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DEVELOPMENT OF THE FURNITURE  
AND JOINERY INDUSTRIES AND  
CREATION OF A CENTRE

DP/YUG/73/006  
YUGOSLAVIA

Technical report: Design of upholstered furniture .

Prepared for the Government of Yugoslavia  
by the United Nations Industrial Development Organization,  
executing agency for the United Nations Development Programme

Based on the work of Ilmari Y. Tapiovaara, expert  
in the design of upholstered furniture

United Nations Industrial Development Organisation  
Vienna

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### Explanatory notes

References to dollars (\$) are to United States dollars.

The monetary unit in Yugoslavia is the dinar (Din). During the period covered by the report the value of the dinar in relation to the United States dollar was \$US 1 = Din 18.35.

A full stop (.) is used to indicate decimals.

A comma (,) is used to distinguish thousands and millions.

OOUR stands for Osnovna Organizacija Udruženstvenog Rada (Basic Associated Labour Organization).

RO stands for Radna Organizacija (Working Organization - association of OOURs).

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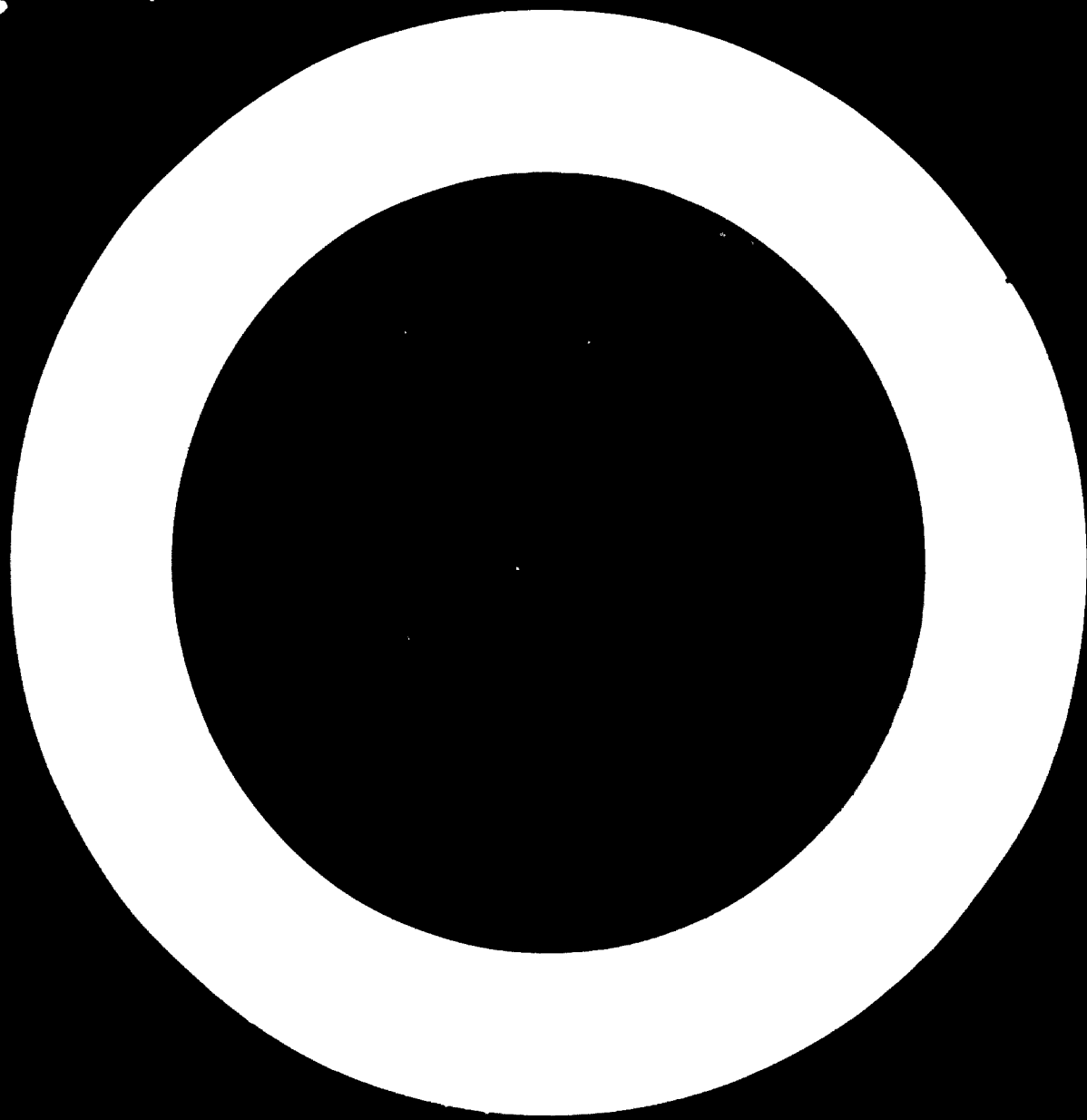
Mention of firm names and commercial products does not imply endorsement by the United Nations Industrial Development Organization (UNIDO).

ABSTRACT

This is the report of the second mission of the expert in the design of upholstered furniture, undertaken in connection with the large-scale project "Development of the furniture and joinery industries and creation of a centre" (DP/YUG/73/006). His first assignment was carried out in September/November 1976; the second, which continued the work of the first, from 3 April to 3 June 1977. The parent project is being executed by the United Nations Industrial Development Organization (UNIDO) on behalf of the United Nations Development Programme (UNDP). The assistance was requested by the Government of Yugoslavia; it is being co-ordinated by ŠIPAD, a co-operative integrated forest industry organization.

The expert advised and instructed a team of counterpart designers. With the counterparts he visited 11 furniture factories, discussing problems of design with staff at all levels. He organized, with the help of other project personnel, a Design Seminar, during which working drawings and prototypes were produced. He also visited and evaluated the ŠIPAD display at the 1977 Zagreb Furniture Fair.

At the end of his assignment he made a number of recommendations for improving the quality of the design of the furniture produced at the ŠIPAD factories, principally concerning the education of designers (he prepared a model curriculum), the need for comprehensive design programmes covering one or two years and the possibility of establishing a furniture design council to advise and support ŠIPAD.



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## INTRODUCTION

The large-scale project "Development of the furniture and joinery industries and creation of a centre" (DP/YUG/73/006) has been operational since 1 September 1974. The assistance, which was requested by the Government of Yugoslavia on behalf of Bosnia and Herzegovina, is being provided through ŠIPAD, a major co-operative integrated forest industry organization, by the United Nations Industrial Development Organization (UNIDO), executing agency for the United Nations Development Programme (UNDP). UNDP has contributed \$602,655 to the project, and the Government of Yugoslavia, Din 19,247,900.

An expert in the design of upholstered furniture has made two missions to Sarajevo in connection with the project. His first assignment was carried out from 13 September to 12 November 1976; it was reported on in document DP/ID/SER.A/76 of 7 December 1976. The present report covers the second assignment, from 3 April to 3 June 1977, which was a direct continuation of the mission undertaken in 1976.

The expert was the adviser to a team that was to design upholstered furniture. Rough sketches of the designs had been made by the expert during his mission in 1976.

The expert made 11 factory visits, each with its own counterpart. These field trips were an important part of the mission. Team-work started with the Design Seminar, which yielded working drawings and prototypes. The work of almost every designer reflected the problems he faces in his own factory. The ŠIPAD exhibition referred to in the job description (annex I) could not be assisted because Mr. Ražčić, the ŠIPAD exhibition specialist and main counterpart for exhibition work, was working on exhibitions elsewhere during most of the expert's assignment.

## I. FINDINGS

### Factory visits

All of the expert's factory visits, described in detail in annex II, were interesting whether the factory was well run or not. They gave the expert the opportunity to discuss factory and design problems with the counterparts, who are listed in annex III. At almost every factory visited, the expert assisted in the formation of a new design team, which was one of the main tasks of the mission. The counterpart system was found to be an effective way of teaching design.

New designs can be made if a designer or design team knows the limits and possibilities of the factory well enough. Most of the designer counterparts at the factories are familiar with technical matters and trade problems, but few of them know their own design speciality or what is happening with design in the rest of Europe. Designers at factories must work daily on design and they must have the opportunity to study and express their ideas. If a designer has the same opinion as everybody else on a team, he will be a copyist rather than a designer. The factories visited by the expert desperately need new designs; they need designers who have the courage to make their own suggestions after carefully listening to the points made by other members of the team. The designers should be given the opportunity to study and travel; otherwise their designs will be isolated from general trends.

The result of such isolation can be seen in almost all the factories in Bosnia and Herzegovina. The successful export of factory products depends on high-quality design. Design reflects regional identity, materials, technology, skill and factory conditions.

Well-designed furniture is not necessarily more expensive than poorly designed, and it is usually more profitable and easier to sell. Designs that compare well with good European designs are badly needed by the factories visited by the expert which, except for "Samac", are all producing furniture that is out of date.

Each factory should prepare a design programme for the next three years. To develop designs a good, well-lighted drafting room and a prototype workshop are needed. Such a workshop is usually considered expensive but if it is well organized it is one of the most profitable sections in a factory.



### The 1977 Zagreb Furniture Fair

The expert visited the Zagreb Furniture Fair, which was held from 19 to 21 April, where ŠIPAD had a display section of 2,020 m<sup>2</sup>, which was similar to its display six months earlier.

The location and area of the whole exhibition were functional and in general the exhibition was successful. However, the ŠIPAD display was dull and lacked colour. If ŠIPAD and the factories exhibiting could agree in advance to use certain main colours, they would then be free to choose colours for the details, and the dominance of certain colours would not cause insuperable difficulties.

The expert saw the furniture of the ŠIPAD department at the autumn 1976 exhibition. There were no great changes made in the 1977 display, but the following is worth mentioning: last autumn, only one piece of upholstered furniture was displayed, a domino or components sofa system. This year, many domino pieces were shown at the five factory exhibition stands. The most advanced upholstery techniques can be used when making this kind of furniture.

It would be advantageous to both consumer and producer if the domino system were more common. Such furniture can be bought and sold in parts, according to the buyer's purse. Consumers would be able to combine different pieces to reflect changing circumstances in the size of homes and family income, while retailers would have a better, more flexible sales potential.

At the exhibition, the expert visited each stand with about 20 designers, discussing the advantages and disadvantages of the models, faults in measurement and the quality of the materials, wood, finishing and upholstering. The discussions were very lively and many questions were asked. This stand assessment took about 1½ hours, and subsequently became a part of the Design Seminar, which was held on 9-12 May 1977. Any exhibition, even special furniture fairs such as those held at Copenhagen, Cologne, Malmö and Chicago, is not only an occasion for training. It also has the purpose of presenting new technical and design developments.

