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National College of Art & Design
Faculty of Design
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Danish Design Education:
A Model for Furniture Design Education in Ireland.

by
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Submitted to the
Faculty of History of Art and Design and
Complementary Studies
in Candidacy for the Degree of
Bachelor of Design
in Industrial Design
1994

ACKNOWLEDGEMENTS

I would like to thank the following for their contribution and assistance in writing this thesis :

Anja Van Gossein, Past President of the Craft Council Of Ireland.

Kevin Whelan, Tutor, D.I.T. School of Marketing and Design and the Furniture College of Letterfrack.

Tony Kenny, Project Manager, Udaras na Gaeltachta.

Diarmuid Bradley, Furniture designer.

Pual Caffery, Thesis tutor.

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Introduction

The aim of this thesis is to investigate the need for improvements in formal education in furniture design in Ireland, with particular regard to industry.

This shows by comparing and contrasting the present Danish and Irish furniture design education systems. In Ireland the education is directed towards craft whereas the Danish system aims at keeping the craft based design, yet applying it to industry. By adopting certain aspects of the Danish furniture design education system, it is possible to strengthen the link between industry and craft design concerning furniture in Ireland, while still maintaining the distinctive characteristics of Irish furniture design.

The literature research deals with courses that are available in furniture design, the furniture industry and design organisations, in both Denmark and Ireland. The educational institutions in Denmark included in this thesis.

The educational institutions where furniture and interior design is studied in Denmark are:

The Royal Danish Academy of Fine Arts, School of
Architecture

Aarhus School of Architecture

The current study is designed to examine the role of the school in the development of the child's social and emotional competencies. The study is designed to examine the role of the school in the development of the child's social and emotional competencies.

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The School of Arts, Crafts and Design, Copenhagen
The School of Interior Design, Frederiksberg
Technical College.

Prospectus from these institutes give an outline of the particular courses. A Publication by the Danish Design Center "Danish Furniture Design" outlines the courses, illustrates designs arising from the educational structure and demonstrates the continuous developments of furniture design towards industry.

The furniture industry in Denmark:

The two significant publications in this area are "Danske Modler" and "Danmark" which give up-to-date information on technological developments, exhibitions and consumer trends within the furniture industry. This ensures that the educational institutes are aware of the continuous changes within the furniture industry.

Danish Design Center:

The publication "Design DK" acts in the education of design by discussing designs, promoting manufacturers/designers and connecting manufacturers/designers together by showing Danish design at national and international levels.

The School of Business and Economics
The University of Western Australia
Perth, Western Australia

Proposed by the School of Business and Economics
The University of Western Australia
Perth, Western Australia
The School of Business and Economics
The University of Western Australia
Perth, Western Australia

Two design organizations
The School of Business and Economics
The University of Western Australia
Perth, Western Australia
The School of Business and Economics
The University of Western Australia
Perth, Western Australia
The School of Business and Economics
The University of Western Australia
Perth, Western Australia

Design School
The School of Business and Economics
The University of Western Australia
Perth, Western Australia
The School of Business and Economics
The University of Western Australia
Perth, Western Australia
The School of Business and Economics
The University of Western Australia
Perth, Western Australia

Although there are no recent reports of this kind ie these reports are dated from 1961 to 1973, few of the recommendations of the fore mentioned reports have been applied. These reports view the furniture industry as being uneducated in the production, marketing and design of furniture. The reports emphasise the importance of furniture design education towards industry.

Design organisation

There are two design organisations in Ireland, The Craft Council of Ireland, Powerscourt, and The Design Yard, (Temple Bar, Dublin). They produce exhibition brochures and provide reference material on designers and manufacturers but neither successfully portray Irish design through other publications.

Articles showing Irish furniture design appear in the craft magazine Ireland and are often published in relation to tourists, thus showing the importance of craft in Irish design.

The research done pinpoints that education in furniture design is an important aspect in the development of industry and Irish furniture design, but little has changed over the last 30 years. The design of Irish furniture shows that craft and industry are diverging further, instead of coming closer together.

While studying furniture and interior design at the School of Architecture at Aarhus, Denmark, I found that their teaching methods collaborate design and manufacture as one in producing furniture. This results in the connection between designer and manufacture: they come to understand each other and learn how to use one another.

The thesis addresses the teaching methods of the furniture design educational system and the designs produced through different education systems.

With standing water and a few small fish
the water was very shallow and the bottom was
very soft. The water was very shallow and the
bottom was very soft. The water was very shallow
and the bottom was very soft. The water was very
shallow and the bottom was very soft. The water
was very shallow and the bottom was very soft.

The first thing I noticed when I stepped out
of the boat was the soft mud under my feet.
The water was very shallow and the bottom was
very soft. The water was very shallow and the
bottom was very soft. The water was very shallow
and the bottom was very soft. The water was very
shallow and the bottom was very soft.

CHAPTER 1

History of Design

The history of design offers a broad knowledge of social and historical aspects of design to furniture designers, while also exploring the aesthetics, forms, materials and techniques used in the creation of the furniture design. It provides a wealth of knowledge that enables a person to develop a critical opinion and awareness of design.

"The way we view and study furniture influences our opinions of it and we should always try and understand the setting in which furniture is viewed" (Conway, 1983), 63)

The teaching of the history of design has developed in a number of ways. By looking at informal teaching of the craftsmen and the formal teaching of educational institutes - the importance of history of design in relation to furniture design can be seen.

The craftsmen both in Ireland and Denmark have the same teaching. In the past, particular families were renowned for their skills at certain crafts. Traditional craftsmen relied on the father to son relationship to preserve their way of designing. The way in which they were taught history of design was by looking at the furniture designs of their fathers and forefathers. They benefitted from first hand knowledge of the design by being shown the design or by having it described to them. This method of teaching worked in the past but in present

day circumstances it is too restrictive for their designs to be successful. In order to overcome this, there is a need for craftsmen to learn about furniture design outside their own locality. Here they may learn new techniques and new ideas which they can apply to their own personal style. This knowledge doesn't take away from their tradition but adds to its importance. In comparing outside knowledge with their own they perceive their own work in a different light and so they can realise the full potential of their own design.

