college education should be retained, even after the introduction of four-year university training in this field, I do not think the two forms of schooling should merge with each other.

I nevertheless believe that transforming secondary schools of design into two-year colleges should only be a temporary measure to be resorted to until the question of full university education of industrial designers in Yugoslavia has been solved conclusively.
SPECIALIZATION

A glance at the evolution of all the living beings shows us, by way of what actually happened in the course of millions of years, that the evolution invariably tends toward an ever-increasing division of labour and specialization of the species. It appears that this is also true of the development of man's work.

At the end of the nineteenth century, an engineer was regarded as a universal technical expert. Later, even simple people began to differentiate between individual professional branches. Some fifty years ago, construction work was performed by the architect and the constructor. Further branching of various professions brought about the necessity of interfering with excessive specialization; in our country, this necessity was put into effect ten years ago, during the time of intensive school reforms in Yugoslavia. Proposals for specializations to be offered by the school of architecture in Ljubljana included the following: city-planning, public buildings, dwellings, furnishings, industrial design, and visual communications. All of these, however, were ahead of the actual development; moreover, the reaction to this planning ahead of time consisted in the identical activity, namely overtaking the actual possibilities. As the reaction was too strong, the division - specialization, in other words - simply did not occur the way it should have occurred: In our country, mature specialization should have resulted in the establishment of three branches, viz. city-planning, architecture, and design. Such, however, was not the case, even though it should be conceded that this realization may not be applicable to the whole of Yugoslavia, let alone to various countries of the world. In the industrialized countries, especially in the United States of America, the spatial design and the design of surfaces for industry separated from architecture or painting a long time ago. In these countries, industrial design is associated with artistic or technical institutions of four-year colleges and universities, in terms of both the syllabus and the organization itself; as a pedagogic discipline, it is divided into divisions, departments, sections, chairs, institutes, and so on. The divisions usually include product design, advertising design, interior design, graphic design, fashion design, ceramics, etc.
ATTENTION GIVEN TO THE TRAINING OF DESIGNERS

In the United States of America, the tradition in the training/education of industrial designers is considerable. The development of this type of education there was promoted by the economic crisis in the period between 1929 and 1936 as well as by the teachers from "Bauhaus", the influential German design school who emigrated to the United States. Their tradition can also be seen in the fact that in the American four-year colleges of design both technical and art subjects are taught almost universally by fully qualified industrial designers (holders of degrees in industrial design), whereas in Europe all such subjects are taught also by architects, painters, and sculptors.

At present, there are more than a hundred four-year colleges and universities of design in the world, of which forty-five are in the United States of America and thirteen in Japan; these are followed by the United Kingdom, the Federal Republic of Germany and the Scandinavian countries. The industrial nations have been paying a lot of attention to this particular type of education. It is also in such countries that the design of various articles has become a decisive factor in terms of competition and the struggle it entails. The realization that the Eastern European countries together with the Soviet Union have been lagging behind their Western counterparts in this development has incited the governments of these countries to try to compensate for this deficiency by gaining on the competitors. The results of attention given by the most prominent political personalities can already be felt in the field of the education of designers, where its programmed mass participation and the considerable material support accorded to it point to a faster development in the near future.

Yugoslavia has not been particularly lucky in terms of such activities. In the long post-war period, it was possible to sell virtually everything; obviously, the economic system failed to produce attempts at an improved quality in design. It is true that in the subsequent period of workers' self-management the role of the state in guiding the economy became weaker, yet, so far, not a single prominent politician in Yugoslavia has raised the political and economic problem associated with our lag in the design of articles.
In the practice of design - that is, with regard to the results - we are behind the Western world, while in the education of designers we lag behind not only the Western countries but also the Eastern ones including the Soviet Union. The latter aspect is certainly a grave realization, especially because our lag appears bound to increase in the time to come, in comparison with both the East and the West. We have only just started thinking about the possible ways and means of solving the problem of designers and their education.

**YUGOSLAV EXPERIENCES IN PROGRAMMING THE NEEDS FOR DESIGNERS**

A few years ago, the Federal Chamber of Economy and the Center for Industrial Design in Zagreb carried out a study, whose intention was to clarify the circumstances characteristic of Yugoslav industrial design, and to determine the profile, or professional requirements, that such a specialist was expected to have. A similar study was undertaken by the Chamber of Economy of Slovenia, whereby it was established that the Slovene industrial designers were recruited mostly from among the architects, and that, also in the future, the education of our designers was to be entrusted to the architects of Ljubljana.

The following data can be given for the Socialist Republic of Slovenia:

In the last eight years, 65 architects and 30 graduates of secondary art schools have graduated from the School of Architecture in Ljubljana; there are, in other words, four architects and two graduates of secondary art schools a year per 100,000 Slovenes. In the United States of America, in the same period of time about 2,300 architects and a similar number of designers have completed their studies; in other words, a little more than one architect and one designer per 100,000 Americans. There are nearly three times as many alumni per 100,000 inhabitants in Yugoslavia (granting the difference in level and specialization) as there are in the world’s leading industrial country.

We will not be able to succeed with this American average as long as our industrial design lags so much behind that of other countries. If we only take wood products and trade into consideration, we can immediately state that we have not yet examined and tested the standards of modular systems of windows and doors, staircases, paneling, installations, etc., that the architect might find in a catalog, which is customarily done by many of our foreign
colleagues. Here most of these items are designed separately, and this certainly represents one of the most burning questions of our industrial designers.

