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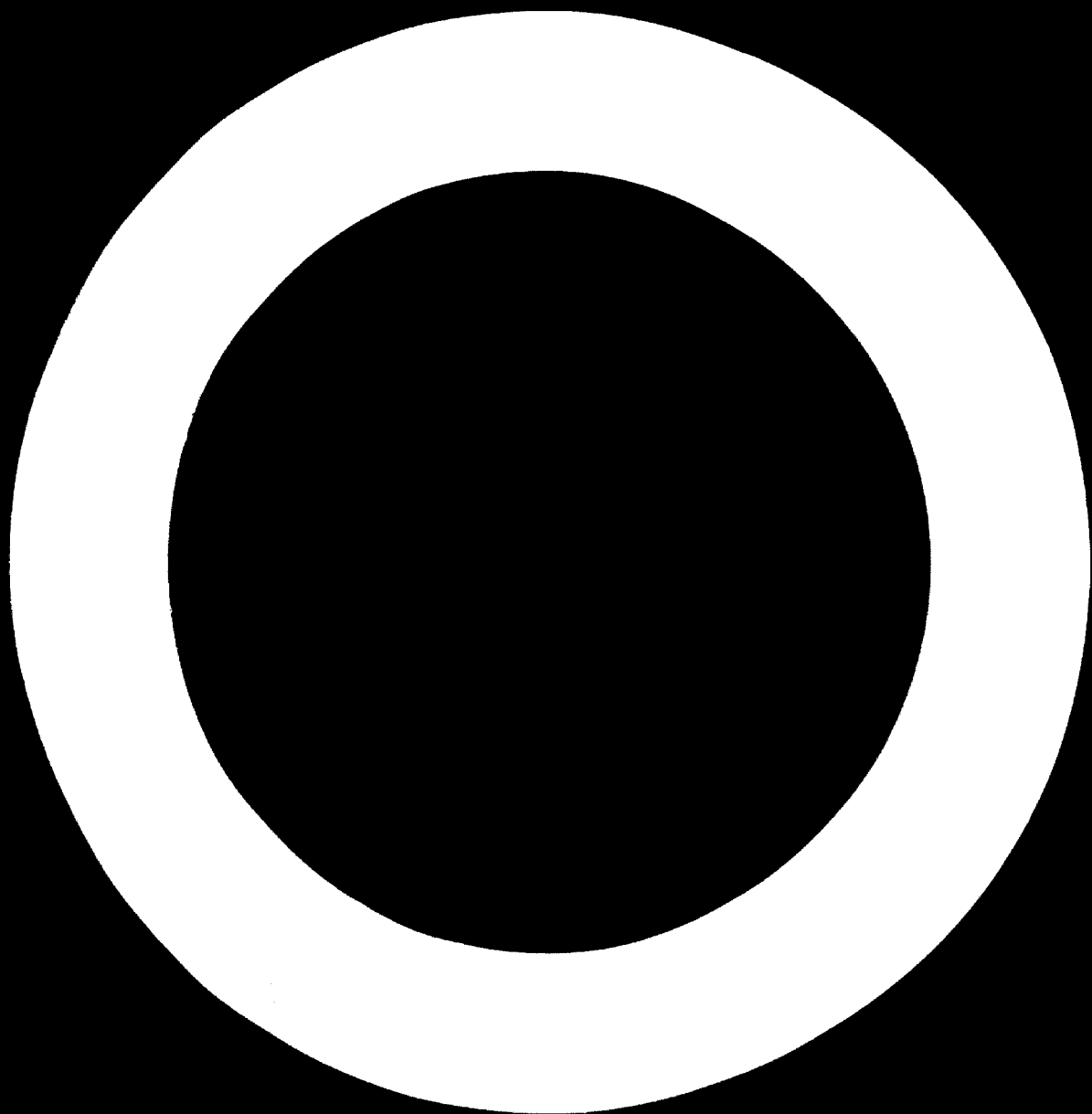
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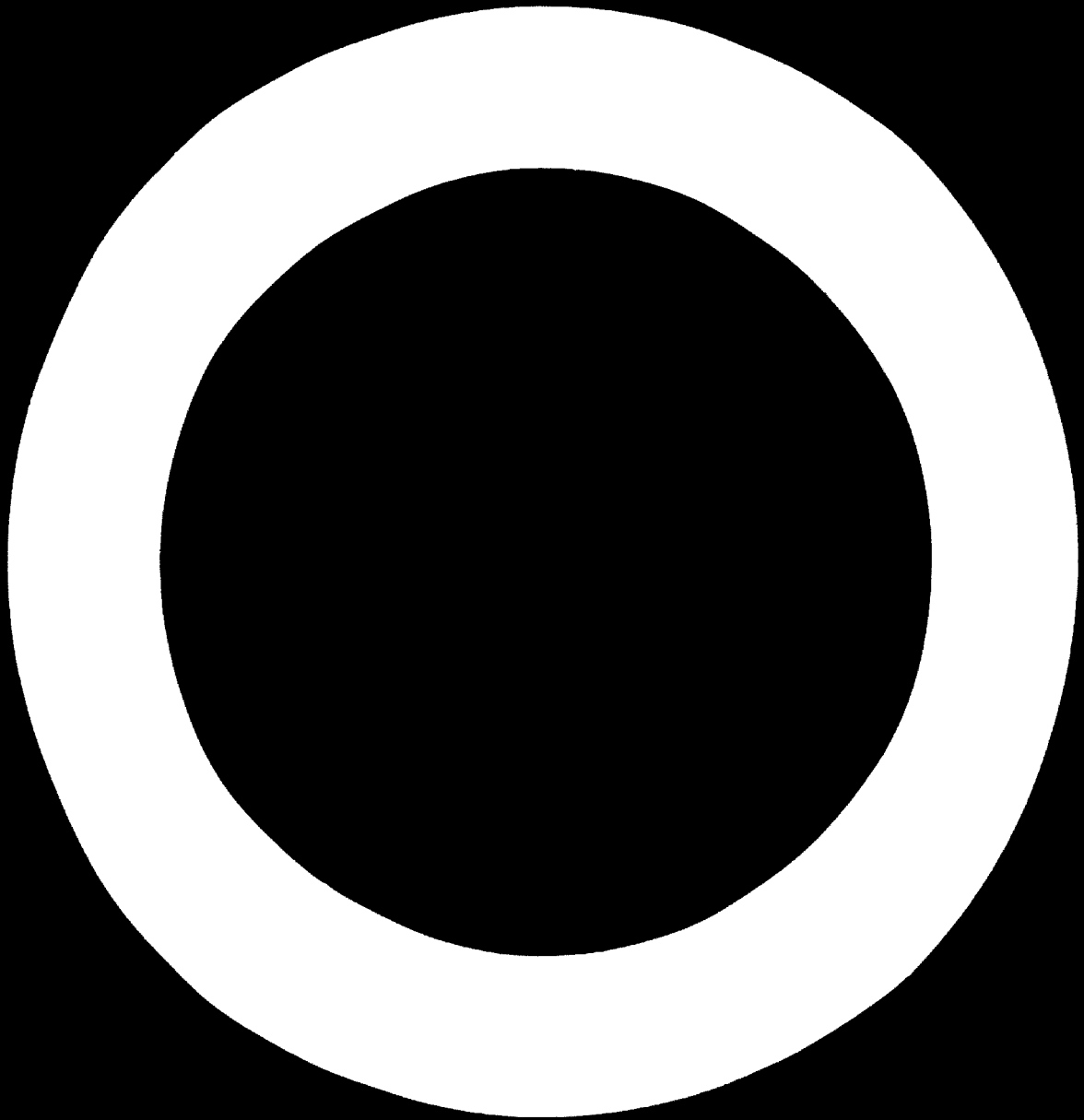
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YUGOSLAVIA .