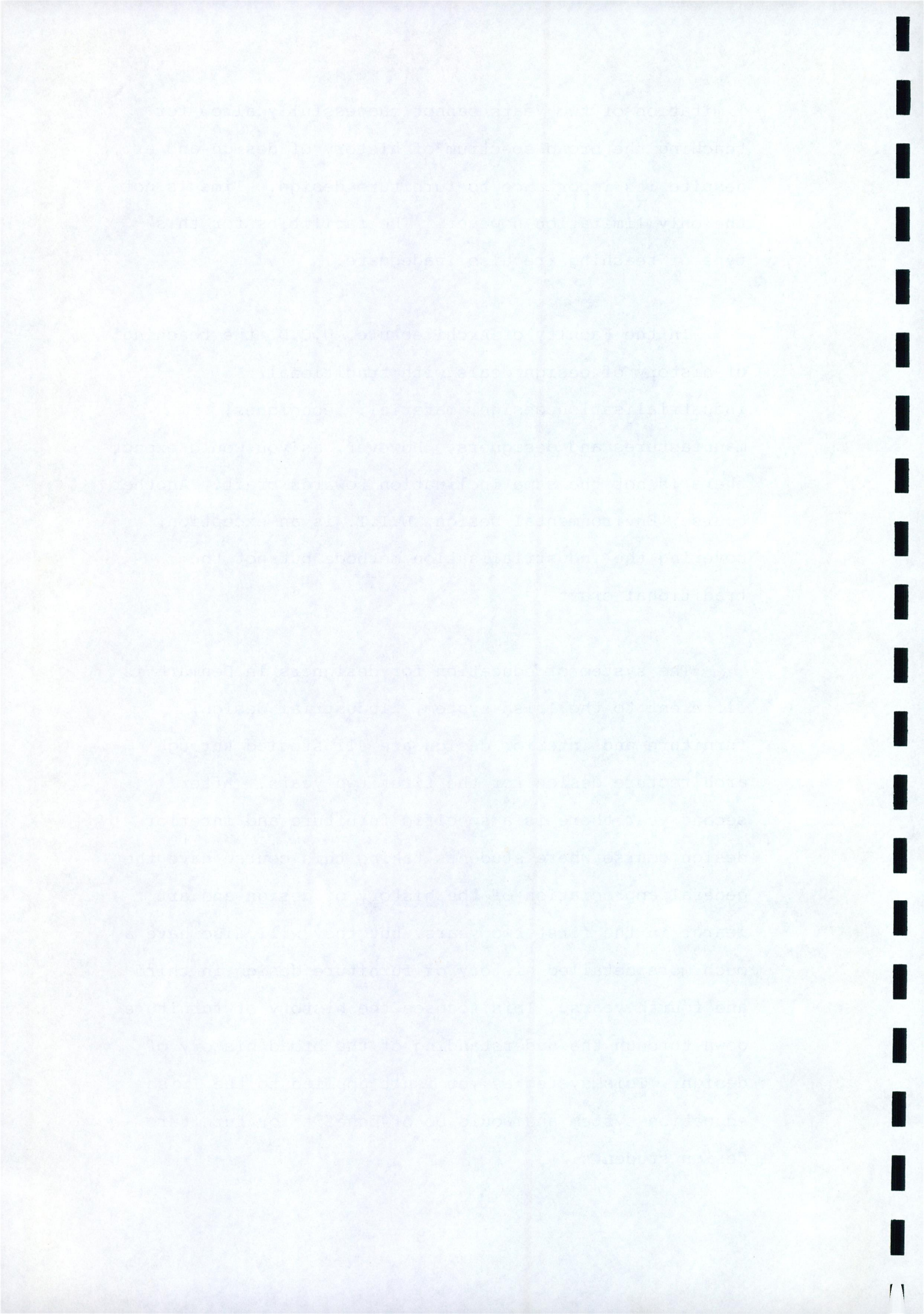
In N.C.A.D. a broad history of design and art is taught in courses such as Industrial Design, Craft Design, Fashion and Textiles. Designers' influences of inspiration and methods analysis of design within their social and industrialisation/traditional context are also studied. This broad knowledge gives the student an understanding of the past and reasons why designs were successful during that period. By being able to study the designers of the past, students may learn how to structure their own designs and so develop their own styles. And so the study of history of design establishes inspiration, techniques and attitudes in design. Craftsmen lose out on the benefits of this formal education.

In Letterfrack, craftsmen are formally educated in the history of design but aspects such as textiles, which are applied to furniture are by-passed. The time

limitation of two years cannot successfully allow for teaching the broad spectrum of history of design and art, despite its importance to furniture design. Time is not the only limitation however. The facilities for this type of teaching are also inadequate.

In the Faculty of Architecture, U.C.D. the teaching of history of design deals with traditional/ industrialisation design, material, techniques, manufactures and designers. However, as you would expect there is not the same inclination towards craft. Another course, Environmental Design, D.I.T. is an exception, covering the industrialisation methods but not the traditional craft.

The system of education for designers in Denmark is different to the Irish system. Industrial design, furniture and interior design are all studied through architecture design for the first two years. After second year there is a specific furniture and interior design course where students taking this course have the general appreciation of the history of design and art learnt in the first two years, but they will also have a much more detailed history of furniture design in third and fourth years. This focuses the history of furniture down through the understanding of the broad history of design. This system as yet isn't applied to the Irish education system and would be of benefit for furniture design students.



The history of design subconsciously can be seen through its appearance in society. It is not uncommon in Denmark to find furniture design pieces (e.g. work by Hans J. Wegner) openly on display in such places as banks and restaurants, or exhibited in the local Town Hall. This, and the fact that many of the museums exhibit furniture designs, shows the importance of furniture design in Denmark and the importance of its history.

Irish furniture design is not exhibited in this way, despite its long standing tradition. Firstly, the lack of awareness of the importance of furniture designs and secondly the lack of resources for it to exist, seems to account for this. In Ireland there aren't the subconscious reminders of the history of furniture design present in our society that can be seen in Denmark.

On examining the methods of teaching history of design in relation to furniture design in colleges in Denmark and Ireland, it can be seen that there is a way in which most of the beneficial aspects of the discussed courses may be linked. The way to do this would be by firstly providing a broad history of design, which would include a general view of art and textiles (as is done in N.C.A.D.) and then concentrating at a later stage on furniture design (as they do in Danish colleges, for example in the Aarhus School of Architecture).



Fig.1. Kvadrat textiles to furniture.

The Theory of Design

The theory of design is used and experimented with by the students through projects that they undertake. When the designer creates a design, it is based on principles of colour, light, mathematical calculations, shapes, texture and construction. These are the elements of design.

Colour theory is applied to furniture design by using complementary or contrasting colours. This can be most effectively used by use of contrasting materials or similar materials of different colours. See Fig. 1.

Mathematical theory is used in furniture design in construction and in order to achieve the correct dimensions so that the furniture is in proportion to its surroundings. Light and its different types is also an important consideration when dealing with furniture design.

This can be seen by the effect that light has on furniture and the way in which colour may change in the light. Daylight creates a bright full appearance, while artificial light emitting a general light creates a more subtle effect, as seen in Fig. 4. So it can be seen that colour, mathematics and light are all factors to be considered in a completed furniture design.