Descriptive literature on the factory, including photographs, drawings and graphics, should be available in the stand in order to create a good image.

The stand of the Republic of Slovenia merited attention. It consisted largely of furniture shown in room settings. ŠIPAD should develop its exhibitions along similar lines.

### The Furniture Design Seminar

The most important part of the mission was the Design Seminar for management and marketing personnel, technicians, designers, architects and other personnel in ŠIPAD whose work is related to design. The Seminar took as its starting point the view that design should be understood by staff at all levels of the factory because many good innovations and creations are killed by marketing, management and technical personnel. Lack of trained taste or experience does not always prevent criticism of a model. It is easy to kill a new model, but extremely difficult to create another good one. The Seminar concentrated on the design of upholstered furniture. There were three main concerns:

- (a) Design as a total concept in a furniture factory (lectures<sup>1/</sup> and discussions);
- (b) The Design Seminar workshop;
- (c) A panel discussion of designs made during the Seminar and of prototypes made immediately afterwards.

Details are given in annex IV. The participants are listed in annex V.

The designs made during the Seminar (see annex VI) are the property of each designer's OOUR. It was agreed that drawings and prototypes would be sent to the OOUR after copying and photographing.

### Exportable furniture models versus domestic models

The furniture industry in Bosnia and Herzegovina needs to sell more products in foreign markets. All of the factories could export, but only a few could do so profitably. There appear to be three main difficulties: the models, quality and price.

#### The models

A model must be designed and built with a factory's conditions and technical possibilities in mind. It must also suit the buyer's market. A good model originally designed for a specific region has often found its way into foreign markets. In fact, good exportable furniture models are all of national origin. Bosnia and Herzegovina is a timber-producing region, and this should inspire the creation of new furniture models for the home and for foreign markets.

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<sup>1/</sup> The expert's lecture, "Design under zero conditions", is given in annex VII.

Quality

A good model means good quality. A good model with bad quality is a waste of time, material and money. Quality control does not disturb factory production. Good quality and good factory control guarantee a successful product.

Price

Price is affected by many factors, among them design. Well-designed furniture with acceptable quality should be economical to produce and not necessarily very expensive.

It is desirable for a new model to have a national identity. The home market is needed for the initial production of the model, and when exporting begins, the home market is needed to support the business abroad.

The present ŠIPAD policy is to base selling on the export market on price, and not on quality or design. This policy lowers profitability in the ŠIPAD furniture factories.

Aims of a possible furniture design council in  
Bosnia and Herzegovina

It would be advantageous to have a regional design plan for Bosnia and Herzegovina and ŠIPAD that would cover both the domestic and foreign markets and use all the natural wood resources available. A furniture design council, with power and independence, is badly needed. Its tasks would be:

- (a) To advise ŠIPAD on developing its five-year design programme;
- (b) To gather good, creative, free-lance designers to be under the direction of the council or to be located within different factories, and to make all necessary agreements with them;
- (c) To organize an international furniture design competition in the spring of 1979;
- (d) To work out a co-ordinated programme with the Design Centre;
- (e) To co-ordinate furniture exhibition activities;
- (f) To organize annual or biennial furniture design seminars;
- (g) To maintain liaison with design education elsewhere.

### Education in furniture design

#### The need for formal training

A strong wood-processing industry like ŠIPAD has many, perhaps hundreds of, engineers and almost as many economists, administrators etc. But only a few staff have been educated in architecture and design. Of the 23 designers, architects, craftsmen and builders who participated in the Design Seminar, only five have university degrees as designer-architects. This lack of education is reflected in the low aesthetic standard of the ŠIPAD furniture models.

Many people in ŠIPAD know that the organization has a serious design problem, which could be mitigated through seminars, study tours, evening schools, external designers, competitions etc. Long-term assistance is mainly educational. ŠIPAD needs designers who have been educated at a university and specially trained for the furniture industry. The study period should be from four to five years. Practical training in the use of hand and machine tools and in workshop and factory circumstances, sometimes with a theoretical part and drawing-board work, is necessary.

The Academy of Fine Arts would be a good guide in questions of education. Decisions to establish design education have been made by people from the Academy and ŠIPAD who have interests on both sides. The expert elaborated a proposed architecture-design curriculum, which is included as annex VIII.

In the next 10 years about 10 to 12 designers will be needed annually for the furniture sector in Bosnia and Herzegovina. The courses given at the Faculty of Architecture in Sarajevo are not suited for the training of furniture designers.

#### Furniture and design magazines

Discussions between the factory designers and the expert indicated a great need to be constantly in touch with fellow professionals and with developments in design all over the world. Exhibitions and fairs are good in this respect but are not enough since such knowledge does not always reach the factory personnel.

Literature and design periodicals are a common way of keeping the staff of a factory informed of progress in technology and design elsewhere. Magazines and other practical literature form a good base for the intellectual stimulation of a factory and are the most economic means of educating the

staff (for instance RO "Majevisa" could order several magazines and circulate them from one factory to another). Annex IX suggests a number of foreign magazines that might be ordered.

#### Design policy

In the next few years ŠIPAD must obtain good designs from different sources. This will be necessary at least until the Academy's training programme has an effect, in about five years. Suggestions are given below on what can be done in the meantime to ensure a sufficient number of designs.

#### Factory staff designs

Traditionally, factory designs are made by a team of technicians, engineers, marketing men, builders etc. who are technically very strong but helpless in aesthetics. Such a team is usually conservative as well and lacks new ideas. It always creates difficulties in the production line. At least one outside influence is needed. For instance a Design Centre designer might join the group and introduce aesthetic knowledge and a more cosmopolitan view to the factory, since the technical and commercial staff cannot know or plan for the tastes and needs of people living in cities in Western Europe.

Flats in towns are usually very small and the situation here is almost the same as it is in Western Europe. Yet upholstery factories produce thousands of large sofa sets and wall units that have to be used as a whole. Such inappropriate proportioning is a main problem in the furniture industry in Yugoslavia. Marketing men say that these are the products people want; they may be right since people buy, but on the other hand there are no other products to choose from.

#### Design Centre designs

The Design Centre has been established as a focus for design in the wood-processing industry and to offer all kinds of design assistance. But industry does not seek help from the Design Centre. Why? Perhaps more flexibility and understanding is needed on both sides. The staff of the Design Centre should become more aware of the capacity of the machines, and the factory staff should have more patience since a good model comes slowly. Producing prototypes is one of the cheapest ways of avoiding mistakes.

The expert could not see any reason for not using the Design Centre. It has capable and skilled staff and it is not fully occupied. Both sides should be critical but also constructive in their professional activities.

Designs of foreign and domestic free-lance designers

The quickest, most effective and most profitable way is to settle licensing or royalty agreements with free-lance designers at home or abroad. A model is selected, the construction is developed, technical knowledge is provided and new products are produced with minimum risk and maximum information. This approach encourages domestic designers.

International competitions

The expert stated in his first report that one way of collecting good ideas and promising designs is to hold an international design competition. The proposed methodology for such a competition (to be organized by SIPAD) is given in annex I, "Tentative procedures for a national or international furniture competition", in the technical report by another UNIDO expert assigned to the same project, A. Vodder.<sup>2/</sup> The recommendations are still valid.

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<sup>2/</sup> "Assistance in furniture design", DP/ID/SER.A/8 of 17 October 1975.

## II. SUMMARY OF FINDINGS

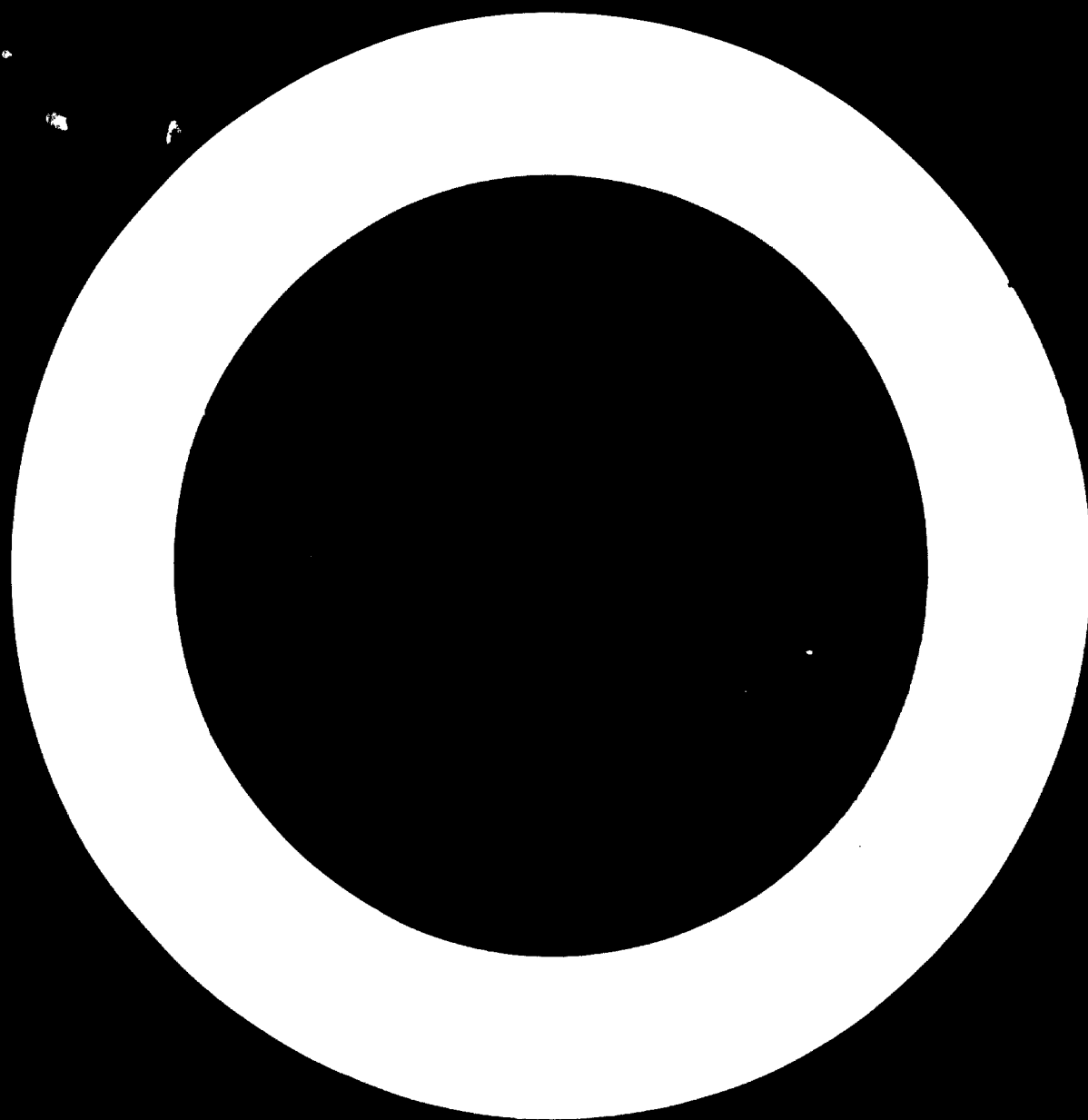
1. Education of designers in Bosnia and Herzegovina is almost nil.
2. The existing designers need more opportunities for travel.
3. Factories that have the technical capacity to export do not have exportable models.
4. Only a few factories have prototype workshops or design studios. Most have neither. A well-organized prototype workshop is one of the most profitable parts of a factory.
5. Small flats in Europe and Yugoslavia should have suitable pieces of furniture, e.g. small sofa and sitting-unit systems. The sofa and easy-chair systems available in Bosnia and Herzegovina are big and overdimensioned. The domino sofa-unit system, presented during the expert's first mission, is recommended to replace the old-fashioned overdimensioned sofa system.
6. Domestic and international exhibitions by ŠIPAD are necessary; they would both serve a commercial purpose and encourage progressiveness in design.
7. The Design Seminar showed that design problems are related to all personnel of the factory. The Seminar had a good practical result: many new sofa systems, easy chairs and chairs were designed and produced. It also gave design management the opportunity to discuss changes and to solve some general design problems. The designers had the same opportunity in the practical working design studio.
8. It is of great urgency to develop a three-year design programme in Bosnia and Herzegovina for reasons of export and because most factories are presently without profitable, exportable models. Within the ŠIPAD group some factories and some lines of production have been modernized. But they need new designs, and it is the right moment for them to begin producing new models.