**Technical report
ASSISTANCE IN FURNITURE DESIGN**

**Prepared for the Government of Yugoslavia by the
United Nations Industrial Development Organization
United Nations Development Programme**





United Nations Development Programme

CENTRE OF FURNITURE AND JOINERY
INDUSTRY DEVELOPMENT, SARAJEVO

DP/YUG/73/006

YUGOSLAVIA

Technical report: Assistance in furniture design

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 Arne Vodder, expert in furniture design

United Nations Industrial Development Organization
Vienna, 1975

EXPLANATORY NOTES

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

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

A slash (/) indicates a field-season covering part of two consecutive years, e.g., 1974/75.

Use of a hyphen (-) between years, e.g., 1974-1975, signifies the full period involved, including the beginning and end years.

References to "dollars" indicate United States dollars, unless otherwise stated.

The monetary unit in Yugoslavia is the dinar (Din). In September 1975 its value in relation to the United States dollar was \$1 = Din 17.00.

The following abbreviations are used in this report:

BiH Republic of Bosnia and Herzegovina

OOOR Osnovna Organizacija Udruženog Rada (A self-managed unit of an enterprise)

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SUMMARY

The consultant, an expert in furniture design, spent three months in Yugoslavia from 15 April to 14 June 1975 and from 1 September to 1 October 1975. His mission formed part of the parent project "Centre for the Development of the Furniture and Joinery Industries, Sarajevo" (DP/YUG/73/006). During his stay in Yugoslavia he was assigned to the Design Centre of ŠIPAD, the Forest Industry Enterprise, at Sarajevo.

The consultant's findings were principally that in order to meet the demands of a fast-growing industry, the Design Centre needed to expand its facilities for wood technology, quality control, design, marketing research, information, product organization and training personnel. He found further that the furniture industry in Bosnia and Herzegovina (BiH) suffered from a lack of co-ordination and flow of information among factories. He judged the quality of the production to be between 30 and 60 per cent of what was technically possible. He also felt that ŠIPAD was in need of larger sales outlets using more modern display techniques.

His principal recommendations were for introducing new designs to stimulate exports; for increasing the number of designers on the staff of the Centre; for training workers, especially in quality and craftsmanship; and for improving quality control, marketing and display. He also recommended study tours and fellowships for designers, and the study of foreign languages.

INTRODUCTION

The consultant's mission was part of the larger project "Centre for the Development of the Furniture and Joinery Industries, Sarajevo" (DF/YBH/73/000). The project was submitted by the Government of Yugoslavia in December 1973, approved by the United Nations Development Programme (UNDP) in September 1974 and by the United Nations Industrial Development Organisation (UNIDO), the executing agency, in August 1974. The project was scheduled to start on 1 September 1974 and to last for three years and four months. The UNDP contribution was \$555,000 and the contribution of the Government of Yugoslavia was Din 19,47,900.

The long-range objectives, as set forth in the project document, were to enable the furniture and joinery industries, initially in the Republic of Bosnia and Herzegovina (BiH) and later in all of Yugoslavia, to make a greater contribution to the economy of the country and to increase their participation in domestic and foreign markets. Immediate objectives were to help the industries to increase the value of their products, to improve quality, to reduce costs of production, to design new products and to forecast market requirements and adapt production accordingly.

During his stay in Yugoslavia the consultant was assigned to the counterpart agency, ŠIPAD, at Sarajevo. ŠIPAD is an integrated corporation of wood-working industries with more than 120 factories in BiH, employing some 55,000 persons and covering the complete range of wood-processing industries from forestry: sawmills, pulp and paper production, wood-based boards (plywood, particle board, fibreboard), joinery and prefabricated houses, furniture etc.

The merger of the various production units into the ŠIPAD organization took place three years ago. It now includes 28 furniture factories and has about 120 furniture outlets in all of Yugoslavia. During the preparatory period leading up to this project, the ŠIPAD Design Centre was formed and the Institute of Wood Technology was integrated into ŠIPAD.

The principal aim of BiH in the development of this sector is to double the production of furniture and to treble that of joinery within five years, increasing the work force from 6,000 to 9,000 persons in the furniture industry and trebling it to 4,500 persons in the joinery industry. At present ŠIPAD accounts for 80 per cent of the total forest in the Republic and

produces 85 per cent of the manufactured ("finished") wood products. The supply of raw materials is adequate since one third of the country's total forest resources are located within BiH. Two thirds of the total are broad-leaved species, mainly beech, and one third are conifers with firs, pines and spruce predominating.

Of these species the furniture industry will have to concentrate on the use of beech and pine. Both are extremely well-suited to furniture production, especially when the furniture is designed according to the characteristics of the wood.

The policy of increasing the production of manufactured products to the point where the wood resources are fully utilized will doubtless raise employment in and increase the income of the wood-working enterprises.

The consultant was recruited by UNIDO as an expert in furniture design and undertook two assignments at the ŠIPAD Design Centre. The first was from 15 April to 14 June 1975 and the second was from 1 September to 1 October 1975. In the period between assignments he spent 12 days in Denmark establishing contacts and compiling information for the ŠIPAD Design Centre and the project.

His tasks, according to the job description were:

- (a) To review and assess the aesthetic value and marketability abroad of the present and past production marketed through ŠIPAD;
- (b) To advise on the introduction of new design details;
- (c) In collaboration with the market research expert, to recommend procedures for the development of new products and their introduction into production;
- (d) To recommend methods for the creation of design awareness among potential designers of furniture and to establish a programme with this in view;
- (e) To advise when requested on:
 - (i) Adaptation of production to market requirements;
 - (ii) Introduction of new materials;
 - (iii) Introduction of modern surface-finishing methods;
 - (iv) Improvement of quality.

During his mission to Yugoslavia he visited the following factories:

Varda at Višegrad
Standard at Sarajevo
Namestaj at Gradačac
Konjun at Zivinice
4 Novembar at Bihać
Una at Bosanska Krupa
Luc at Trebinje
Neretva at Konjic
Budućnost at Bosanski Samac

The specific problems relating to design, quality, and a present and future production programme were discussed, and recommendations were made for future assistance in design.

The consultant also visited the Zagreb International Fair in April and September 1975 in the company of the staff of the Design Centre. Notes and comments on the furniture exhibited were sent to all furniture factories.

During the first part of the mission some meetings took place at which the Danish film "Sit down, sit Danish" and about 120 diapositive slides were shown. During the second part, 80 slides on quality control, obtained from the Institute for Wood Technology at Copenhagen, were shown.

I. FINDINGS

Need for marketing, quality control and training

A project of this size needs not only a large-scale investment in the production capacity, but also at the same time plans for technology, quality control, organization, marketing documentation, design and the training of both workers and sales personnel.

If the Centre is expected to be self-supporting in the development of furniture and joinery, for the Republic of BiH and for all of Yugoslavia, the following departments should be included:

Wood technology, with a prototype workshop and quality control

Design

Marketing

Documentation, including an information service

Product organization

Training

At the time of the consultant's mission only the Wood Technology Institute and the Design Centre existed.