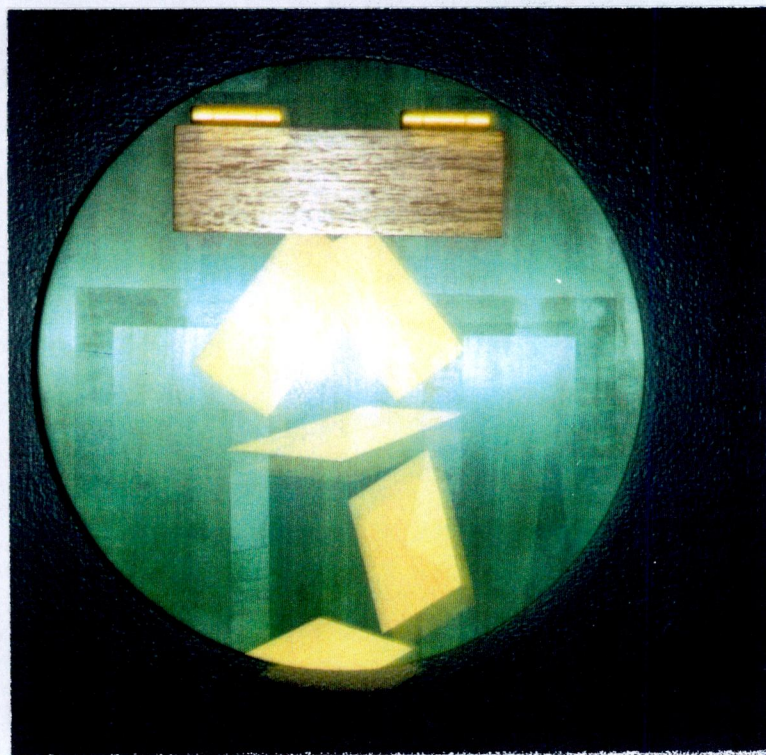


Fig.2. Letterbox By Paul Ryan, 1993.

In Ireland the basic theories of design are taught in all educational institutes. Each institute places emphasis on particular aspects of design theory, depending on the course.

The textile course in N.C.A.D. sees colour theory as an important element in design. The use of contrasting colours and the use of textiles results in stylistic and effective visual appearance in their designs. Upholstery of furniture is not part of the course at N.C.A.D. but the principles behind the course could be used to great effect by the furniture designer. At present furniture designers in Ireland keep furniture upholstery as a separate field of study yet its importance to furniture design cannot be ignored.

In Letterfrack the colour theory is also applied though without the use of textiles. Here the principles of colour are used in relation to coloured veneers and woods (Fig. 2). Mathematical theory is taught for use in the design and making of furniture. Students experiment and explore these theories by producing full-size pieces of furniture.

The industrial design course in N.C.A.D. explores the mathematical and colour theories. Colour is studied in relation to trends and fashion and colours are chosen to suit consumer markets and industry. By studying mathematical theory through geometric shapes, ergonomics

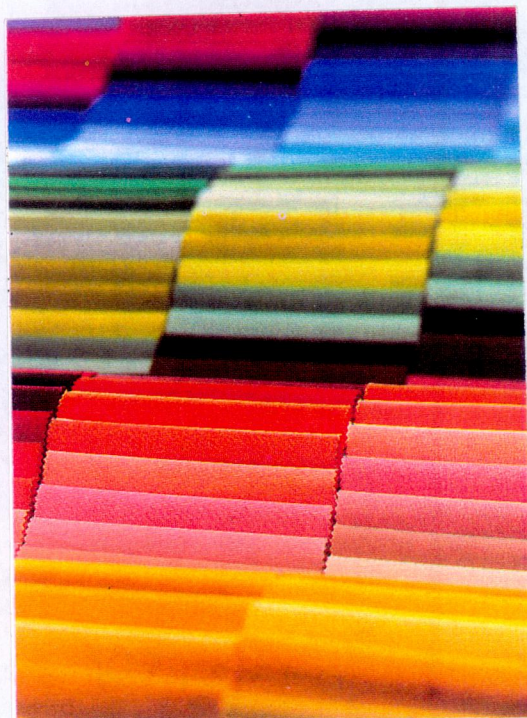


Fig.3. Coloured textiles.

and modular systems, the shape of the design can be better understood. The theory is then applied to projects.

The architecture course in U.C.D. and the environmental design course in D.I.T. examine the colour, light and mathematical theories. They look at the construction of an object and the way light effects it as being the important aspect while giving consideration to colour. By building mock-up models, students gain the experience of combining light, mathematical and colour in order to produce the final complete design. This combination has to exist in furniture design. If not, the study of design principles independently may lead to an incomplete study of furniture design.

In Denmark they successfully blend the theory of colour, light and mathematical in the architectural institutes. Their teaching methods differ slightly from Irish methods. Projects are a major part in their course but also they have formal classes on the principles of light, colour and mathematics. These theories are also explained through demonstrations.

In the Aarhus School of Architecture, Denmark, furniture and interior design students look at the use of colour by visiting the Kuadrat manufacturer, where they examine the range of mixture of colours and the different contrasts and blending used in textiles. Examples of

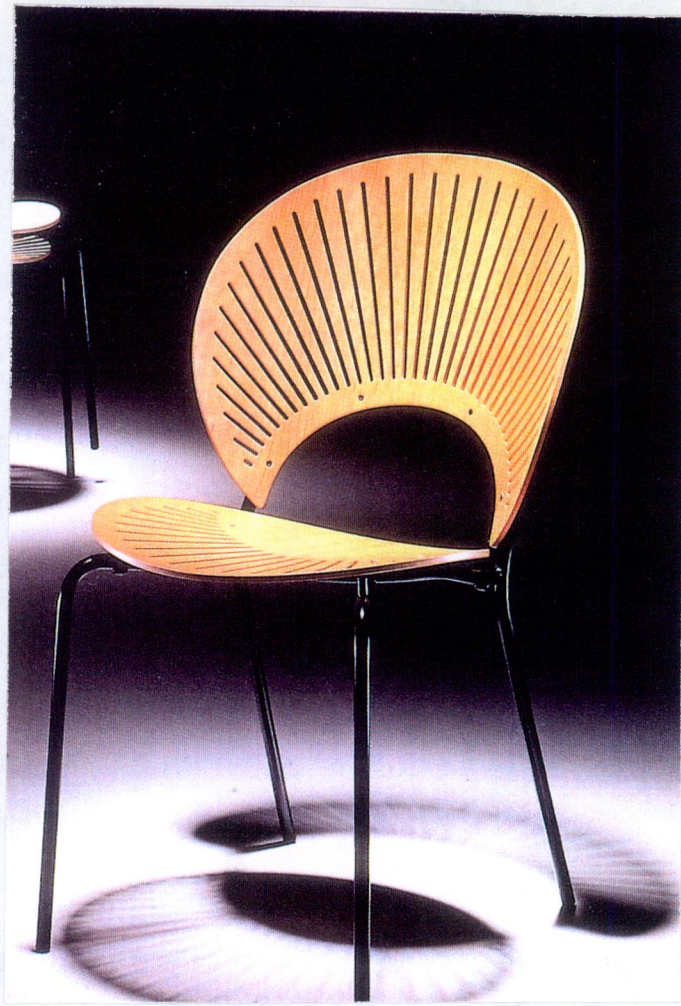


Fig.4. Furniture and light by Nanna Ditzel.



Fig. 5. Ellipse shaped table by Piet Hein.

these can be seen in Fig. 3. This brings the student into contact with industry by introducing them to textiles and colour in manufacture. This is important to the design of furniture upholstery and so to the complete furniture design.