A design programme would need strong management in order to negotiate new agreements. For dealing with serious and delicate design problems within ŠIPAD a furniture design council, if it is established with care, could be of great help. One of the first tasks of such a council would be to find good design contacts and negotiate licensing or royalty agreements. Programme planning can be used to solve design problems for only a few years at a time.

### III. RECOMMENDATIONS

1. When the present shortage of qualified furniture designers has been overcome, some five years from now, all factories will need to have their own designers fully occupied. They will also need their own design studios and prototype workshops.
2. The "Majevisa" group has its own designer in addition to its factory draftsmen. It is suggested that all other groups within ŠIPAD should follow this example as soon as possible.
3. University education for designers is urgently needed. The Academy of Fine Arts in Bosnia and Herzegovina would be a good starting point.
4. A design seminar should be held every one or two years. It is an effective way of giving extensive design education and technical information to ŠIPAD design personnel and management.
5. ŠIPAD needs one- or two-year design programmes covering all products intended for the domestic and foreign market so as to make full use of its professional design staff.
6. Furniture design programmes should cover:
  - Design activity within factories
  - Design agreements on a royalty basis with free-lance designers (foreign and national)
  - Collaboration with the Design Centre
7. An international furniture design competition should be held as soon as possible (as suggested in the expert's previous report).
8. A strong furniture design council should be urgently established.
9. Literature on furniture and professional magazines should be widely used as a source of information on design developments in other countries.
10. Factories should make more use of the qualified designers of the Design Centre.





Annex I

JOB DESCRIPTION

PROJECT IN THE SOCIALIST FEDERAL REPUBLIC OF YUGOSLAVIA

DP/YUG/73/006/11-03/L (31.7.A)

POST TITLE      Expert in the design of upholstered furniture

DURATION        Two months

DATE REQUIRED    March - April 1977

DUTY STATION    Sarajevo, with extensive travel in the Republic of Bosnia and Herzegovina

PURPOSE OF PROJECT      To assist in the development of the furniture and joinery industry of the Republic of Bosnia and Herzegovina, including the creation of a centre

DUTIES

The expert will be attached to the ŠIPAD Design Centre. He will be responsible to the National Project Director and will design new upholstered furniture in collaboration with ŠIPAD Design Centre's Yugoslav staff and the designers attached to the various factories. He will work in the factories receiving assistance from the design teams.

Specifically, the expert will be expected to:

1. Design furniture for both home and institutional use, collaborating with the staff of the ŠIPAD Design Centre and of the "Standard" factory in Sarajevo, "Majevisa" factory in Brčko, "Budućnost" factory in Bosanski Samac to complete the upholstered line designed in the first mission.
2. Assist the team of the Design Centre in the design and development of themes for ŠIPAD furniture exhibitions.
3. Train counterparts in the above fields.
4. Advise ŠIPAD management and factory management on the above duties on an ad hoc basis.

The expert will also be expected to prepare a final report, setting out the findings of his mission and his recommendations to the Government for actions that might be taken.

QUALIFICATIONS      Architect or furniture designer with considerable experience in the design of upholstered furniture. Familiarity with the latest design and technical development necessary. Experience in design for export desirable. English; knowledge of French desirable.

BACKGROUND  
INFORMATION

The furniture and joinery industries of Bosnia and Herzegovina contribute about 8 per cent to the Republic's gross national product, and produce over 4 per cent of its exports. An ambitious five-year development plan is being implemented to double the production of furniture in order to attain Din 2,000 million and increase the work force from 6,000 to 9,000 persons. This plan calls for an investment of Din 800 million. Joinery production will increase from Din 200 million to Din 650 million and the work force will treble to reach 4,500 persons. Investment of Din 950 million is foreseen for joinery plants. ŠIPAD, a co-operative integrated forest industry organization consisting of 126 factories and employing 55,000 persons, accounts for 65 per cent of saw-milling and 85 per cent of the final products of the wood industries of Bosnia and Herzegovina. The Government of Bosnia and Herzegovina and the ŠIPAD organization have decided to create a "Centre for the Development of the Furniture and Joinery Industry" to serve the 38 existing furniture and joinery plants within the organization; they have requested UNDP/UNIDO assistance in the development of this industrial sector and the establishment of the Centre. It is to have the following departments: technology, quality control and documentation, design, marketing and engineering, and organization services.

The ŠIPAD Design Centre is to be incorporated in the above Centre once it has been established. It has a staff of 17 and provides central design services in the design of all types of furniture, joinery and prefabricated wooden houses for the factories in the ŠIPAD organization.

Annex II

REPORT ON FACTORY VISITS

OOUR "Standard", Sarajevo

The team visited "Standard" every Friday morning on 8, 15, 22 and 29 April and 6 and 20 May 1977. These visits were a follow-up of those made during the second week of November 1976. They were made in the company of architect Nafa Galičić and the counterpart architect Vesna Bujić from the Design Centre. Janja Stanišić was the team's interpreter-secretary. The factory counterpart was engineer Mrs. Kadira.

By the time of the first visit all the prototypes of the products designed in November 1976 were ready in the factory. Some of the corrections suggested in November 1976 had also been made.

In the full-size working drawings (made by factory draftsmen) the prototypes were partly overdimensioned. But this is typical of all prototype-making techniques and processes: as the final proportions of the new furniture design cannot be judged before prototypes are made, proportions become final only after many prototypes.

Many small corrections were made on the prototypes during subsequent visits. The elementary sofa plan, originally designed for "Radnik", Bosanska Gradiška, was finalized by the team. It is suggested that this design enter production at "Standard" because "Radnik" has not made use of it during the past six months.

Some small corrections were needed on Mr. Vodder's sofa set. As he will not be coming to Sarajevo in the near future, the alterations were made, and he was informed of them.

OOUR "Bosna", Brčko, 12 April

The visit to "Bosna" and "Budućnost" was made in the company of Mrs. Stanišić, who acted as interpreter. The counterpart in "Bosna" was Karlo Higl.

"Bosna" has made new prototypes since November 1976, but has used framework sketches developed earlier. The prototype set was covered with a good thin black leather. The leather-cutting lines were not yet good enough, however; the draftsmen need further training in this field. In the new design some of the arm-pillows of the easy chair will be discarded. Those of the sofa will stay.

All corners and edges of the mattresses and pillows will be round (radius of 4 cm) and will be handled the same for both leather- and textile-upholstering material.

OOUR "27. Novembar", Brčko, 13 April

This factory, like "Bosna", belongs to the RO "Majeвица".

Branko Kapalet of "Budućnost", the co-ordinating counterpart of Milan Area, joined the team in Mr. Area's office in Brčko. At Mr. Area's suggestion the team briefly visited the "27. Novembar" furniture factory.

Upholstered furniture models are old, quality needs to be improved, and the factory needs to be modernized.

OOUR "Samac", Bosanski Samac, 13 April

At the counterpart's suggestion the team visited the willow (rattan) furniture factory "Samac". Production is about 1,500 objects a day (chairs, tables, baskets, chests etc.). These are made partly in the factory, but the main parts are subcontracted to be worked on at home.

The quality of the raw material is controlled very well; the splicing technique is good; and the models and design meet international standards (90% of the production is exported).

The consultant feels that (a) more upholstering work (pillows and mattresses) may be possible; and (b) the factory's designers need to be encouraged to continue developing new designs.

OOUR "Budućnost", Bosanski Samac, 13 April

The same team was informed in "Budućnost" that the factory plans to continue developing the design line that was started in the fall of 1976. The counterpart, Mr. Kapalet, has designed a large amount of furniture belonging to this type of furniture. "Budućnost" was to have completed the work on this series by the start of the Design Seminar.

OOUR "Srebrenik", 26 April

OOUR "Srebrenik" is a nearly completed furniture factory which will use mainly particle board (60% of its capacity). It has 130 employees. Production capacity can easily be doubled. It has no kiln driers, and no upholstering

technique is needed other than the so-called "hard mattress-board upholstery". The Design Centre has made a living-room cabinet component set. It is suggested that this set be redesigned to have only four to five components instead of the 19 it now has. A better presentation (perspectives, combinations etc.) is needed, together with a good finishing technology. The factory should develop a painting technique that gives a colourful specialization motive to facilitate marketing. Fresh ideas are needed. It is suggested that a team be put together jointly with the Design Centre.

OOUR "Jadrina", Gračanica, 26 April

OOUR "Jadrina" is a relatively new factory with a good level of machinery and skills. The general organization and layout needs improvement. The four kiln-drying chambers also need improvement. Some new kiln-drying chambers are foreseen. The nature of the factory is such that an increase in kiln-drying capacity will result in more use of solid wood. This will allow a larger range of designs to be produced and create a better individual character and overall image for the factory's products. More attention should be paid to the finishing department, especially to drying and colour finishing. Additionally, more interest could be taken in constantly developing new models in order to ensure the factory's profitability.