The co-ordination is unsatisfactory among the factories affiliated with SIPAD and the Centre. With the general breakdown of communication, the factories tend to seek information in Zagreb, Belgrade or Ljubljana. The aims and work of the Centre should be made clear to the factories so that they would request information and assistance from it in such matters as sales, marketing, technology and quality control instead of seeking this information elsewhere.

The present state of furniture production

An internal flow of information is lacking between SIPAD and the factories. One factory does not know what the others are doing, with the result that all turn out more or less the same products - especially wall units - in competition with each other. The same applies to upholstered furniture; several factories produce chairs and couches that look identical.

In general the upholstered furniture is too large, too deep and does not give enough support.

The tables are too high according to Scandinavian usage - about 75-76 cm instead of 70 cm.

The quality of the metal frame for the office furniture is not up to the standard required for export, and office chairs are needed to complement the desk line.

The quality of the fittings used is poor and the choice too limited; there seem to be some import restrictions on fittings used for assembly, for instance, from Germany (Häfele) and from Denmark (Siso). These fittings are needed if the quality is to be improved. It might be an idea to tackle this problem at the ŠEPAD level.

The tables are not constructed strongly enough; they vibrate too much, the particle boards are not good enough, and the material under the laminates or veneers "telegraphs" through. With regard to the wall systems, the doors do not meet at the same level and the door handles are not always placed at the same height (a difference of 12 mm was measured). Outside veneers are different from those used inside; edge-banding with 0.7 mm veneer does not result in good quality products and some of the upper doors do not even have veneer on the top edge.

The measures inside of some wall systems do not give space enough for hanging objects - 40 cm is about 20 cm too little for wardrobe use. A feeling for quality is lacking; on the average the consultant judged the quality to be between 30 and 60 per cent of that technically possible. It was his impression that some of the furniture even looked old and used before it had left the factory. As the factories have a relatively high level of technical facilities for their production, the problem may lie with the internal transport system.

Quality control is also a problem. Poor quality is not always recognized and does not directly influence the workers' salary. Nevertheless, clear progress both in design and quality could be noticed between the time of the Zagreb Fair in April and that in September. Several new ideas had been introduced in the construction of school furniture, office furniture, dining groups, stacking chairs, sitting groups etc.

New plants

Several huge plants are under construction with floor areas ranging from 6,000 up to 19,000 m². An enormous production is going to be put on the market in a few months, and as no marketing or market research has been made, there is an urgent need to create original designs for these plants.

SIPAD sales outlets

Most of the SIPAD sales outlets are too small, which limits the possibility of an interesting display of different SIPAD furniture. The product-range is too narrow, and the similarity of products together with the lack of correct lighting make for an uninspired display.

The Design Centre

The Design Centre is understaffed. It is impossible for eight or nine designers, however skilled, to cope with the design needs of 28 furniture factories. Furthermore, some of them are occupied most of the time with preparing for different exhibitions. These circumstances make it difficult to allocate time for the development of new designs; the designers are more or less obliged to produce "catalogue design".

During the first part of the consultant's assignment it was difficult for him to co-operate closely with his counterparts because they were busy designing school furniture. In addition, there was a demand from the sales department for designs of six wall systems for the USSR. The problem was solved by the national project director, Mr. V. Solaja, who made contact directly with the factories and the free-lance designers. This approach led to the successful results of the mission in that several different lines were then put into production.

Language problems

The lack of knowledge of foreign languages was a serious problem, especially in the producing OCURs of SIPAD, and much time was lost because no interpreter was available when needed.

11. RECOMMENDATIONS

One of the most urgent needs, if ŠIPAD wants to increase the production for both the home and the export market, is for new models with original designs.

Copies have to be sold at lower prices than originals. Furniture design is a process of trial and requires much patience, since perhaps only one of 30 ideas may be expected to reach the production stage. The industry must be prepared to invest 3 to 5 per cent of its turnover in product development and to pay royalties to designers from Yugoslavia and abroad in order to get new models. Because of the enormous capacity of the ŠIPAD plants, the royalty could be less than the 5 per cent paid in Scandinavia, probably 2 to 3 per cent depending on the production envisaged. The royalty should be based on the production price (factory price). In this way ŠIPAD should get enough designs since many architects and designers would be interested in co-operating with it.

The Design Centre

The Design Centre is understaffed; for 28 factories the Centre should have about 16 to 18 full-time furniture designers instead of the present eight or nine. There should also be co-operation with free-lance architects and designers, and each factory should employ one or two designers to correct designs for production within the factory.

The free-lance designers and the designers within the factories should be supplied with market information and materials from the Design Centre in order to have an equal opportunity for developing new designs.

On the other hand, all new designs should be cleared by the Design Centre or a product co-ordinator so that they are not in competition. In this way the Design Centre would develop new designs and would act as a link between the factories and the marketing department, putting into production the types of furniture identified in the marketing research.

The Design Centre should concentrate on the following duties:

- (a) Creating original designs, some with a national character;

- (b) Co-operating with the Institute for Wood Technology regarding the feasibility of new construction techniques and technological processes from the point of view of both production and design;
- (c) Selecting a range of fabrics - colours and patterns - in co-operation with the sales department, in order to unify the models and facilitate combining different models in one location (large-scale purchases also result in a better price being obtained);
- (d) Designing and supervising exhibitions not only at fairs, but also at the SIPAD sales outlets, and training personnel in modern display, including the use of lighting, colours, carpets etc.;
- (e) Designating a small team of designers to concentrate on designing specially for institutions - hotels, schools, offices etc. (with the vast increase of capacity in this sector a sizable production should be possible);
- (f) Considering the adoption of the Scandinavian system of IKEA. According to this system, which has been an enormous success, consumers assemble the furniture themselves with some small fittings. One may choose it in the showroom and take the package with the item he wants, pay in cash, bring it home and assemble it himself. No special account, no loan, returns or claims are accepted for eight days, and the price is 30 per cent lower because of large series production and reduced services to customers. The quality of the products of IKEA is not affected by the low price. If this approach is introduced, the line of products should be designed in detail so that the whole range of furniture would fit together.

In order to make the work of the Design Centre more rational and since wages will be the main expense, it would be an advantage to supply the Centre with the following equipment:

- (a) Drawer machines (tabletop 1 x 2 m);
- (b) Projector for visualizing and enlarging the scale of drawings;
- (c) Polaroid cameras for temporary use, so that details can be remembered and discussed afterwards;
- (d) Photo-copying machine;
- (e) Blue-print copying machine (depending on the rentability).

There should be a small workshop with equipment for making small-scale models (1:5 or 1:10) as well as models of exhibition layouts (scale 1:100). The Design Centre should have access to this workshop.

Product co-ordinator

A person should be appointed to co-ordinate the work of the sales department, the Design Centre and the various OOURs. This co-ordinator should be in charge of the whole ŠIPAD programme; his task would be to produce a homogeneous and complementary collection.

Prototype workshop

The prototype workshop should be the link between the Design Centre and the Institute for Wood Technology and should be the place where new constructions could be produced and checked. It should also be utilized as fully as possible for training workers and students in improving the quality. Each worker should be thoroughly familiarized with problems of quality so that he would be interested in contributing to producing better quality.

The prototype workshop would be important for the design since it would provide designers with prototypes made quickly, instead of their losing time in travelling to the factories for each minor change introduced.