They also look at the working use of colour and the effect light has on it through projects, totally dedicated to experimentations. They set up studio lights with colour filters and examine the effects of mixing colours in large areas of space. They look at the effect of light on furniture and the effect of light on the colour displayed by the piece of furniture. Through experimentation the student receives a visual understanding of combining colour and light in relation to furniture (Fig. 4). The mathematical theory (Fig. 5 super ellipse) of furniture design is taught through projects by experimenting with models. Each project is critically analysed by the class, so that the students learn from other projects within the class and they also learn to be more critical of their own work.

A full understanding of the theory of design is important to any designer, but the theories of light, colour and mathematics are of particular importance to furniture designers. In Denmark these theories are explored in detail through formal classes and through projects whereas in Ireland it is only by doing projects that the theories are learnt. The Danish idea of

There are two main types of...

1. The first type is...

2. The second type is...

3. The third type is...

4. The fourth type is...

5. The fifth type is...

6. The sixth type is...

7. The seventh type is...

8. The eighth type is...

9. The ninth type is...

10. The tenth type is...

11. The eleventh type is...

12. The twelfth type is...

13. The thirteenth type is...

14. The fourteenth type is...

15. The fifteenth type is...

16. The sixteenth type is...

17. The seventeenth type is...

18. The eighteenth type is...

19. The nineteenth type is...

20. The twentieth type is...

21. The twenty-first type is...

22. The twenty-second type is...

23. The twenty-third type is...

24. The twenty-fourth type is...

25. The twenty-fifth type is...

26. The twenty-sixth type is...

27. The twenty-seventh type is...

28. The twenty-eighth type is...

29. The twenty-ninth type is...

30. The thirtieth type is...

relating industry to their furniture and interior design course by visiting textile manufacturers, is one which we could adopt in Ireland.

Outlined above are just some of the major aspects of the theory of design. Of course it would be impossible to explain in detail all the aspects of the theory of design. This section, which is specific towards colour, light and mathematics, is merely used to demonstrate the huge importance and significance that the theory of design has, as part of an educational course of furniture design.

1. The first part of the paper is devoted to a general discussion of the problem of the existence of a solution of the boundary value problem for the Laplace equation in the case of a domain with a piecewise smooth boundary.

2. In the second part, we consider the problem of the existence of a solution of the boundary value problem for the Laplace equation in the case of a domain with a piecewise smooth boundary.

3. In the third part, we consider the problem of the existence of a solution of the boundary value problem for the Laplace equation in the case of a domain with a piecewise smooth boundary.

4. In the fourth part, we consider the problem of the existence of a solution of the boundary value problem for the Laplace equation in the case of a domain with a piecewise smooth boundary.

5. In the fifth part, we consider the problem of the existence of a solution of the boundary value problem for the Laplace equation in the case of a domain with a piecewise smooth boundary.

6. In the sixth part, we consider the problem of the existence of a solution of the boundary value problem for the Laplace equation in the case of a domain with a piecewise smooth boundary.

7. In the seventh part, we consider the problem of the existence of a solution of the boundary value problem for the Laplace equation in the case of a domain with a piecewise smooth boundary.

8. In the eighth part, we consider the problem of the existence of a solution of the boundary value problem for the Laplace equation in the case of a domain with a piecewise smooth boundary.

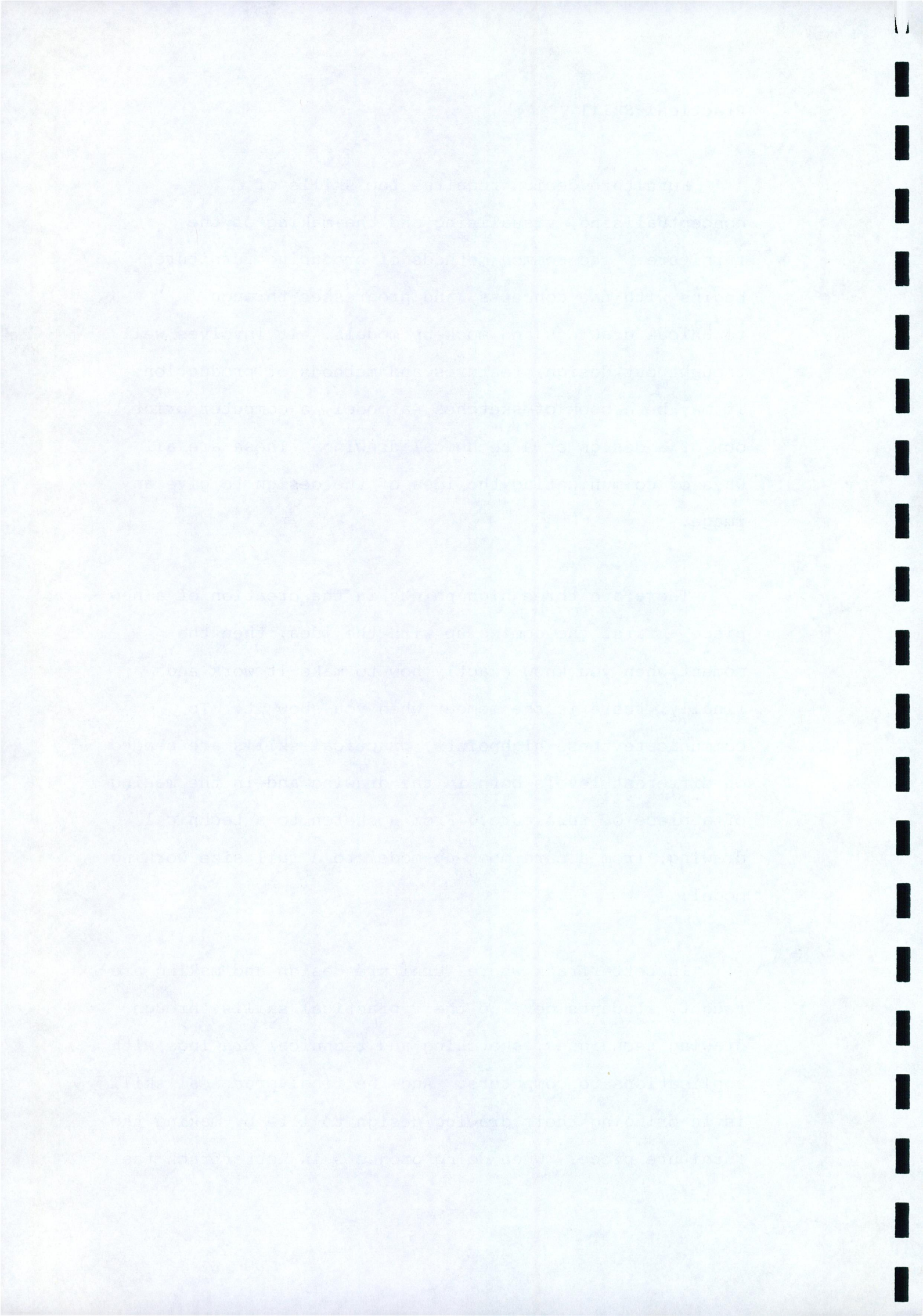
9. In the ninth part, we consider the problem of the existence of a solution of the boundary value problem for the Laplace equation in the case of a domain with a piecewise smooth boundary.