OOUR "Stolar", Bijeljina, 27 April

OOUR "Stolar" is a brand-new, large, well-constructed and modern factory due to start production in one month. It now needs so-called "security models". Its former specialization - bedrooms - is suggested to fill this need. Another possibility would be living-room storage components, a large field in which competition is not too keen. The finishing technique of the new factory should be developed to include more colours, not just the natural wood colour.

The "Stolar" design team made some changes on one bedroom set, which will be the first serial production object of the new factory. It is suggested that the old factory be used as a design studio and prototype workshop. An attractive, colourful, reasonably priced bedroom is badly needed.

OOUR "Namještaj", Gradačac

OOUR "Namještaj" manufactures kitchen furniture. It has done well to specialize, and quality is acceptable in relation to the existing level on the market in Bosnia and Herzegovina.

General suggestions for improvements in the above factories

1. All these factories need to have their own design draftsmen. The co-ordinator is to be Branko Kapelet.
2. Each factory should develop its own identity and special design programme. It should specialize, as OOUR "Namještaj" has done. If all the factories have basically the same programme, they will be competing with each other.
3. More colour is needed everywhere in the ŠIPAD stands.

RO "Konjuh", Živinice, 16 May 1977

The visit was made in the company of Mrs. Stanišić. The counterpart and architect at the RO "Konjuh" was engineer-architect Ruža Gujić.

The table factory of "Konjuh"

This modern factory, completed in 1976, was designed to turn out 1 million tables a year. It is in good working order and the machinery is heavy enough for effective production. The solid-wood material is good red beech, delivered from the factory's own logging operations and sawmills. Most of the horizontal surface material is particle board laminated on both faces. The edges are weakly mounted, sanded and finished. The tables are acceptable knock-down types, but constructions and thickness of materials are in general minimum. Tables must be stable, but most of the tables shown were not stable enough to meet Western European standards. The design programme is narrow, dry and uninteresting.

The following steps should be taken:

- (a) The stability of the tables should be improved;
- (b) A quality-control programme should be urgently developed;
- (c) Design programmes should be elaborated, making use of:
  - (i) The factory's own architect and design studio;
  - (ii) The ŠIPAD Design Centre (for instance architect Vesna Bujić's table and chair could be produced on a royalty basis);
  - (iii) Designs made by the best free-lance designers in Bosnia and Herzegovina or by an internationally known design studio on a royalty basis, national or international;
  - (iv) Designs of tables obtained through a design competition in Bosnia and Herzegovina.

The chair factory of "Konjuh"

"Konjuh" has been establishing a totally new chair factory. The old factory had good lathes and high-frequency plywood press sections, fair upholstering and finishing sections and a poor transportation system.

The following is suggested for the production process:

- (a) Two or three main process lines should be introduced, depending on the technical nature of the chair models (one line for each main type);
- (b) High-quality chair designs are needed, and could be obtained by the means indicated in (c) above. The chairs should be either stackable, collapsable, knock-down (KD) or some other type of chair that is easily packed. By these methods it is possible to produce a million chairs a year profitably.

During the visit to the chair factory the team made some corrections and suggestions on the prototype chair designed in the Design Seminar by Mrs. Gujić (the expert's counterpart in "Konjuh"). The new, corrected chair was shown at the Design Centre on 18 May 1977 along with all the other prototypes developed during the Seminar.

OUR "Neretva", Konjic, 13 May

This visit was made in the company of Mladen Pjaca, National Project Director, with counterpart engineer Mulić and Janja Stanišić, who was the team's interpreter.

"Neretva" is an old furniture factory with very old buildings. A new factory building to house the machines is ready and will be moved into before the end of the year. New design programmes are under way, which the team had the opportunity to see.

The following steps are suggested:

- (a) Solid wood (beech) with thicker dimensions than normal is recommended (Mulić designs plus Vodder designs have a robust character);
- (b) Carvings should be limited to one part of the furniture. They should be more elegant and stylized, in contrast to the too rich ornaments used at present;
- (c) The prototype of a new easy chair, designed by Mr. Mulić, is ready for correction. This should be done and the chair put into production.



Annex III

COUNTERPART PERSONNEL

Of the project

Mladen Pjaca, Director  
Janja Stanišić, Secretary and interpreter  
Olga Kisić, interpreter

During the Design Seminar and at the factories

Arslan Raščić, representative of the Design Centre at the Design Seminar  
and at the Zagreb Furniture Fair  
Vesna Bujić, representative of the Design Centre at "Standard"  
Kadira Jirota, OOUR "Standard"  
Karlo Higl, OOUR "Bosna"  
Branko Kapalet, OOUR "Bosna"  
OOUR "Srebrenik"  
OOUR "Jadrina"  
OOUR "Stolar"  
OOUR "27. Novembar"  
S. Mulić, OOUR "Neretva"  
Ruša Gujić, OOUR "Konjuh"  
Iset Isetbegović, OOUR "Šamac"  
Sead Ahmedić, OOUR "Standard"  
Joža Israel, Administrative Secretary of the Design Seminar

Annex IV

EVENTS AND PROGRAMME OF THE  
FURNITURE DESIGN SEMINAR

The Seminar was held at the ŠIPAD Design Centre from 9 to 12 May. A final, review session was held a week later, on 18 May. The work was divided into three parts, as follows:

<u>Design as a total concept in a furniture factory</u> Critical design questions; lectures and discussions with diapositives, films, overlays etc.; design reports by five factories	<u>Group</u> A <u>1/</u> + B <u>2/</u> 1½ days 9-10 May
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Fifty-seven people attended this part of the Seminar. Most of the speakers, though not designers, were directly concerned with design. The speakers were, aside from the expert: M. Pjaca, Deputy General Manager, ŠIPAD; Mr. Karamehmedović, Dean of the Academy of Fine Arts, Sarajevo; Mr. Bernik, Professor at the Faculty of Architecture, Zagreb; Mr. Praskac, Director of the ŠIPAD Design Centre; and Mr. Cody, a furniture technologist and UNIDO expert in industrial engineering.

<u>The Design Seminar workshop</u> Individual discussions of design problems at the drawing table	<u>Group</u> B 2½ days 10-12 May
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There were 24 participants, each of whom had the same tools: a drawing table; standard-size paper; access to the necessary information; proofs. They were to design one of the following:

- (a) A wooden chair with plywood seat and upholstered back (five participants chose this problem);
- (b) A sofa system with domino components (10 participants chose this problem).

Each participant was asked to make his own design although open discussion and team-work were allowed. Management and marketing etc. participants were invited to view the workshop in progress.

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1/ Group A comprised management, technicians and marketing specialists.

2/ Group B comprised designers, draftsmen and architects.

Panel discussion

"Do we need domestic and/or continental furniture design, or any design?"  
Report and discussion of results of the Seminar  
with audio-visual material, drawings, samples

Group

A + B

18 May

The discussion was led by Ing. Joža Izrael, Secretary of the Seminar. The panel members were proposed by "Budučnost", "Standard", "Varda", the ŠIPAD Design Centre, the Academy of Fine Arts and the UNIDO consultants. Full-sized prototypes were exhibited. Each model was discussed, with each designer describing his own work.

Annex V

PARTICIPANTS IN THE DESIGN SEMINAR

Name	Employer	OOOR	Position	Group
Valjević Safet	"Maglič" Foča	"Varda" Višegrad	Designer	B 1/
Stoisavljević Mirko	"Una" Bosanska Krupa	"Bina" Bihać	"	B
Rodić Dragan	"	"Una" Bosanska Krupa	Builder	B
Gujić Ruža	"Konjuh" Živinice	Joinery for Živinice	Designer	B
Moker Zvonko	"	Chairs for Živinice	"	B
Bukvarević Nurija	"Majevica" Brčko	"Namještaj" Gradačac	Director	A 2/
Alibašić Fahro	"	"	Technical director	A
Kovačević Faruk	"	"	Chief of Devel. Dept.	A
Muratović Esad	"	"	Chief of Prep. Dept.	A
Kukuruzović Edhem	"	"	Chief of Sales Dept.	A
Emin Fikret	"	"Budućnost" Šamac	Chief of Prep. Dept.	A
Begić Bahrija	"	"	Chief of Prod. Dept.	A
Čaušević Sead	"	"Bosna" Brčko	Technologist	A
Hasanbešić Fadil	"	"	Director of OOOR	A
Higl Karlo	"	Workers' Organisation Brčko	Designer	B
Kapeleti Branko	"	"	"	B
Isetbegović Iset	"	"Namještaj" Gradačac	Technical director	A

1/ Group B comprised designers, draftsmen and architects.

2/ Group A comprised management, technicians and marketing specialists.

Name	Employer	OOUR	Position	Group
Vranješ Boro	"Sana" Sanski Most	"Sana" Sanski Most	Sales representative	A
Jović Miloš	"	"	Construction consultant	B
Simeurčević Ilija	"	"	Designer	B
Crnomarković Milan	"	"	"	B
Ibrišinović Ibrahim	"Majeвица" Brčko	Furniture Factory Srebrenik	Director	A
Petrušić Djordje	"	"	Technician	A
Catal Džemal	"	"Jadrina" Gračanica	Builder	A
Lugonja Stojana	"	"Stolar" Bijeljina	Designer	B
Furdić Branko	"Kosara" Bosanska Gradiška	"Standard" Prnjavor	Chief of Techn. Prep. Dept.	A
Knešević Nikola	"	"		A
Madronja Stipe	"	"Radnik" Bosanska Gradiška		B
Drvenica Mirko	"	"	Designer	B
Miljak Ranko	"Veleš" Mostar	"	President, Workers' Organi- sation	A
Ormanović Salih	"	"	Director	A
Mulić Semso	"	"Neretva" Konjic	Designer	B
Ritiš Franjo	"Maglič" Foča	"Varda" Višegrad	"	A
Ahmedić Sead	"Jahorina" Sarajevo	"Standard" Sarajevo	"	A
Ibrulj Ramis	"	"	Builder	A
Krpić Sead	IRC Sarajevo	"Sunaprojekt" Sarajevo	Factory designer	A