UNDP/UNIDO has provided equipment worth about \$US90,000. It lies unpacked in the original crates; it should be utilized as soon as possible. Some of the prototypes could still be made at the factories, thus giving the factory concerned advance knowledge of the model and stimulating interest for new models among its workers.

Fairs

There are two fairs in Zagreb, one in Belgrade and one in Skopje every year, as well as several fairs abroad.

The preparation for the participation of ŠIPAD in these fairs is left to one architect, who does not get the information about what is going to be exhibited in sufficient time beforehand. It is therefore impossible for him to prepare the plans in advance and creates difficulties on the spot.

A need exists to create a team of three persons who should be informed sufficiently in advance of fairs to be able to make a realistic plan for the whole exhibition and have it confirmed with each factory. In this way it would be possible to have much better stands at the various exhibitions.

Training workers

The design of Scandinavian furniture for everyday use has its roots in the furniture culture of previous eras. Most of it is originally crafted by master cabinet-makers in such a way that the best furniture is an extension of the craftsman's personality.

The furniture-making in BiH is not rooted in the same way in tradition, but it is now evolving rapidly from small local workshops into an industry with probably the largest capacity in Europe. In this greatly accelerated stage the feeling of the individual worker for quality and craftsmanship have become lost. Therefore, it is important to establish a practical training programme for workers and students. Probably the best places would be the Institute for Wood Technology and the prototype workshop. But the training must also take place within the various factories, in order to involve the OOURs more in the project activities.

The OOURs

The requirements of the OOURs should be defined and communicated to the Centre and the Institute with the request that these bodies solve their problems, choose the proper specialists for the various tasks and arrange their work programme in detail.

ŠIPAD newspaper

The ŠIPAD newspaper could be used to inform the OOURs about activities and recommendations. It should be more widely used for internal information.

Quality control

There should be a comprehensive control and supervisory service. A quality control committee should be established by the Institute for Wood Technology; it would co-operate closely with the factories and draft the detailed requirements for the materials, processing and technology that must be met before a quality mark may be put on a piece of furniture. Such a committee could be established in co-operation with the Danish Institute for Technology.

The producer should accept unannounced visits of quality-control experts at the factory and let them take away items from the production for testing at the Institute. Testing often means partial or complete destruction of the

furniture. For instance, a chair is tested in a special machine which rocks it. The norms should be 10,000 cycles for private use and 50,000 cycles for institutional use.

A book about quality control and testing of furniture, "Minimalni Uslovi Kvaliteta Namestaja" (190 pages), which was published in Yugoslavia in 1974, seems to be very instructive. The testing system corresponds approximately to what is used in Scandinavia. It could be a valuable help in starting the quality-control operations. In addition to the quality mark, most Danish furniture bears a tag giving the buyer essential information about the furniture - its dimensions, the materials used, the surface finish, the function, the durability and how to take care of the particular piece. Some of the furniture of ŠIPAD, for instance, the furniture in national style, should also be accompanied by a short description telling some historical facts about the origin of the type, thus giving the customer the feeling that he has bought something of value. It would make it easier for both the dealer and the customer to make their choice in this rapidly growing "jungle" of different materials the characteristics of which may often be difficult for the client to evaluate.

In the future, new ergonomic considerations, for example, of the way furniture is used, will influence the functional demands.

ŠIPAD outlets

ŠIPAD has some 120 outlets in Yugoslavia; these need to be modernized (the consultant visited the ones in Zagreb, Split, Ljubljana, Sarajevo (4), Belgrade and Mostar). Naturally the work of modernization cannot be done all at the same time.

The task should be started by:

- (a) Training of salespeople, who should advise and give information about the goods, their quality, technical details and upkeep. In the long term this type of training should lead to increased sales;

- (b) Changing the present layouts of the stores by effective use of modern display techniques, such as including lamps, curtains, carpets and decoration in the arrangement of goods to be sold. A step further would be to offer a complete service for interior planning, including planning the layouts of kitchens. In cities where there are two outlets, the one that is better situated should be the first to be modernized. The shop in front of the Hotel Europa at Sarajevo should be modernized in such a way that the entire house is used as a ŠIPAD showroom. The house is a nice building which needs only a few changes outside, apart from a new entrance in the front and an elegant façade bearing the name of ŠIPAD. Inside, some restoration should be done, such as new staircases, lower ceilings, new lighting and carpets. This would be the first step in making the name of ŠIPAD well-known as a place where people can get new furnishings of good quality. At the same time mobile exhibitions should be installed in some other outlets. The size could be 4 x 5 metres, depending on the space available, but the interior should be complete with screen walls, lamps, lighting, curtains and carpets, finished in such a way that the customer may see how the exhibited articles would appear in a dwelling.

The exhibitions should be followed up by a campaign in the press or perhaps on television, in the vein of "Buy ŠIPAD furniture - buy Bosnian - buy quality". The advertising need not be as direct as this statement but should convey this meaning.

A good graphic designer should be added to the staff to work on advertisements, trademarks, publications for fairs etc.; he should give the material a uniform appearance that would make it easy for people to recognize ŠIPAD. This graphic designer should also "design" packages and assembly instructions.

Competitions

The idea might be worth considering of initiating a competition among Yugoslav designers or perhaps also with international participation. The subject should be presented in such a way that the most futuristic designs are avoided and only concrete projects for wood furniture in beech or pine for such purposes as homes, hotel rooms, or institutions would be considered. Such a competition would require that a royalty be paid as a percentage of the product's price. Some rules are given in annex I.

ŠIPAD co-operation with the School for Applied Art

As ŠIPAD has a genuine need for new design, a special course might be introduced in furniture design at the School for Applied Art. The pupils could be given practical training in drawing, graphic design and anatomy.

As these designers would have no need for special academic education, they might make good assistants for such projects as model-making and arranging exhibitions.

The two last years should include courses on wood technology - design, ergonomics and production techniques. ŠIFAD should provide the possibility for starting this course. With 28 furniture factories there would be enough demand for its graduates.

New products

The present use of polyester seems to be rare in BiH. Consideration should be given to its increased use because of increasing wages. The advantages of a chair shell (frame) made from a rigid polyester block are its low price, its lightness and its indestructibility. If this type of frame could be bought at a competitive price, it would be the product to watch out for.

The cold-moulding process with polyurethane is used in some of the factories, but more attention should be given to the design of the shell. The price is higher than polyester, but the process makes for less assembly work and seems to be the most promising for the time being.

The fibre-fill process should be carefully assessed together with the cold-moulding process since they complement each other well.

The integral-foam process and the skin-forming, soft-foam moulding process will not be of any interest for the time being mainly because of the high cost of the tool.

Wood-laminating procedures could be of interest, since they offer new possibilities in furniture design. Presses for laminating could be installed at the two factories, Blazuj and Zwornik.

BiH has a fine quality of marble, which could be used together with wood, for instance, for tabletops up to 1 x 2 metres.

In addition, there could be a small production of ashtrays, candle-holders etc. in marble in order to use this material to its full extent.

Toys in wood and kitchen equipment from the Varda and Neretva factories are other products which could easily be introduced.

Marketing department

This department should start its operations as soon as possible in order to undertake research on foreign and domestic markets, analyse the results and pass the information on to the Design Centre to serve as guidelines. At present, models are chosen by guessing whether they will be suited for any given market.