Practical Skill

Furniture design requires the skills of conceptualising, visualising and the making of the furniture. The common methods of producing furniture begins with the concepts, and progresses through technical drawings and mock-up models. It involves well thought out design, features and methods of production. It may be a book of sketches, a model, a computer print out of a design or a technical drawing. These are all ways of communicating the idea of the design to give an image.

There are three high points in the creation of a new piece - first the coming up with the idea, then the moment when you know exactly how to make it work and finally, there is the moment when you show it. To communicate these highpoints, practical skills are needed on different levels both in the drawing and in the making of a piece of furniture. From a sketch to a technical drawing, from a card mock-up model to a full size working model.

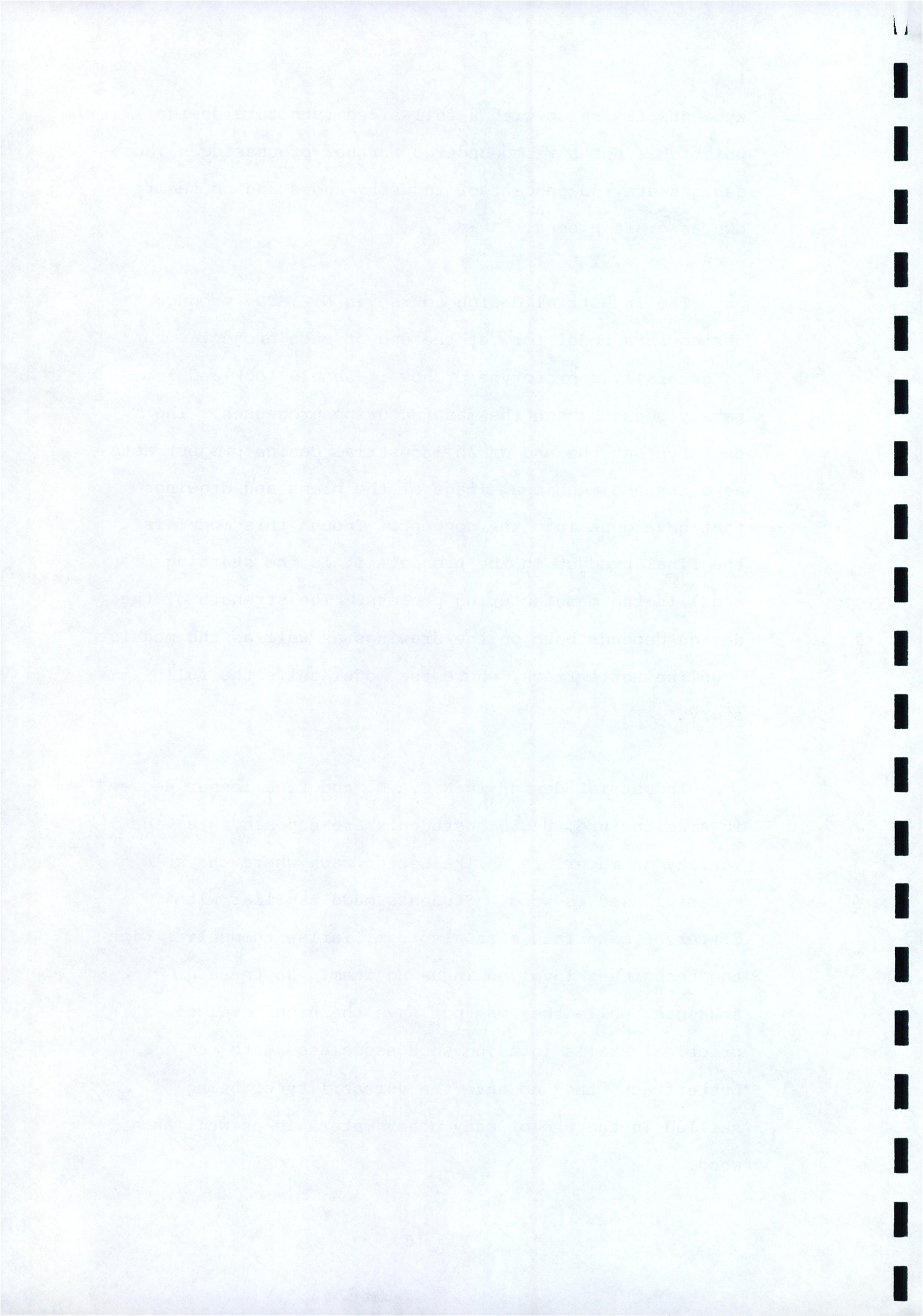
In Letterfrack where furniture design and making are taught, students develop their practical skills through drawing techniques, sketching and technical drawings with applications to computers. And the final practical skill is in bringing their drawing/design to life by making the furniture piece. When doing projects in Letterfrack the



students finish up with a full-sized furniture design which does not have to undergo further processing. These designs are independent of industry and stand on their own as craft pieces.

The industrial design course in N.C.A.D. produce the design in a model form at the end of each project - but is generally a prototype of how it should look and it rarely goes through the manufacturing processes. The prototype at the end of an industrial design project acts as a three dimensional image of the plans and drawings that have gone into the concept. Though this model is the final product in the project, it is the starting model in the manufacturing process. The strength of the design depends both on the drawings as well as the models - unlike Letterfrack, where the model tells the full story.

Industrial design in N.C.A.D. and to a lesser degree in Architecture, U.C.D., students are exposed to a wide variety of materials unlike Letterfrack where the sole material used is wood. Students made familiar with different materials must also familiarise themselves with the techniques involved in using them. So these students, while they may not have the high level of practical skills in using wood associated with Letterfrack, they do have the versability of being skilled in the use of many other materials as well as wood.



The environmental design course in D.I.T. is similar to Letterfrack, in that they do full sized models of their designs. They do not have the same high level of practical skills as Letterfrack students do, however they focus on materials other than wood, such as metal. These students direct their work more towards industry using prototypes in the same fashion as industrial design, N.C.A.S. and Architecture U.C.D.

The Danish architectural institutes follow much the same procedure as the N.C.A.D. system of teaching basic practical skills. Because in Denmark there is a separate furniture design course, the application of these skills are directed towards furniture design only. This does not happen in Ireland. In Letterfrack the application of practical skills is towards furniture only but also towards wood only. Danish students, by being able to focus on furniture design and in using the knowledge of the various materials, are more aware of the possibilities open to furniture designers.

Both within the Danish and the Irish educational system, computer aided design has become important in producing and displaying the design in two or three dimension. At present in Denmark, computer aided design is an important link between designs and manufacture. In Ireland furniture design in industry hasn't developed to the same extent that it has in Denmark, and so in Ireland computer aided design doesn't link manufacturers to

designers. In anticipating that link it is advisable that students would be familiar with the application of computers within the furniture design industry.