Name	Employer	OOUR	Position	Group
Murtović Enes	IRC Sarajevo	"Šumaprojekt" Sarajevo	Factory designer	B
Matić Borislav	"	"	"	B
Čadžo Slavica	"Incel" Banja Luka	"Vrbas" Banja Luka	Designer	B
Papo Moric	IRC Sarajevo	"	Chairman, Workers' Organization	A
Klico Mustafa	"	"Šumaprojekt" Sarajevo	Factory designer	A
Hrnjić Faik	"	"	"	A
Praskač Zdenko	"	E-Centre	Director of OOUR	B
Bujić Vesna	"	"	Designer	B
Rašić Arslan	"	"	"	B
Galičić Nafa	"	"	"	B
Ljubojević Danilo	"	"	"	B
Čimović Danilo	ŠIPAD-KOMERC	"Namještaj"	Director	A
Radić Rade	"Šedinac" Jajce	"Šedinac" Jajce	Designer	B
Serdarević Miralem	"Jahorina" Sarajevo	"Standard" Sarajevo	Technical director	A
<u>Others:</u>				
Pjaca Mladen	ŠIPAD Comero Sarajevo		National Project Director, UNDP/ UNIDO project	A
Israel Joža	"	"	Adviser, ŠIPAD	A
Karamehmedović Muhamed	Academy of Fine Arts, Sarajevo		Dean	A
Bernik Stane	Faculty of Architecture at Zagreb		Professor	A
Cody Desmond P.			UNIDO expert in industrial engineering	A
Tapiovara Ilmari			UNIDO expert in design of upholstered furniture	B
Stanisić Janja			Secretary, UNDP/ UNIDO project	A

Annex VI

PHOTOGRAPHS OF PROTOTYPES OF FURNITURE DESIGNED  
AT THE DESIGN SEMINAR

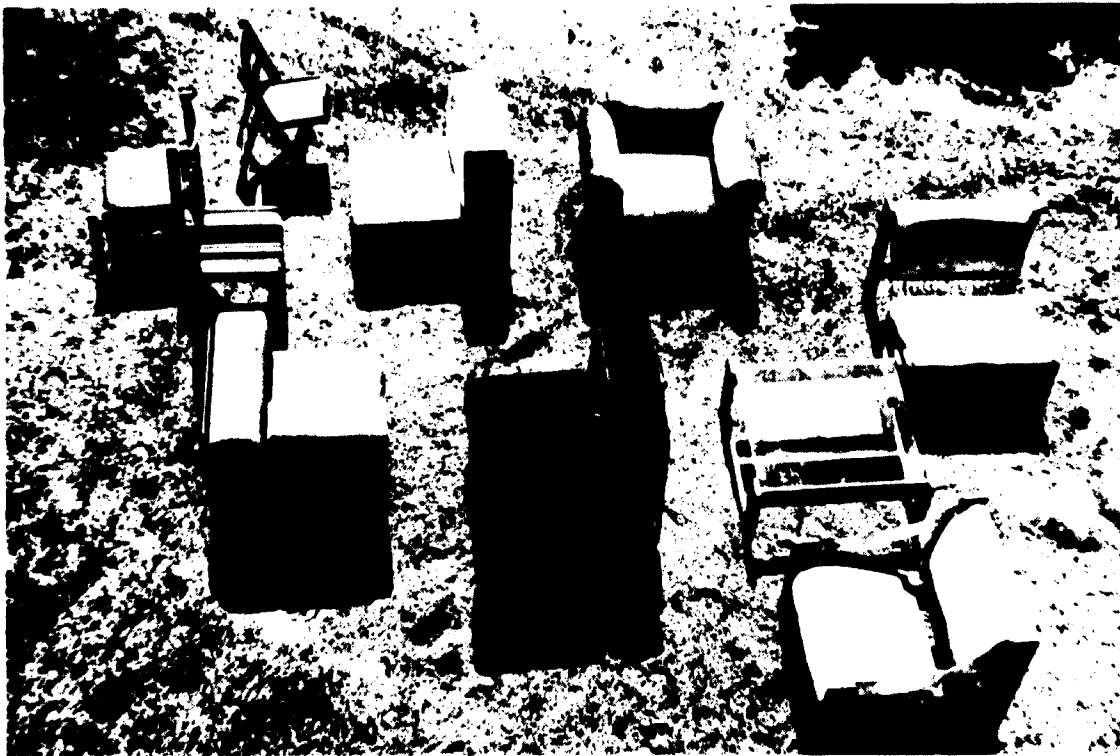


Figure I. Models designed in the Seminar and made  
in various factories

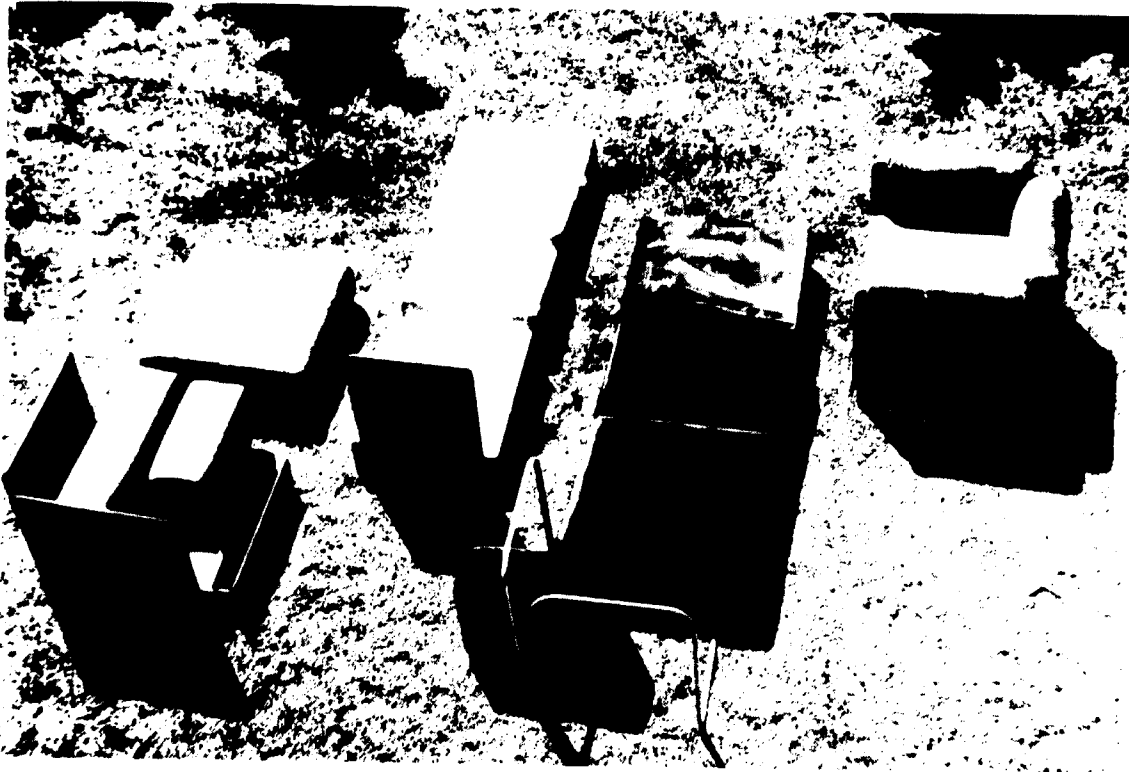


Figure II. Domino systems; components;  
one assignment of the Seminar



Figure III. Wooden chairs with upholstered alternative -  
other assignment of the Seminar