Slovenia with its two million inhabitants would require at least twenty-five qualified designers per year. According to this key, the Yugoslav economy and the research institutions would need about 300 designers of all branches per year. This number, which refers only to designers with four-year university education, does not include architects nor designers who have graduated from secondary art schools.

THE TRAINING OF DESIGNERS IN THE REALM OF HIGHER EDUCATION

The basic principles contained in the curricula of colleges and universities for design show a considerable degree of uniformity. Most of these educational institutions offer four-year schooling without the possibility of associate degrees after two years of studies, and represent the continuation of a ten to twelve year education of a general character. Post-graduate studies are organized too, lasting for three to four semesters and representing studies at a different level. In the matter of specialization, it has generally been observed that smaller and industrially less developed countries offer fewer possibilities of specialization in their design schools.

The education of industrial designers must form an inseparable part of the students' everyday life. I therefore believe that the educational life of colleges and universities of design should take place in the experimental workroom, the library, behind the drawing table as well as at home. However, when visiting such institutions both in Europe and in America, I realized this was certainly not the case, and that the schools were, in general, displaying too much of a "school" character; they did not adequately provide the flavour of an attractive experimental laboratory that might, quite imperceptibly, initiate the young specialist into research work. In order that the required period of time extending from graduation to the beginning of a specialist's independent work might be reduced as much as possible, we ought to transfer the process of organic integration of separate theoretical subjects with practical experiments into the period of schooling itself, possibly
the very beginning thereof, i.e. at the outset of the education of all the designers. Since it is impossible to know everything about every subject, and since furthermore it is inadequate to know everything about a very specialized field, it is necessary above all to delimit the starting-points to be observed in the study of design. The student must acquire the habit of properly setting about the solution of each and every assignment and of ascertaining its essence. He must construct — either alone or with the aid of his teacher — the required methodology of work concerning both his identifying the topics for and undertaking research. He must become accustomed to proposing and developing objective analyses and creative syntheses. His guidance — optional, to be sure — should consist in his choosing the principle from the whole to the particular.

The atmosphere and the surroundings in which the young designer lives and works are undoubtedly of paramount importance for his creative development. The rich cultural heritage and well developed artistic activities of many an Italian city seem to stand for a stimulating atmosphere contributing to the creation of good Italian industrial design, even though Italy has only just started with a special education programme for industrial designers.

The actual design of a given article is shaped by a number of requirements, one of which is the design itself, which is why, in terms of plastic art, it should not be the sole motivation, but rather one out of several requirements that are at par with one another. Teachers ought to be selected in conformity with these requirements. Subjects pertaining to the plastic art, compositionally united, and organized in plastic art courses, should be taught by the plastic artists. As to the matters of design, the designing as such should be taught by the designers, while consultants and collaborators should be chosen from among the specialists for each individual task, and particularly those specialists who enthusiastically endorse the search for original solutions. If possible, they should be members of research institutions from such production enterprises that have introduced the latest techniques of production. In the design of metal tools, the student and his teacher/designer ought to enlist the cooperation of the mechanical engineer; a certain work related to wooden furnishings should include the participation of the industrial wood technologist, whereas a competent specialist working in the field of printing might help with a number of typographic tasks. We should
strive for the students to get used to teamwork early on in their education. This has been accepted and practised in many a large division of research and development in the organizations of production as well as in the designers' offices and their experimental laboratories.

The university curriculum ought to emphasize seminars, the teacher acting in his capacity as mentor, on the understanding that he does not take the seminar work to stand for the school of craftsmanship, but rather for a certain form of work, because a student's mentor is not supposed to be always the same person; the selection of appropriate mentors is to be carried out on the basis of the specialist requirements of each assignment given to the students. Both lectures and practical work performed in the studio, in the laboratory, or in the workroom ought to make up an organic and indivisible whole, where theoretical results are constantly supervised and attuned to the practical work, i.e. to the experiments. Neither of the two parts is to take precedence over the other, because that would lead to either academicism or practical bias.

The education of industrial designers cannot be conceived of without certain experimental possibilities. A significant percentage of original ideas originate in the experimental work, and it is also in the laboratories that the majority of model changes are projected. The drawing and the plant often represent only the graphic registration resulting from the laboratory treatment of a particular model. I am not implying that students should be taught manual skills or craftsmanlike knowledge; this is not necessary, although the designer-to-be has to familiarize himself with a variety of modern methods and procedures as well as with the possibilities of designing articles by utilizing different materials and different techniques.

The school ought to be ahead of the level of the industrial development actually achieved. Laboratory equipment in schools may well be miniature; it can also be universal, but it certainly has to be modern. Hardly anything is good enough for the school. Obsolete machines and industrial tools together with the existing craftsmanlike mentality of our auxiliary pedagogic
workers, are categorically incompatible with the education of designers — these practitioners of one of the youngest professions to have appeared in the modern period — and they also represent a serious obstacle to our industrial progress.

The pedagogic workers at four-year colleges and universities for the study of design ought not to content themselves with their pedagogic work: they should combine it with research work, participation in designers' competitions, and with the publication of the results of their scholarly activities. The results of such work ought to be evaluated by means of international standards. In this way, the indispensable link-up of the teacher and the economy might be achieved to the advantage of both parties. Such connection and the participation of regular and post-graduate students in suitable work performed for the benefit of industry would create favourable conditions for a gradual transition of the school as such to a self-financing educational institution