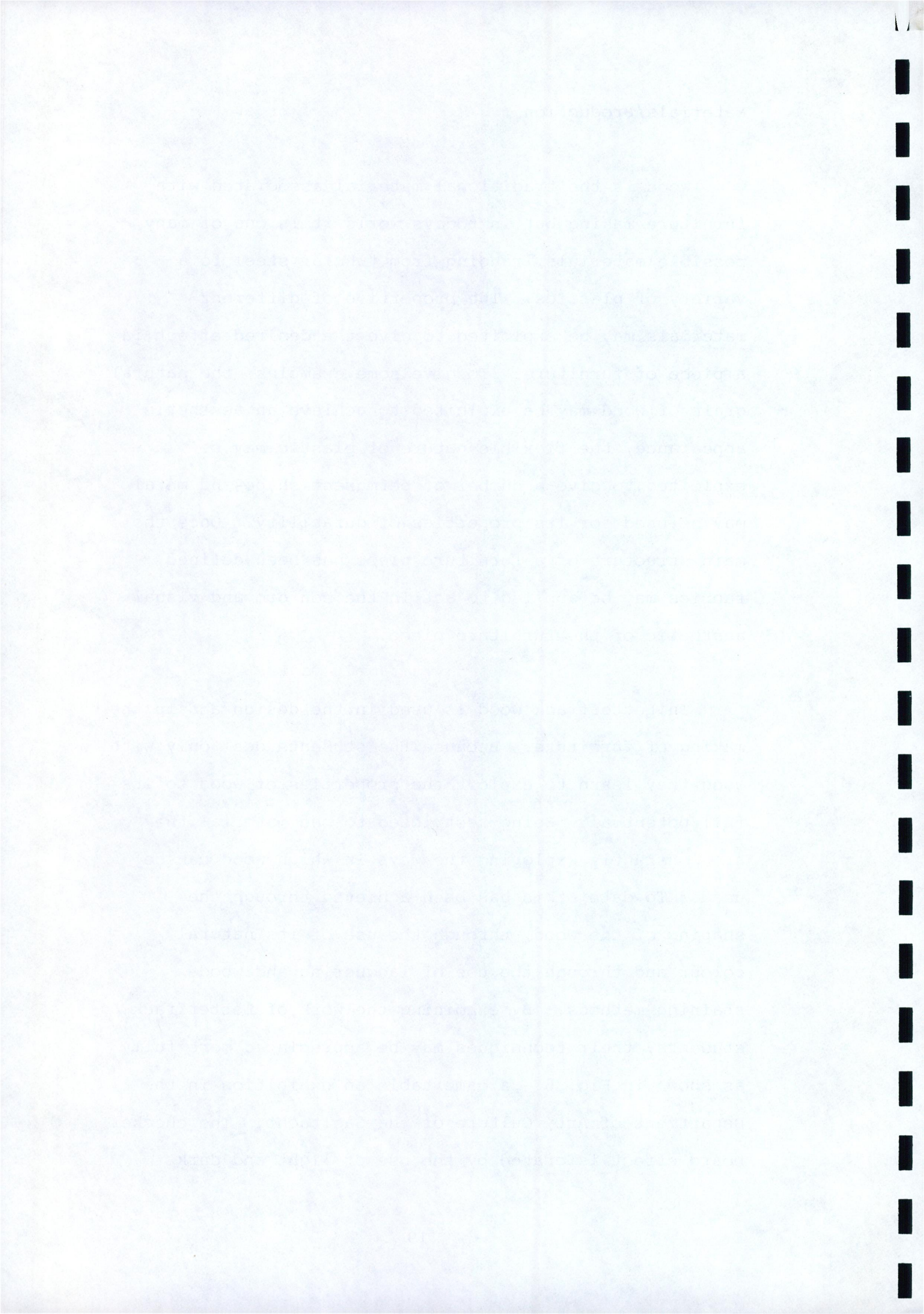


Fig.6. Game table by Derek Noonan.

Materials/Production

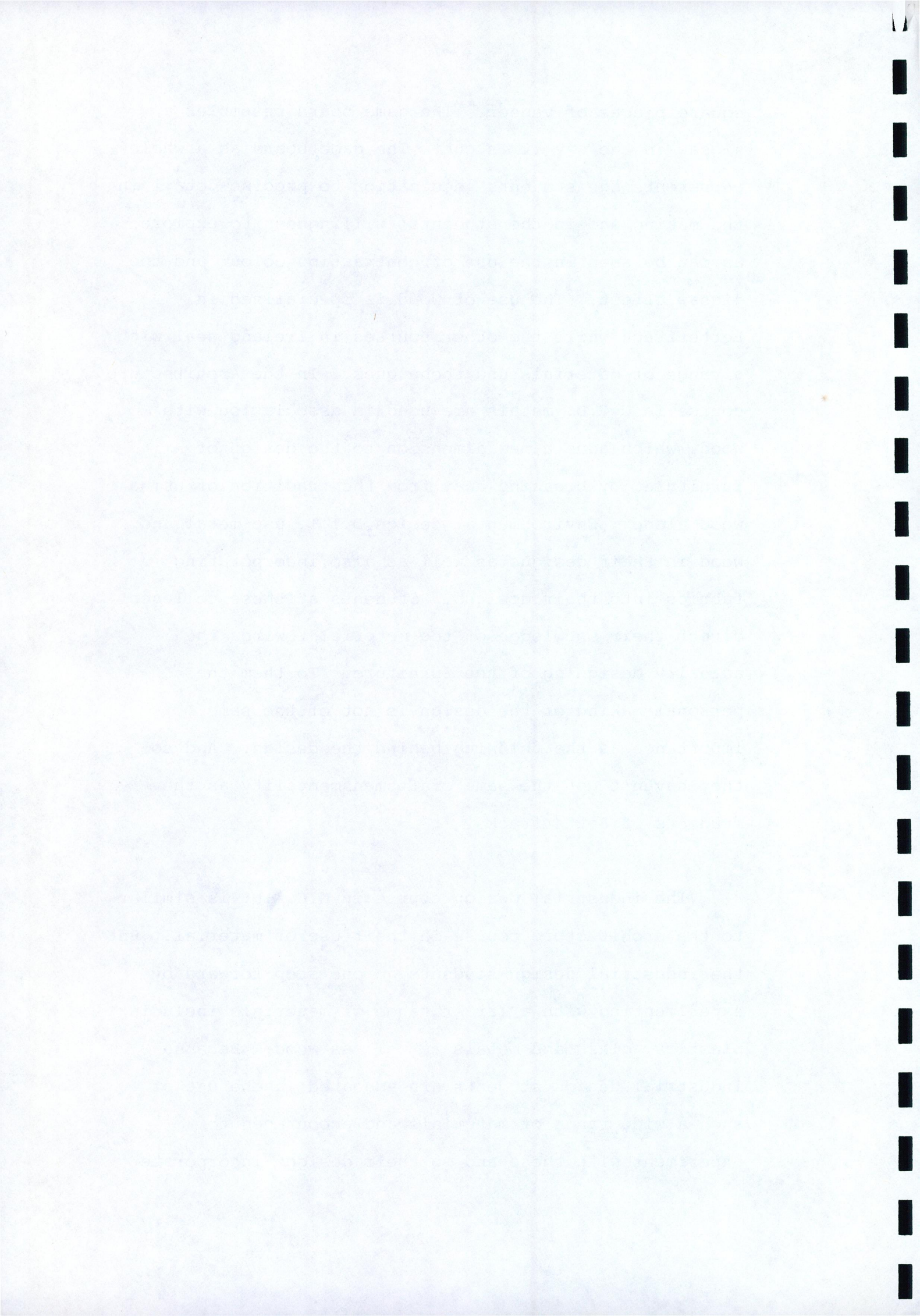
Wood is the traditional material associated with furniture making but in today's world it is one of many possible materials, ranging from tubular steel to a variety of plastics. The properties of different materials may be exploited to give the desired effect in a piece of furniture. To give some examples; the natural grain of wood may be exploited to achieve an aesthetic appearance, the flexible nature of plastic may be exploited to give a number of permanent shapes and metal may be used for its properties of durability. Once the main structure of a furniture piece has been defined, fabrics may be applied to act in the form and visual aesthetic of the furniture piece.