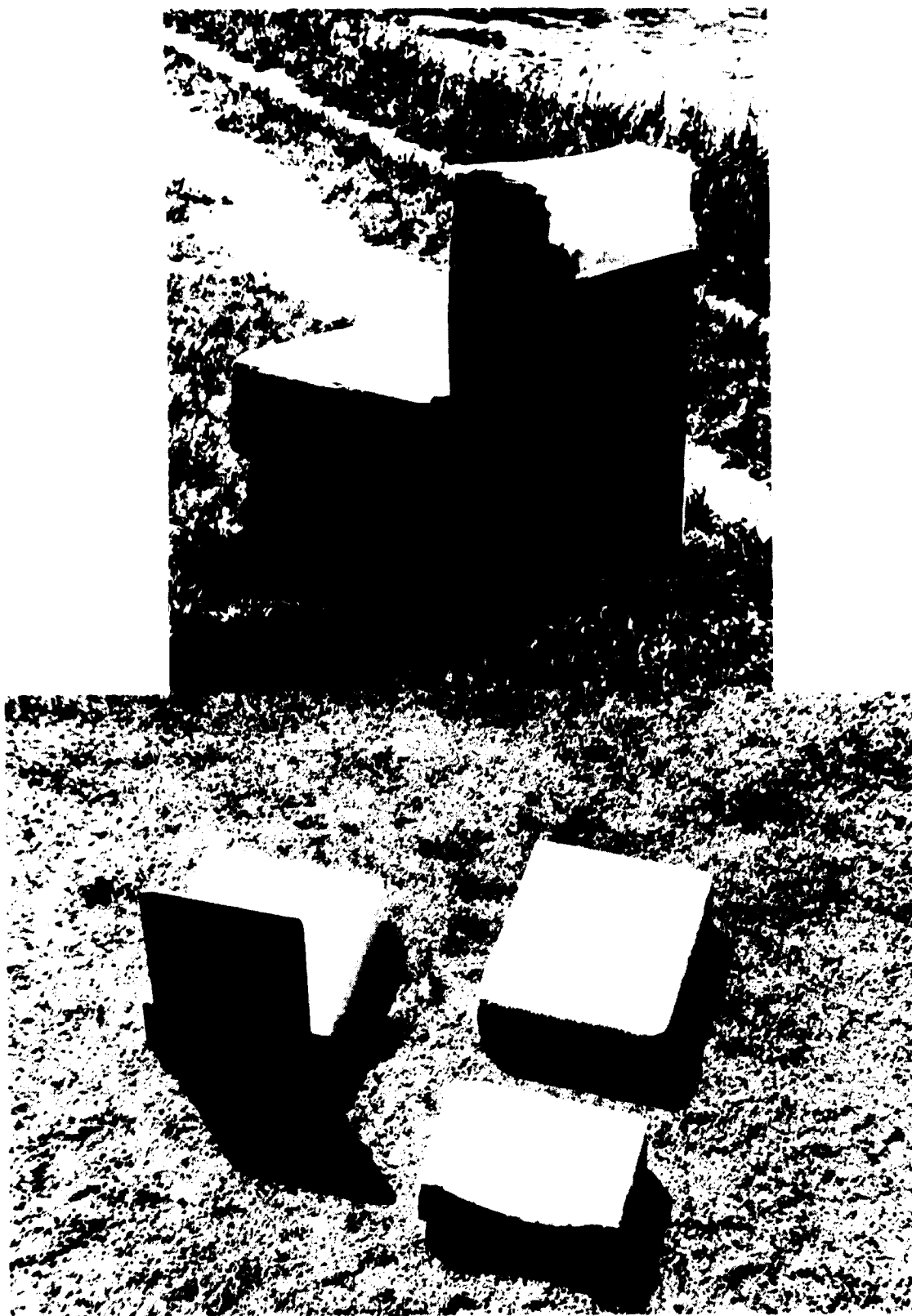


Figure IV. Design: Drvenica, Mirko; prototype:  
OOUR "Radnik", B. Gradiška

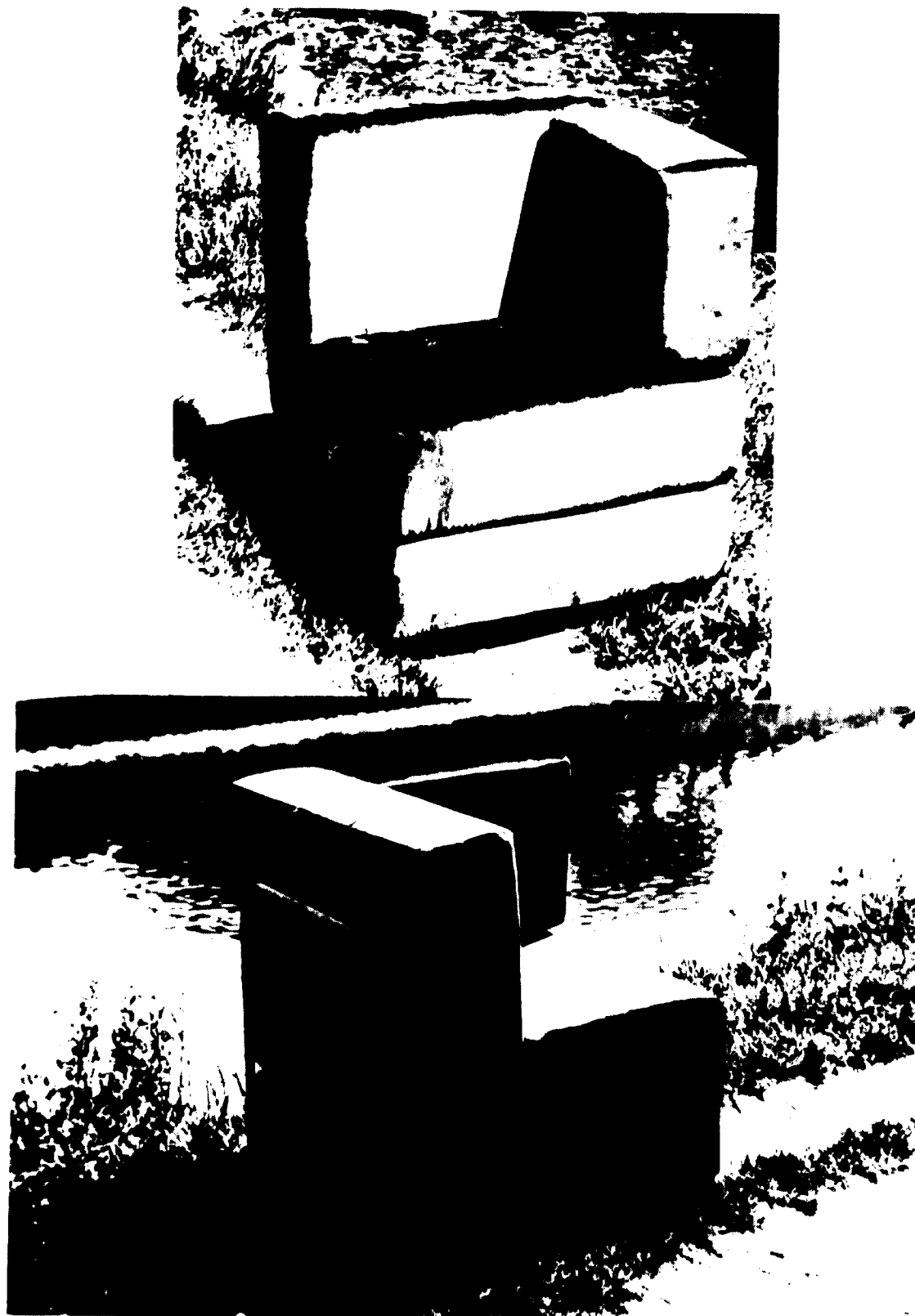


Figure V. Design: Ahmedić, Sead; prototype:  
OOUR "Standard", Sarajevo

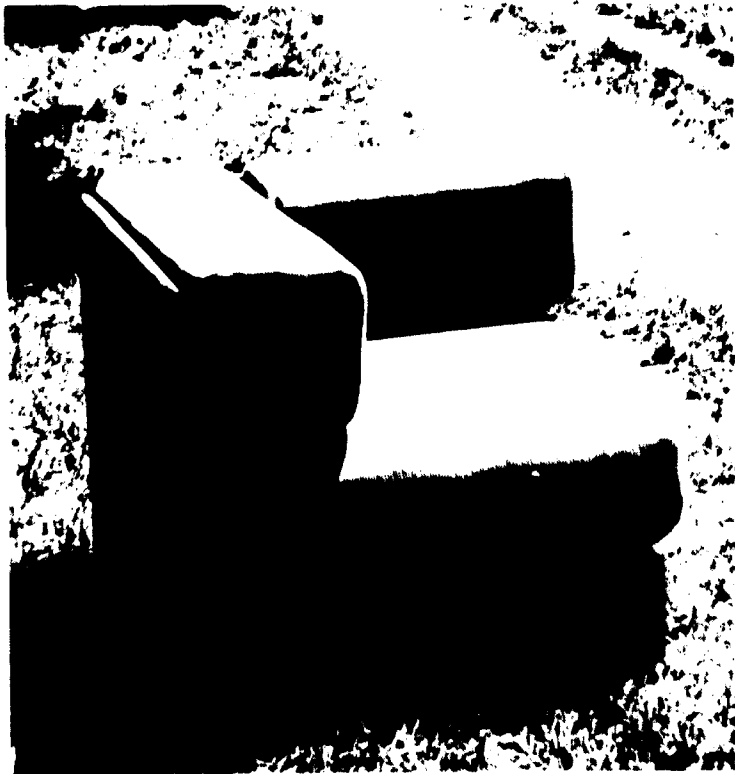
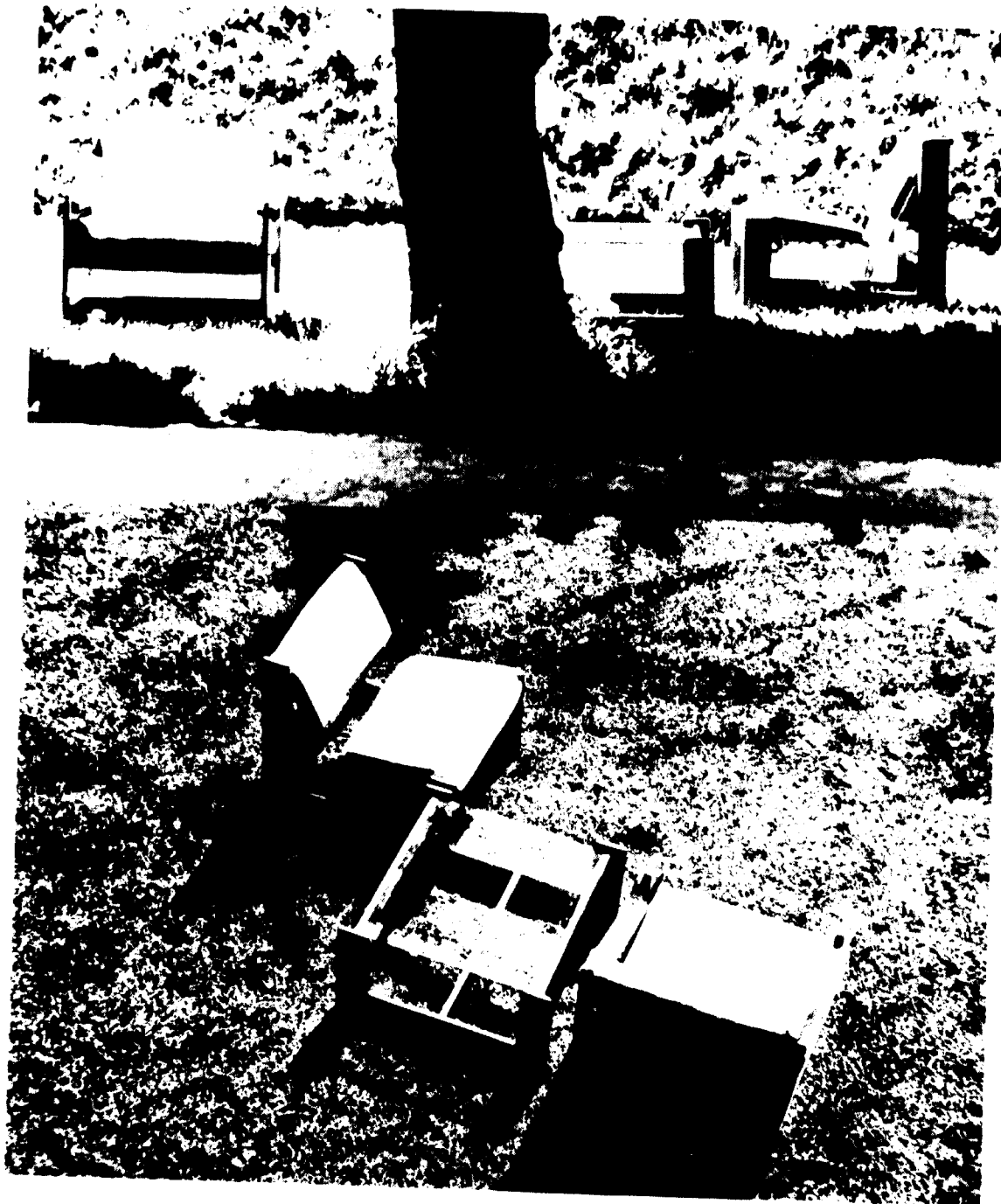