Until this department is operating and gives reliable information, the consultant would suggest that a stop be made to the erection of new plants, and, if the need for more plants becomes apparent, that they should be made smaller (maximum 5,000-6,000 m²) since they would thus be easier to manage in planning and introducing changes in production.

The following factories would like to co-operate with the market research expert and to seek his advice as soon as possible on the marketing policy for the new lines that they are going to introduce:

Una at Bossanska Krupa

4 Novembar at Bihać

Varda at Višegrad

Hametaj at Gradašac

Study tours and fellowships

Study tours and fellowships are included in the project document and would be good ways in which to train the staff. A committee should be formed to nominate the right candidate. The free-lance and factory designers and technicians, who are concerned with the problems of design, should have the same possibility of being awarded fellowships or of participating in study tours as the staff of the Design Centre and the Institute. Both study tours and fellowships must be prepared carefully in advance in order to have the maximum effect. No study tour must take place without an interpreter, and perhaps an expert should also join the tour.

For the first study tour it should be arranged for the technicians of the Institute for Wood Technology to visit the Institute for Technology at Copenhagen. Perhaps the Institute in Stockholm and Fira in London should be visited for a study mainly of quality-control procedures (approximate duration 12 days). This tour should be arranged as early as possible and should

and include more than eight to nine persons plus an interpreter. The consultant believes that Mr. Raskovic would be the natural leader for this tour, which should also include some members from the production OOOs. It would be an idea to include as well one or two designers in view of future co-operation; the designers could learn about quality tests.

The second study tour, which could be arranged for the furniture designers (from the design centre, free-lance designers and perhaps one or two from the Institute), should take place in May in order to see the fairs in Copenhagen and Hamburg. If these designers are not included in the first tour, they could visit the Institute for Technology at Copenhagen and perhaps Fira in England. Visits could also be arranged to the design centres in London, Frankfurt or Berlin (eight to ten participants plus an interpreter; duration about 11 to 14 days).

The project document includes two fellowships of two months each. The first includes a two-month stay in the United States of America. The consultant proposes that the fellow spends 10 days on the East Coast, 10 days on the West Coast and 10 days in Canada (Montreal area). The trade centre in Chicago (Hart) should be visited. Furthermore, it would be an advantage if it could be arranged for the fellows to join a team of designers for a month, for instance, at the furniture centre in Grand Rapids or perhaps with Baker Furniture in New York. This trip should take place in March-April (details are given in annex V). The second fellowship (in Europe) could consist of a one-month stay in Scandinavia and another month in the Eastern European countries.

A visit to Japan might be another possibility since that country has a fast-growing production of furniture; but this would imply changes in the budget and in the project document.

Language problems

Language problems are a serious barrier to communication; few SIPAD employees speak any foreign language sufficiently well. Intensive courses should be introduced as soon as possible within SIPAD (some people from the production should benefit from these). The consultant would like to stress that this assignment would probably have been a failure if Mrs. ^{ca} ~~ca~~ had not been present to interpret during all the factory visits. The interpreters assigned to UNIDO experts should know the various technical expressions. Two or three interpreters might be needed by the project.

III. RESULTS OF THE MISSION

The work of the mission can be divided into three parts:

- (a) Co-operation with the Design Centre;
- (b) Co-operation with the various OOURs and the designers there;
- (c) Meetings and work done during a 10-day stay at Copenhagen in August.

Co-operation with the Design Centre

The ŠIPAD range of furniture was discussed with the staff of the Design Centre, and findings and recommendation were sent to the OOURs. The Zagreb Fair was visited in May and September. A meeting was organized on 27 May for the staff of the Design Centre, the Wood Technology Institute, and representatives of various production OOURs. About 30 persons were present. The consultant's findings relating to the furniture viewed at the Fair were communicated and recommendations for different changes were made and discussed. After the discussion, the Danish film "Sit down, sit Danish" and 120 diapositive slides on Danish furniture production were shown.

On 29 May a meeting with the top management of ŠIPAD took place. The consultant's findings and recommendations were explained and discussed. (For the minutes of this meeting, see annex II.) Present at the meeting were the Deputy General Director, Mr. Pjaca, Messrs. Todorovic, Milic, Sarajlija, Praskac, Jusic, Mercvajler and Solaja and Mrs. Stanisic.

The Design Centre should complete the office furniture designed partly for 4 Novembar factory in the first part of the assignment and finished during the consultant's stay in Denmark.

A line of furniture for laboratory use should be studied to determine whether it meets the local needs. The existing programme and the programme for new design (especially a change in designing for institutions) were reviewed and discussed. Problems regarding the organization of the Design Centre were also discussed. During the last days of the mission some dining tables, chairs and sideboards were designed for Konjuh, and prototypes were to be produced. A sofa group should be ready for OOUR Radnik so that a prototype can be produced.

Co-operation with the OOURs

During the first part of this mission separate reports were made on each production OOUR visited, translated into Serbo-Croat and sent to the OOUR concerned. They are attached to this report as annex III. Owing to the limited time the co-operation was concentrated mainly on three factories: Varda, 4 Novembar and Una.

Good results were always achieved through direct co-operation with the OOURs, in spite of the rather short time. As a result of the effort and enthusiasm of the staffs of the factories, all the different prototypes were ready on the date promised.

Varda at Višegrad

The consultant discussed various designs with two designers, Mr. Faruk and Mr. Alija, during the first part of this mission. The designs were accepted and samples were made over the summer; the furniture was ready for the exhibition at Zagreb in September. It consisted of a wall system, a sitting group, a bar-dining table and chairs and a low sitting group - all in pine of a rather good quality, which no doubt will be improved as soon as production starts. Varda's future production is going to be 40 per cent pine and 60 per cent in veneered case.

During the last visit to Varda corrections and recommendations were also made regarding several groups of furniture in pine that were not shown at Zagreb; there remain some corrections to be made, but the work seems promising.

Co-operation with 4 Novembar at Bihać

A range of office furniture partly designed during the consultant's stay at Sarajevo in the spring and finished in Denmark was adopted and samples were produced during the summer. The range consists of desks in four versions and a system of cabinets and bookshelves. The furniture was made in two versions, one in natural beech with brown handles, bases and trayfronts, the other in a grey colour with the same brown parts. The system is constructed for complete knocked-down shipment. The Design Centre will finish the design of the divider and files for drawers so that they will conform to the Yugoslav standard.

The quality of the furniture will be quite good; it is scheduled to be exhibited at the fair for office furniture at Zagreb in October.

Co-operation with Una at Bossanska Krupa

At Una a set consisting of a stacking chair and two tables was discussed in May. The samples were made over the summer and the furniture was exhibited at the Zagreb Fair in September. This furniture is specially intended for use in congress rooms, restaurants and hotels. It will be made of natural beech and later in a version stained in four colours. The chair is constructed so that it will be possible to put five together in a row for quick modifications to congress rooms. In addition, some of the existing furniture has been corrected and exhibited in Utrecht.

Work done at the request of ŠIPAD in Denmark

The consultant met with the director of the School for Furniture Design, Mr. Gerlov Knudsen, who was interested in future co-operation. They selected a young Danish designer, Mr. Marquardsen, who would be able to start work at the Design Centre as soon as a date is fixed and to stay for three to four months. The consultant also met with the director of the Institute for Technology, Mr. Morten Knudsen, to discuss quality control and future co-operation between the two institutes. Documentation on Danish quality control was collected and delivered to Mr. Baskovic of the Institute of Wood Technology.