In Letterfrack wood is used in the design and in the making of furniture. Because the students deal only with wood they learn to exploit the properties of wood to its full potential. Being restricted to one material they are constantly exploring the ways in which wood can be used. To date, this has been achieved through the shaping of the wood, through the use of its natural colour and through the use of lacquering and wood-staining methods. By examining the work of Letterfrack students, their techniques may be appreciated more fully as shown in Fig. 6 - a game table on exhibition in the Department of Art, Culture of the Gaeltacht. The checker board effect is created by the use of light and dark



square pieces of veneer. The game board resembles a jigsaw in the way it is cut. The game board as a whole represents the students' dedication to precise detail in the making and in the students' willingness to explore, as can be seen in the use of contrasting colour and the jigsaw effect. The use of wood is specialised in Letterfrack while the other courses in Ireland deal with a range of materials and techniques. In the architecture course in U.C.D. metals are used in association with wood, which adds a new dimension to the design of furniture, by breaking away from the tradition of using wood alone. Environmental design, D.I.T. use metal and wood in their designs as well as also incorporating fabrics into their designs. Students at these colleges direct their knowledge of the material towards the actually designing of the furniture. To them the personal making of the design is not of the same importance as the thinking behind the design. And so they haven't got the same craftsmen mentality as the students of Letterfrack.

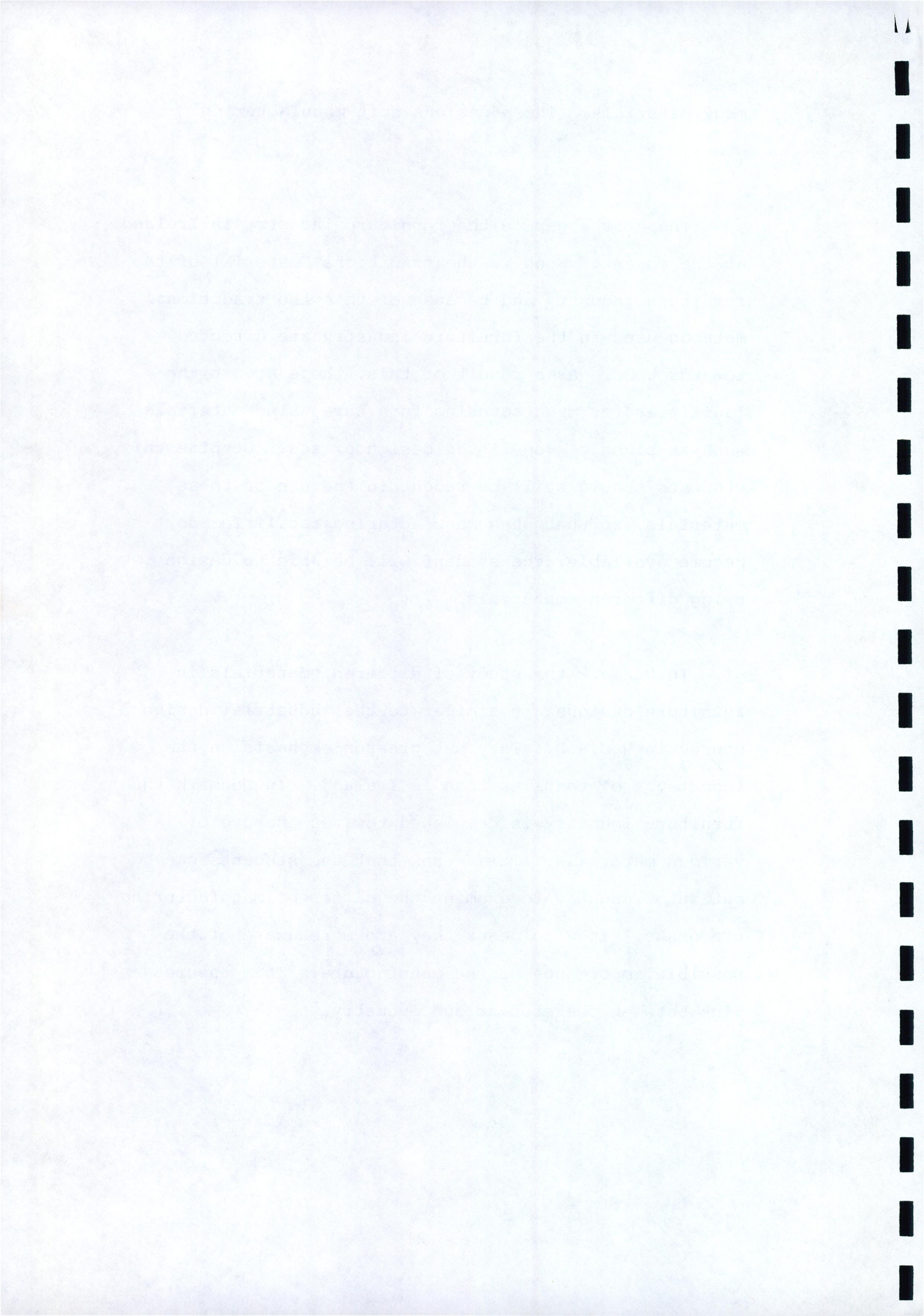
The industrial design course in N.C.A.D. is similar to the architecture course in their use of material. But the industrial design students go one step forward by experimenting with a larger range of materials including plastics, glass and metals as well as wood. Because industrial design students are educated in the use of such a wide range of materials and encouraged to experiment with these and so their designs incorporate



many materials. These designs suit manufacturing processes.

There is a gap in the furniture industry in Ireland at the moment. Wood is the traditional material of the furniture industry and because of this the traditional methods used in the furniture industry are directed towards wood. As a result of this, there aren't the facilities for manufacturing furniture using materials such as plastic even if the design exists. Despite this, students should still be taught in the use of these materials, so that when manufacturing facilities do become available, the student will be able to design using different materials.

In Denmark the study of different materials in furniture designs are similar to the industrial design course in N.C.A.D. They put greater emphasis on the importance of textiles than in Ireland. In Denmark the furniture industry is developed towards the use of various materials. This means that the students can go out into industry to examine the different manufacturing processes. It also means they are more aware of the possible importance of the manufacture. This ensures a link between the student and industry.