Figure VI. Design: factory design group; prototype:  
OOUR "Standard", Sarajevo



Figure VII. Design: Higl, Karlo; prototype:  
OOUR, Workers' Organization, Brčko



VIII. Design: Rađić, Aslân, E-Centre; prototype:  
OOUR "Budućnost", Sâmbac

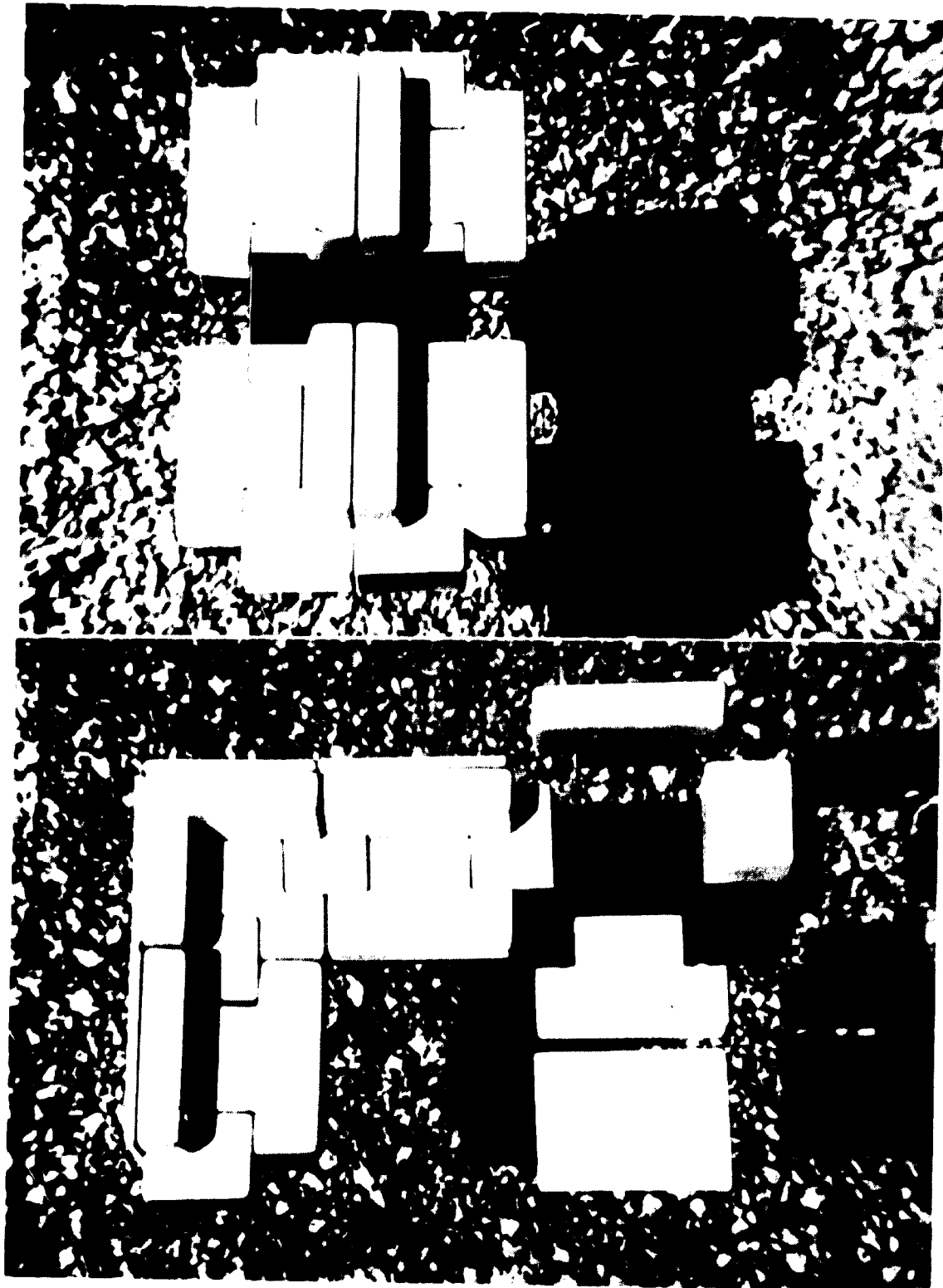


Figure IX. Domino system designed by:  
Galičić, Nafa

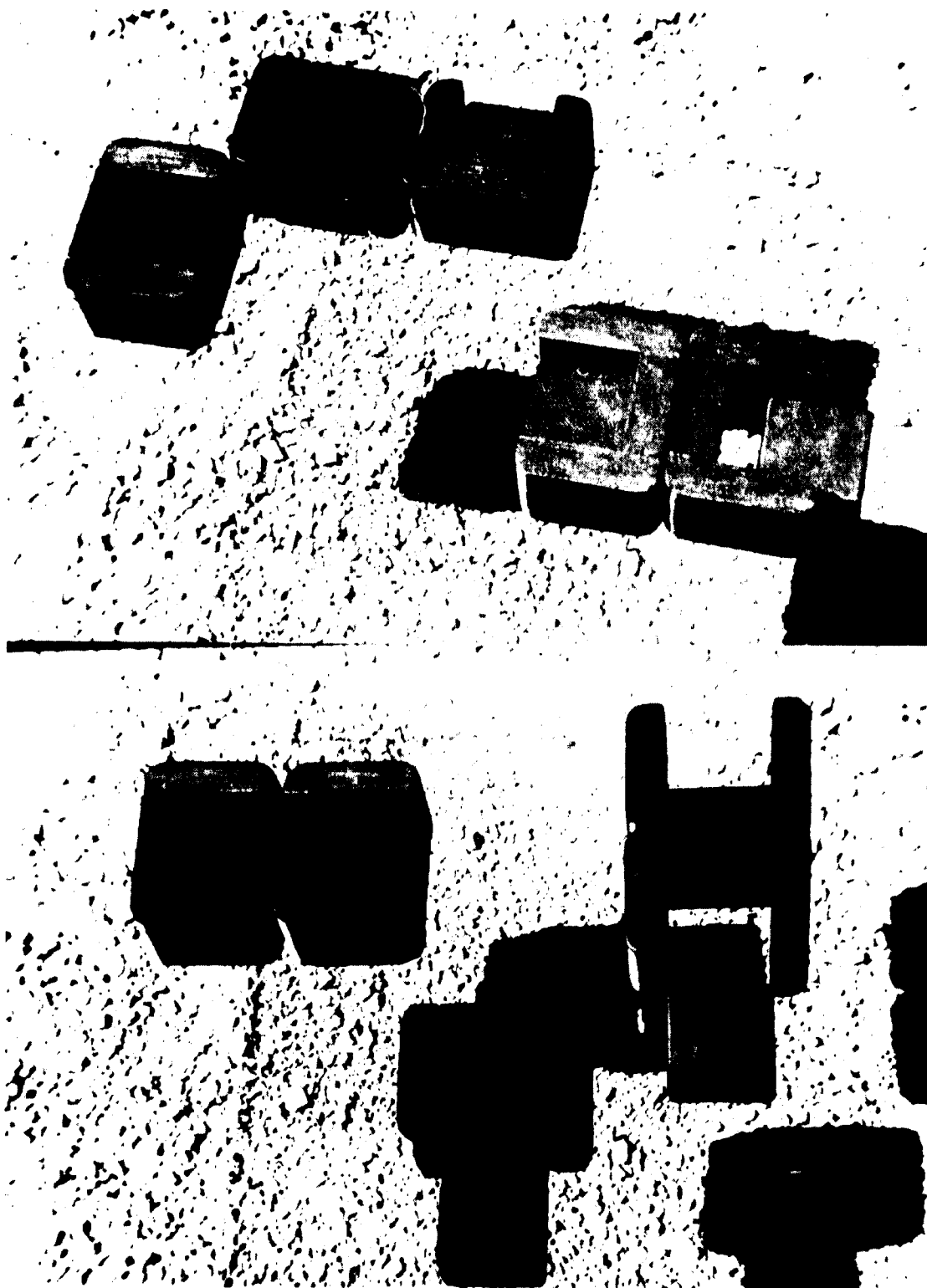


Figure X. Domino system designed by:  
Bujić, Vesna, E-Centre

Annex VII

DESIGN UNDER ZERO CONDITIONS

As part of the Design Seminar the expert gave a lecture, complemented by a show of diapositives, about how he and fellow soldiers used their initiative and civilian skills to advantage to create passable living conditions at the Finnish front during the Second World War. The text of the lecture is given below.

There has always been some kind of design activity, even if it has lacked the names and definitions that it has today. The best of human planning and skills has been applied to tools and weapons, and these are the areas in which the gradual development of technology appears most clearly. We will not, however, follow up this development; we will only state that this circumstance remains the same in a most extraordinary way.

We will now turn to a course of events that took place at the Finnish front during the Second World War. It is a story about the importance of tools for realizing designs in the worst of conditions, and in which no design activity was expected. However, things did not turn out as expected.

The scene is Aunuksen Kannas in Karelia during the Finnish Continuation War; the time covered is about three years. By a coincidence the writer came to division D (from now on to be called D), and also by coincidence this division was at the same sector during the whole war, holding the same front line. Another factor of importance was the ample and almost untouched tradition and culture in the area. In particular, the local building craft proved to be flourishing, though almost unnoticed by the Finnish people. The people living there spoke a dialect of the Finnish language. The soil was good, and the civilians who had decided to stay on in spite of the front's being close were relatively wealthy.

All this is important to know in order to understand the lecture. It should also be mentioned that the men of the division came from the middle of Finland, where the population is famous for its handicrafts.

All these factors converged at the beginning of the war in 1941. D's marching stopped at the river Syvärijoki and the division stayed there to the end of the war. The writer soon became very interested in the Karelian people and their life, and in his leisure time he began to fill his sketch-book with pictures of their life, architecture, constructions, dresses, carpentry etc. It was like living in a museum. Almost everything in these records, especially seen at a distance of several decades, can be considered unique.

During this time the writer found a basic idiom he could identify with and this spurred his creativity. No new creation or design is possible without a sense of identification. An object without identity has no quality and seems false. The material obtained in East Karelia at first appeared unaltered in the writer's work. As it grew and became known it began to take shape.

The first carefully planned construction was a dug-out for the platoon commanders. The dug-out was correctly dug into the ground, and to camouflage it the roof-line was given an irregular shape like protoplasm instead of the normal rectangular one. No nails were used in the dug-out because no nails were available. The logs were sawed with a handsaw. The widest deals were about 3 inches by 20 inches. The axe and saw were the only tools used for the building. Every man had a sheath knife, the common Finnish tool. The tools being very simple, it was realized that they would influence planning, quality, production speed - in fact, everything.

After some practice dug-outs had been built, a field-saw and an electric motor were made. This made it possible to rationalize and speed up the work, which was of great importance since the building was being done very close to the front under cover of camouflage nets. As more efficient tools were developed, the building of canteens, field theatres etc. was started. The third phase began with the frame-saw. Steam was used as fuel for this saw and was obtained from a steam engine taken from a locomotive. As power was now available, it was freely distributed to the local industry and for other needs at the front. New production units were founded. A tar factory and 23 charcoal stacks had already supplied the cars in the division with charcoal. The cars were equipped to operate on producer gas. Moreover, an efficient automatic furnace, a brickyard, a tar factory and a factory producing fuel logs to be used in the cars were set up. During this phase, building activity increased considerably. The units built their own premises as required. However, only one office was in charge of planning all of this construction.

Eventually, D founded a production unit of its own consisting of forestry, farming and building departments, separate production plants and a boat-building yard for scouting boats etc.