Three other meetings to discuss the right counterparts (hosts and guides) for the study tour took place in Taastrup with people from the wood department of the Technical Institute. Mr. Flemming Hvidt and Mr. Borge Jensen helped to select counterparts. These will be assigned as follows:

Wood drying, Thomas Thomassen

Gluing techniques, Poul Christiansen and Borge Jensen

Quality control, Flemming Hviot

Machine techniques, Hans Mølstrand

Surface treatment, Jørgen Reslet

Laboratory for wood protection, Erik Boreas-Holt

Upholstered furniture, Carsten Larsen

A set of drawings for laboratory furniture has been turned over to Namestaj in Gradačac for investigation of the suitability of such furniture for the Yugoslav market.

Furniture from the Neretva OOUR in Konlik, designed in a national style by Mr. Mulic and based partly on handwork and partly on industrial production, was investigated for future export to Denmark. The consultant met with two importers; both were interested and will visit the factory as soon as samples are ready.

In addition, some brochures on prefabricated wooden houses were collected, turned over to and discussed with the Design Centre at Sarajevo.

Annex I

TENTATIVE PROCEDURES FOR A NATIONAL OR INTERNATIONAL
FURNITURE COMPETITION
(to be organized by ŠIPAD)

1. **Publicity:** subject of the competition; information on who may participate; deadlines and other instructions for requests (e.g., requests should be made in writing and include address and phone number).
2. **Invitation for participation.**
3. **Prizes:** total amount and how it is to be divided.
4. **Numerical identification:** project models to be marked with the same numbers.
5. **Rules for submission:** anonymity and the way to submit the project; sizes of the drawings and instructions for returning them; date and address for delivery.
6. **Insurance against fire and theft.**
7. **Judgement:** date and composition of the committee.
8. **Claims:** participants must not reveal names; project must be submitted in time; project must not have been published before.
9. **Rights of participants:** if, within two months of the award of the prizes, a decision on production has not been taken, the author may make arrangements with other producers; the copyright belongs to the author.
10. **Royalty:** agreement about co-operation should be made and the royalty fixed before production starts.

Annex II

REPORT ON THE MEETING WITH REPRESENTATIVES AND
THE MANAGEMENT OF ŠIPAD, HELD ON 29 MAY 1975

The consultant met the following ŠIPAD representatives:

Mr. M. Pjaca, Deputy Director General
Mr. Todorovic
Mr. M. Milic
Mr. Sarailjia
Mr. D. Praskac, Director, ŠIPAD Design Centre
Mr. A. Jusic, Head, ŠIPAD Research and Development Sector
Mr. Mercevaljer
Mr. V. Solaja, National Project Director
Mrs. J. Stanisic, Interpreter

The consultant expressed the following views:

- (a) The Fair at Zagreb was not interesting from a Scandinavian point of view, as much from the standpoint of the quality as of the design;
- (b) The factories turned out the same production (programme) competing with each other;
- (c) Huge factories were being constructed without first having solved the problem of what to produce;
- (d) The outlets were too small, thus limiting the possibility of an interesting exhibition;
- (e) There was a lack of exchange of internal information within ŠIPAD and among the factories;
- (f) The Design Centre did not work as it was intended to; it was impossible to cope with the needs of 28 factories with the present design staff, no matter how skilled they might be;
- (g) The time needed for designing original pieces of furniture could be fixed, and perhaps only one of 30 ideas could be expected to reach the production stage.

The following recommendations were made:

- (a) To strengthen the staff of the Design Centre, which would need 18 to 20 designers (architects) to serve 28 factories. In addition, there could be about 10 free-lance designers. The Design Centre should concentrate on designing new models, arranging exhibitions, and making the sales outlets more interesting;
- (b) To find a well qualified co-ordinator to be in charge of the whole SIPAD collection in order to fit the programme together. This product co-ordinator should be responsible only to the management of SIPAD and his job should be to supply the missing link between the various OOURs, the marketing and sales departments, the graphic advertising, the free-lance designers and the Design Centre;
- (c) To direct the range of furniture more towards the institutional sector;
- (d) To use the prototype workshop partly for new experiments and new models and partly as a place where quality could be controlled;
- (e) To establish quality control after the rules of the Institute for Technology in Denmark or the Nobel Institut in Sweden, form a committee selected by Mr. Backović, and send three to four members together with an interpreter on a study tour;
- (f) To arrange a competition for furniture design, national or international. The economic questions of prizes, licences etc. would have to be solved;
- (g) To establish a royalty system for free-lance designers, based on the production size and on the product price from the factory (royalties of about 1 to 3 per cent);
- (h) To introduce a course for furniture design in co-operation with the School of Applied Art;
- (i) To train the workers so that they feel responsible for their own work, and to train the salespeople so that they are able to give better information about quality, maintenance etc.;
- (j) To change the sales outlets: perhaps reduce their number; make them larger and more interesting; also include lighting appliances, carpets and decorations. Even planning interiors for customers should be included. This was a long-term measure; as a start the outlet in front of the hotel "Europa"

at Simjevo could be a place where factories could show their new products. In the longer term, ŠIPAD should find a suitable location for presenting its products in a better way;

(k) To find a good graphic designer to add to the staff. He should be in charge of advertising, packaging and sales campaigns, and his task should be to make the name of ŠIPAD well-known for new design and good quality;

(l) To organize or endorse language lessons in English and German;

(m) To start the marketing department and to include in its work programme market studies for various products or regions;

(n) To stop the operation of all new plants for the moment, until a decision had been taken on what they were going to produce and until they had been co-ordinated;

(o) To make smaller plants (maximum 5,000 to 6,000 m²) in the future since they would be easier to manage in changing production;

(p) To determine whether the sales department would be able to cope with the future production since one factory alone had a capacity of 1 million tables. There seemed to have been no marketing research carried out. Production had not yet been decided;

(q) To give more support to the UNDP/UNIDO project; the project was far behind schedule. More people from the ŠIPAD top management should be directly involved in the project and take part in decisions, especially when these had to do with the work programme for experts. There should be a committee meeting at least once a month at which the report on project progress and activities should be given;

(r) To show greater interest in the Design Centre since it would be of great importance if exports were to increase and new items were to be developed for 28 factories;

(s) To arrange a system of internal information within ŠIPAD and between ŠIPAD and the factories. The OOURs should be more involved in project activities and should send their needs and requirements to the Centre in order to obtain the proper specialist and arrange his work programme in detail. The ŠIPAD newspaper could be used to inform the OOURs about the activities and recommendations of the experts.

(t) To see that full-time counterparts were available to make full use of experts.

Annex III

SHORT REPORTS ON VISITS TO VARIOUS FACTORIES

1. Standard at Sarajevo

There was a meeting with the director and the factory's designer on 30 April. After a visit to the factory, in a discussion of the quality, the consultant made some proposals for changes in the existing models and suggested ways in which the general quality could be improved.

Better protection of the furniture during internal transport is needed; it should be protected with wedges of polystyrol strips. The representatives of the firm mentioned the need to obtain the design of a furniture group consisting of two sofas, two chairs, a wall system with three sections and one sofa table - all to be sold for less than Din 10,000.

The need for better contact with the Design Centre was also mentioned and the possibility of exchanging books, periodicals and technical information on such things as fittings.

2. The factory Namjestaj (kitchen furniture) at Gradačac

The factory and the exhibition were visited on 6 May with the director and the technical director. The products and quality in general were discussed. The consultant thought the quality quite good and that the factory was more or less on the same level as the German kitchen furniture factories. The following recommendations were made:

- (a) To complement the system with extension plans;
- (b) To change the surface to a mat finish (this should be discussed with the sales department);
- (c) To change the handles of the glass sliding doors which are too small and cause broken nails;
- (d) To make a system for divisions in the drawers;
- (e) To introduce a built-in light under the wall-hanging units;
- (f) To make a unit for books in the model either to hang or to be placed on the floor (or both);
- (g) To make the handles and the edges of the tabletop so that they fit together;
- (h) To assure better protection of the edges during transport;
- (i) To lengthen the baseboard to match the full length of the elements;
- (j) To put at a booklet enumerating Bosnian specialities to give as a present to buyers.

In addition, the possibility was discussed of co-operation with Konjuh regarding tables and chairs for kitchens.

The possibilities of starting the production of laboratory furniture was also discussed. The consultant promised to bring drawings in September.

3. Buducnost at Samac

After the visit to the factory (on 6 May) the quality and sales possibilities were discussed of the various products in general and of the "Scherazada" line in particular. Some minor changes were proposed. The design of the wall system (by Mr. Mulic) is the only product in the SIPAD furniture line which reflects an attempt to reproduce national style; the consultant believes the effort deserves more support.

The sofa tables would look lighter if the arches under the top were raised about 5 to 6 cm closer to the top.

4. Konjuh at Zivinice

The consultant met with the technical director and his wife, who designs the furniture. They visited the new plant, which has a capacity of 1 million tables.

Sketches were reviewed of various tables in different French styles which are to be produced in the new factory. Some recommendations regarding the existing production were made, especially concerning the table construction. The use of a metal corner-fitting was recommended. The quality of the particle-boards was thought to be not good enough. Much furniture is damaged during transport through the internal transport system.

Because of the enormous production capacity there will be a great need for new design. The consultant suggested that there should be co-operation with Mr. Faruk, Mr. Mulic and others, and that the Design Centre should be urged to establish closer working relations.

The problem of gluing beech in large dimension (up to a diameter of 28 cm) was discussed. This question could be solved by the Institute of Technology at Copenhagen.

5. Nerstva at Konjic

The "Mulic" exhibition and workshop for carving were visited in the company of Mr. Mulic. The future plant and production in this field was

discussed. This production is going to be very interesting because it is based on original items from old Bosnian folklore; provided the quality is good, there should be a good possibility for export all over the world.

The size of the future factory is reasonable.

6. Luc at Trebinje

The Luc factory was visited on 24 May. A general discussion was held on quality and design.

Some minor changes in the existing programme for entrance furniture were suggested. The future plans for exhibitions were also discussed.

7. Una at Bossanska Krupa

The lack of original design, which is the main problem, was discussed with the directors on 3 and 4 June.

The factory makes chairs of quite good quality and is well-suited for tables and chairs, both for dining-room and for institutional use. The production will be in beech, oak and perhaps pine or spruce.

The writing table in pine and green lacquer needs only to have the handles changed and for the "Sarg" to be made in pine.

Some corrections were agreed upon for a new group in spruce, which could be interesting for export. The chair was changed; the table was acceptable. An upper cabinet to fit the existing cabinet should be produced. The handles should be changed. The drawings were to be sent to Denmark for correction.

The possibility of establishing co-operation was discussed, and it was agreed to start with a stacking chair designed by the consultant, who was to send the drawings for prototypes to be made by September.

The possibility was also discussed of co-operation with designers from the School of Furniture Design in Denmark.

8. 4 November at Bihać

The factory and the new plant were visited with the director and the technical director (Mlinarić Pero) on 4 and 5 June. It seems quite promising, with the flexible arrangement of production lines. With the new line for lacquer treatment the factory will be able to turn out very good quality with possibilities for export. It has just started production of the "Olympia" system of office furniture.

There is space enough for more lines, and a meeting was agreed on at Jamnjevo to discuss the possibility of co-operation regarding an office line that the consultant had made in Denmark.

There was also interest in school furniture and some metal furniture. Fittings could be made within the factory.

At a meeting at Jamnjevo on 10 June it was agreed to start a new line in office furniture, based on the sketches and models the consultant brought from Denmark. The consultant promised to have the drawings ready before the middle of July so that samples could be made before 1 September.

4. Varda at Višegrad

A meeting was held with the director, Mr. Faruk, and Mr. Alija on 30 and 31 May.

How models in pine were discussed and it was agreed to make the following samples ready as prototypes for 1 September:

(a) Furniture designed by Mr. Faruk:

- (i) Wall system as seen at the Fair in Zagreb but redesigned;
- (ii) Furniture for hotel and private use (seen among the stock of the old factory at Varda);
- (iii) Outdoor furniture (tables and chairs) in black pine (as discussed at the Centre on 19 of May and again at Varda);
- (iv) Lamps, screen-walls for exhibitions, since Mr. Faruk is a skilled architect and has some good artistic ideas; very nice and original furniture should result from this co-operation.

The price of this furniture will be rather expensive and the production size will probably not reach the size estimated by the firm, but these items should make the name of Varda well-known.

(b) Furniture designed by Mr. Alija:

- (i) Wall system in pine (discussed at the first visit to Varda on 28 April and later at the Centre on 28 May);
- (ii) Seating group consisting of a two and three-seater sofa and high and low chairs;
- (iii) Three to four sofa tables to form the group;
- (iv) Dining tables (three items);
- (v) Chair and armchair for the dining tables.

This furniture will form a good basic production for the factory. Mr. Alija has a good knowledge of the wood, and this line might also sell quite well in Scandinavia.

Furthermore, it was suggested that the co-operation with architects be increased so that the factory would be fully occupied. Mr. Mulic from Motak was mentioned. He has some ideas that would fit Varda's production.

As the consultant thought the factory had been designed much too large, different new product lines were discussed to utilize the existing capacity. These might be:

- (a) Kitchen furniture in pine;
- (b) Requisites for kitchen or for decorative use;
- (c) Prefabricated elements for houses in pine;
- (d) Toys in pine or beech.

It was mentioned that it would be possible to have a small workshop for metal hardware within the Factory.

There might be the possibility of co-operating with a factory for lorry production, which is located close by, to produce the wooden parts of the lorries.

The possibility of arranging a permanent exhibition of the new furniture either at Sarajevo or at Belgrade was also discussed.

Annex IV

REPORT ON THE VISIT TO THE ZAGREB FAIR (SEPTEMBER 1975)

The general impression of the SIPAD stand at the Fair was that the quality had improved since the last exhibition in April. Progress was seen in design, especially of the wood furniture. The upholstered furniture pieces were still of a dimension that made them difficult to handle and to sit in.

The greatest progress had been made by the following factories:

Varda. Furniture designed by Mr. Alaja that had been well-done were a wall system and a sitting group in pine. The quality of the sitting group was not the best, but it will surely be improved once produced industrially. A tar set, which needed some changes, and chairs and tables from Mr. Faruk in pine were quite good; the table might need some minor corrections. The dining group needed some changes in the construction and design.

Nanostad. The new kitchen programme was quite nice both in quality and design.

Vranica. The black-and-white dining group was quite nice, but needed some minor corrections in dimensions and upholstery.