Other units, seeing the results of the commander's idea, soon began to engage in similar production activities. The procedure followed in all these activities was almost the same. As required, different craftsmen were ordered from the battle line to practise their civilian profession. There were joiners, carpenters, lumbermen, farmers, gardeners, tar and charcoal stock workers, brickmakers, blacksmiths and industrial foremen. The state of the front being peaceful, the temporary transfers could often last for a long time; they became very popular among the soldiers. During the lulls in the fighting, foresters, engineers, building contractors, architects and industrial directors were in charge of the planning.

As technological advances were made, the quantity and quality of the work improved. Attention was paid to shape and proportions, and precise building materials were delivered according to the drawings made by the planning office. The central workshop supplied doors and windows and the brickyard the bricks. Almost 40 saunas, 8 canteens and a large number of dug-outs were built according to the planning office's drawings. The office also planned hobby models for the division and made graphic objects along with its main tasks of forest and farming production.

At the front it was quite a challenge to make the uninhabited and depressing wilderness bearable and to have more than 10,000 men properly billeted. The state of prolonged war made everyone idle and apathetic. As already mentioned, D had been at its position, the river Syvärijoki, since the beginning of the war, and was to remain there almost until the end. It was necessary to find something stimulating to do in order to keep up the morale and fighting spirit of the men and also in order to improve living conditions. The development of the tools encouraged building. Competition was keen in the struggle against the insidious growing boredom.

In the end the wilderness was built up like a provincial town with all the corresponding facilities and functions. At first the men competed among themselves, then between platoons, companies, battalions and finally divisions. This activity was encouraged by headquarters because an active mind is important for military operations. The men had to have something interesting to do. The Finnish soldiers were enterprising and almost everyone



had a sheath knife. Small groups were equipped with axes and manual saws. By means of these tools D began to add conveniences and comforts at the beginning of the war.

When the war started everyone thought only of his own daily needs. After D had been at the same front line for a long time, the men eventually began to think of tomorrow, and to show an interest in improving tools. This affected planning. The longer the war lasted the more buildings were put up, and there was time to attend to the development of new plans. Architecture and design contests were arranged, and the winners were given leave as a reward. The headquarters collected the hobby models and distributed them to the forces for their information. In 1943 an extensive hobby exhibition was arranged in the largest show-room in Helsinki. While this could be considered a kind of war entertainment, the activity itself revealed a gentler, more human feature of the war and a belief in the future.

The need to hide and to take shelter from the elements was natural to the circumstance of war. Some of the building took place close to the front, where the soldiers had entrenched themselves. Further from the front the dug-outs for dwellings, saunas and canteens were half hidden in the ground. The most characteristic feature of these buildings was the irregular roof-line, the shadows of which were also so shapeless that it was very difficult to discover the buildings through air reconnaissance. Furthermore, in order to have the buildings merge in the surroundings the roofs were covered with moss and the outer walls painted a colour similar to that of the trees. The largest buildings, which were farthest from the front line, were camouflaged with a natural colour made by D. By the end of the war extensive plans had been drawn up for deceptive constructions and camouflage activities, but there was no longer a need to carry them out.

The point of the story is that, under any conditions, individuals and groups can benefit from the situation if they try to make the most of what is at hand. By working in a team and using the particular skills and knowledge of individuals, a group can find the most appropriate applications for materials in the surroundings and live strengthened by its own culture.

Design, colour, construction methods, the possibility of exploiting given conditions are all part of the same package, ready to serve in difficult circumstances.

Annex VIII

PROPOSED CURRICULUM FOR A COLLEGE OF ARCHITECTS AND INTERIOR DESIGNERS

First year

- Statement of fundamentals and of different working methods
- Observation of plastic form created by modelling
- Sketching of uncomplicated utilizations
- Analysing space and making simple constructions using materials like cardboard
- Explanation of manner of presentation
- Collection and combining of materials
- Observing phenomena of space, geometry, perspective and scale
- Using form, colour and materials two- and three-dimensionally

Second year

- Object planning (design), explanation of one-space methods of solution
- Modelling combined with plastic modelling
- Alteration of already existing drawing of an object or interior as a whole
- Lectures on stylistics combined with work in museums and other environments
- Colour spectrum; use of colours in furnishing
- Continuation of first-year studies; planning of residential and public areas. Studies of materials and construction of objects. Drawing up of plans with manufacturing stage in mind, including working and construction methods
- Learning the shape and construction type of different furniture pieces; stylistic analysis

Third year

- More exact designing of interior furnishings; development of working methods; drawing up of official documents
- Training in presentation and critique
- Detailed exposition of interior and construction
- Design based on modelling using a changing scale
- Training as a cabinet-maker
- Written study on buildings, interiors, objects; sketches for new objects, areas or elements, including justification of the choice made

Fourth year

Proposals for subject of final work; from these the teacher approves and delimits the subject to be treated

Preparation of a preliminary study for the final assignment; suggestions on how to handle the subject as a unit

Preparation of final assignment

Presentation of final assignment

The curriculum should include the following aspects:

(a) Competitions between classes, the subjects being sketches of objects and small-scale units and the construction of miniature models (e.g. scale 1:5);

(b) Lectures on the profession and on how to work in it, details, constructions, styles, possible solutions to problems. Lectures also on light, colour, crafts, upholstery and materials;

(c) Working out detailed solutions as a cabinet-maker;

(d) Criticism. All results of competitions will be criticized. Later, all students will learn how to criticize under the teacher's leadership, and their criticism will be subject to criticism;

(e) Following developments in the field both in Yugoslavia and abroad through professional publications and, if possible, study tours;

(f) Arranging exhibitions and getting familiar with artistic and professional exhibitions.

Milieu planning

By carefully examining an area, a subject and the material in question, special uses for the area can be determined and it can be given character.

First-year students will be required to gain artistic understanding and the ability to solve simple technical problems.

Second-year students should be able to construct simple objects and small furnishing units; knowledge of construction will be broadened by lectures and more exacting assignments.

Third-year students will be concerned with objects and furnishing units intended for manufacture. They will be required to adapt to team-work with different experts. In design a flexible understanding of construction and of the richness of forms will be developed.

Six months' summer practice should be obligatory during the first and second years.

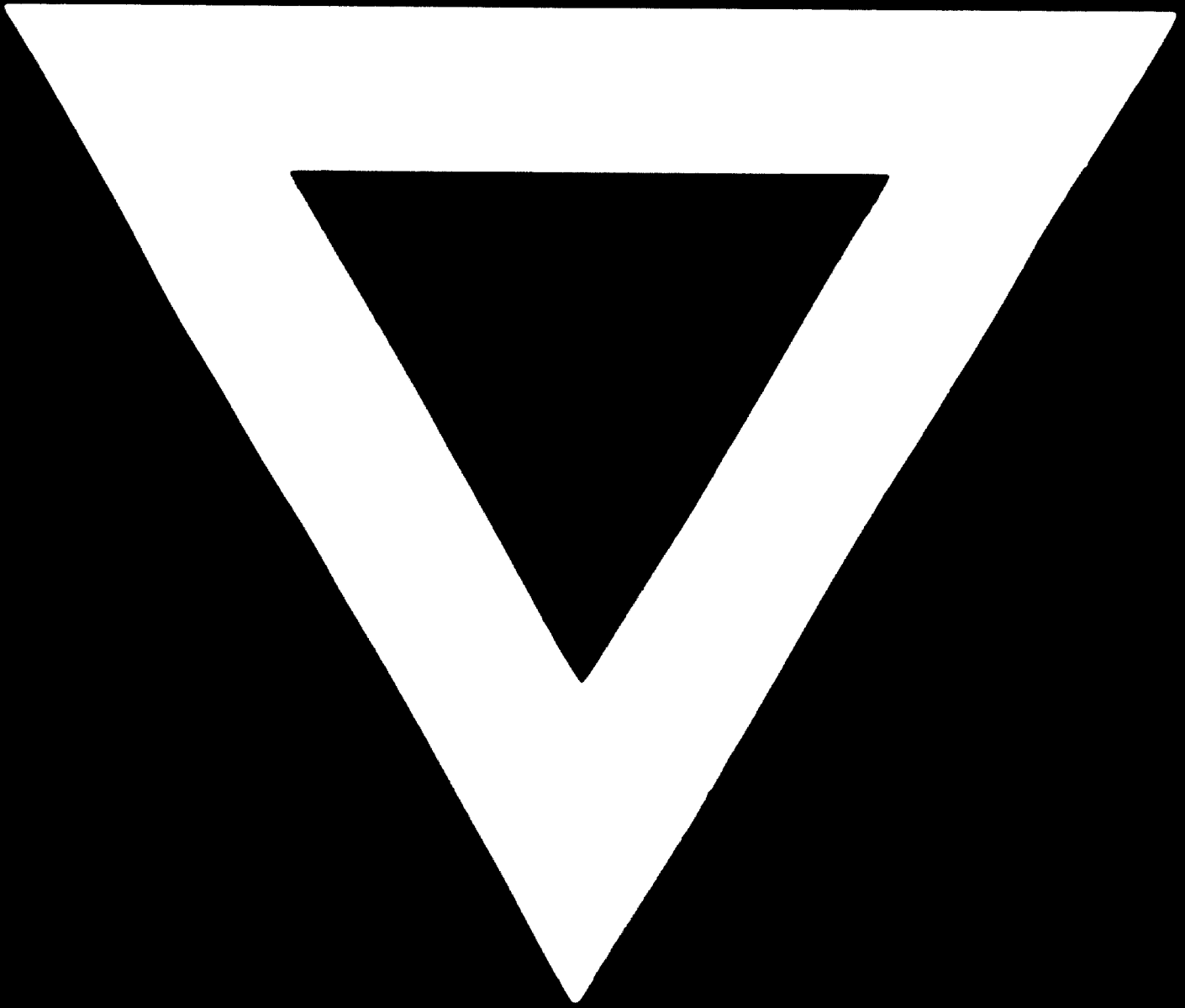
Annex IX

DESIGN PERIODICALS

The periodicals listed below are considered by the expert to be useful in following international developments in design. The list is not intended to be exhaustive.

- Abitare (via Gueressag6 1, I-20145 Milan, Italy)
- Architecture d'aujourd'hui (5, rue Bartholdi, F-92000 Boulogne, France)
- Architecture int6rieure CREE (85, avenue Ledru-Rollin, F-75012 Paris, France)
- Ark (Unioninkatu 30, SF-00100 Helsinki 10, Finland)
- Domus (via Monte di Piet6 15, I-20121 Milan, Italy)
- Ergonomics (10-14 Macklin Street, London WC2, United Kingdom)
- Form (7 Nybrogatan, Pock 7047, Stockholm, Sweden)
- MD Magazine (7022 Seinfelden, Stuttgart, Postfach 1380, Federal Republic of Germany)
- Mobilia (C.M. Rasmussen, Snebkersten 3070, Denmark)

**G-12**



**79.11.14**