Krivaja. Good quality was observed in the pine furniture.

Luc. The changes made in the system since the April Fair were good and the quality had improved.

Una. The quality of the stacking chairs and tables was quite good. The table top should have been placed correctly on top of the frame. The seat should have been a bit narrower because of the stacking system. The fittings used for the attachment of the chairs in rows must be changed; those exhibited were not strong enough.

SIPAD school furniture. Tables and cabinets for schools were good both in quality and design. This product should have a good chance for mass production.

4 Novembar. The office furniture system in a combination of wood and steel was of an acceptable quality. The tables were about 3 to 5 cm too high and there was a great need for office chairs to fit the line.

Bosna. Book-cases in various sizes were quite nice both in quality and design.

Budučnost. The wall units designed by Mr. Mulic were brown instead of green. This was an improvement. The quality also seemed to be better.

Konjuh. The tables and chairs for the USSR were too high and too big. A sofa table with two angles to carry the top did not seem to fit into the production and would be difficult to sell.

Annex V

SUGGESTIONS FOR A TWO-MONTH FELLOWSHIP IN
THE UNITED STATES (MARCH-APRIL 1976)

For a designer to have an all-round view of design and exhibitions in the United States of America, it would be advantageous to join a design team for about one month, to study the work done and the way the team co-operates.

This should be arranged either through UNIDO or the representative of SIPAD in New York. The second month could be divided in such a way that the designer would spend 10 days on the East Coast, 10 days on the West Coast and perhaps 5 or 6 days in Canada (Toronto and Montreal are the only places of interest from a design point of view). The most important place is New York. Most of the producers have their own showrooms. Many of them are located in the D & D Building in the centre of the city.

The following showrooms are important:

John Stuart Inc. (Roger Michaels))	D & D Building
Cado Furniture Inc. (Kai Schmidt))	
Baker Furniture)	205 East 58th Street
Drexel Furniture)	
T. Turner, 62nd Street and 2nd Avenue		
Knoll International, Park Avenue		
Hermann Miller, Park Avenue		

Design Concepts, J.G. Furniture and Steandig Furniture should also be visited.

The following shops in New York could also be of interest:

Bloomingtons, Third Avenue and 58th Street
B. Altman, Fifth Avenue and 34th Street
Maurice Villency Inc., 34th Street

On the West Coast, Los Angeles is more important than San Francisco.

The following addresses could be useful:

Royal System Inc. (Mr. Torben Munkler)
13850 Saticoy Street, Van Nuys (California)
Scan Inc. (Mr. Stig Christensen)

In San Francisco, there are two important shops:

S. Christian of Copenhagen	}	Both in the centre
Mr. Tage Christensen		

In Chicago, most of the showrooms are in the Merchandise Mart Building; among some 100 firms:

Steel Case (office furniture)
General Fireproofing
Knoll International
Herman Miller

In Atlanta, McKeerer, Walker & Graham might be visited.

In Canada, the following firms are worth seeing:

Toronto

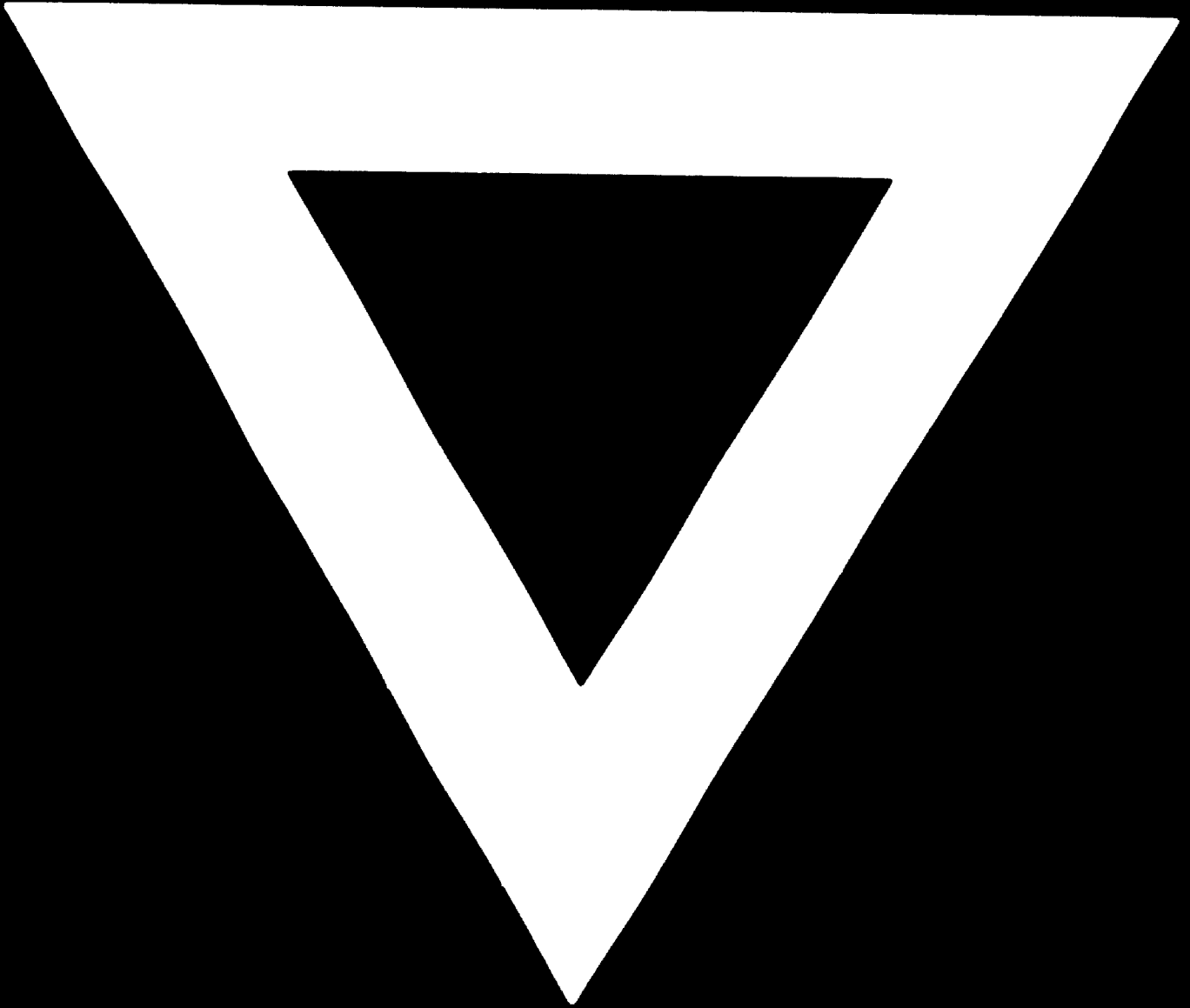
Art Shoppe, 2131 Yong Street (Mr. Martin Offman)
Karelia, 97 Water Street
Nordicraft, 375 Norfinch Drive
De Boer's (five showrooms with good quality)
Bobois Roche (special showroom for steel glass and painted furniture)

Montreal

Danish House, 1480 South Service Road, Trans Canada Highway,
Dorval (big showroom with typical Danish furniture)
H.G. Valiquette, 510 East Street, Caterine
Chateau, 1125 St. Martin Laval (special glass steel)

The best office furniture is exhibited at Place Bonaventure, 21 Riffel.





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