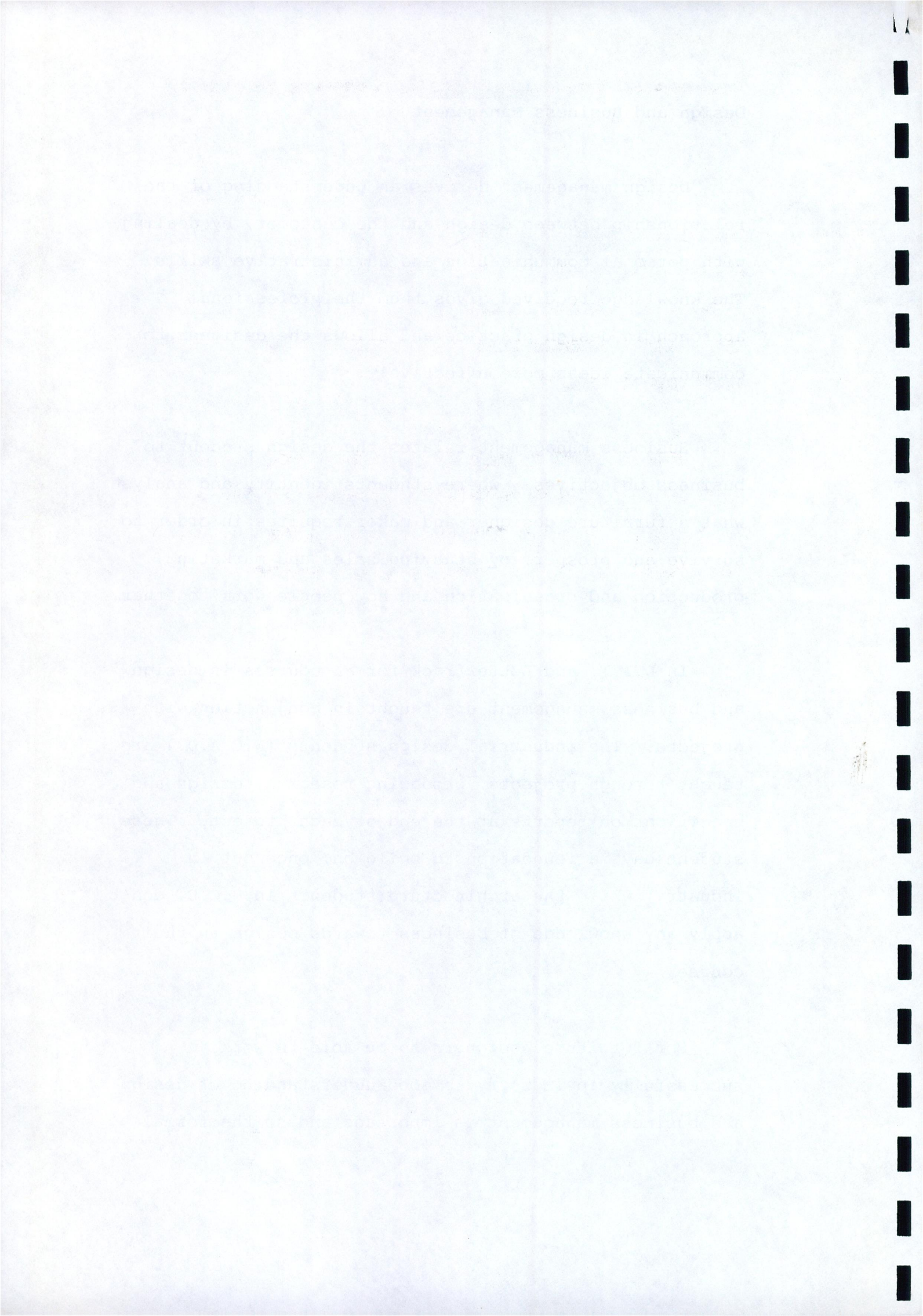
Design and Business Management

Design management derives an understanding of the relationship between design and the customer, by dealing with personal communication and administrative skills. The knowledge received gives them the professional approach in design practice and allows the designer to communicate ideas more effectively.

Business management relates the design student to business objectives - where students identify and analyse what a furniture designer and maker requires in order to survive and prosper, by studying sales and marketing, production and organisation and how people work together.

In D.I.T. and Letterfrack formal courses in design and business management are taught in conjunction with projects. The industrial design students (N.C.A.D.) are taught through projects, producing research, design and specification reports at the end of each project. These student have a foundation to build on, once out in industry, while the architecture students in U.C.D. don't apply any knowledge of business towards design in their course.

For furniture designers to be able to work successfully in industry, a good understanding of design and business management is important and so the formal



teaching of these principles is necessary in courses related to furniture design.

In Denmark there is no formal course related to design and business management. The Danish furniture design industry is developed and so the management principles related to design can be seen in practice, as the Danish students have the opportunity of going out on work experience.

This doesn't happen in Ireland presently, due to the lack of development within the furniture industry and so it doesn't cater for the students to observe business management and design management in practice in industry.



Fig.7. Louie Drawers by Paul Berg.

CHAPTER 2

Craft

The craftsmen of Ireland have developed a unique creative identity through their pieces of furniture. This is driven by the strong tradition (Irish vernacular tradition) of past ages and the rich nature and varied landscape which supplies both the raw material needed to indulge the creative impulse and the inspiration to fire it.

Wood is the material that allows the craftsmen to develop his highly personalised style. Irish craftsmen have perfected the art of using wood as an expression of beauty in their pieces of furniture. This has been described as a "perfect fusion of energy between man and material".

Paul Berg, a craftsman by trade, uses his deep understanding of wood in his furniture. This can be seen in his design in Fig. 7. The solid structure corresponds to the Irish tradition of durability in furniture. The natural image is created by using the knots of the wood as the handles in the drawers, as if the wood choose their position. The drawers are framed by contrasting wood as if to focus on the natural beauty of the drawers. The five-drawer unit seems to sit on the contrasting bubble shaped legs. This piece exemplifies true



Fig.8. Getama chair by Hans J. Wegner.

expression of art through furniture in letting the material express itself.

The craftsmen of Denmark haven't got the same tradition of furniture making as their Irish counterparts. And so, their style has derived from a more recent attitude towards furniture.

Hans J. Wegner, the first Danish designer to gain world fame, always starts work by asking himself: what would a good craftsman do with his skills and the local material at hand?

Take away what is not needed. Make it simple and functional, and in good craftsmanship. Do not aspire to create a work of art. Try to design a good chair. This is very much the Danish mentality with regard to furniture design. The use of a combination of natural materials such as wood, cane, leather and weave is a common feature in the furniture design of Danish craftsmen.

Using Hans J. Wegner's design in Fig. 8, it can be seen how Danish and Irish craftsmen styles may be compared and contrasted. Hans J. Wegner gives a natural comfortable feeling to his basic simple structure, using wood for the main frame and weave for the back and seat. This is not a display piece. This chair was designed to be used.



Fig.9. The Armchair by Eric Connor.

Craftsmen in Denmark and Ireland are informally educated in design. Because of this, their education is somewhat unpredictable in that they choose what they want to learn.

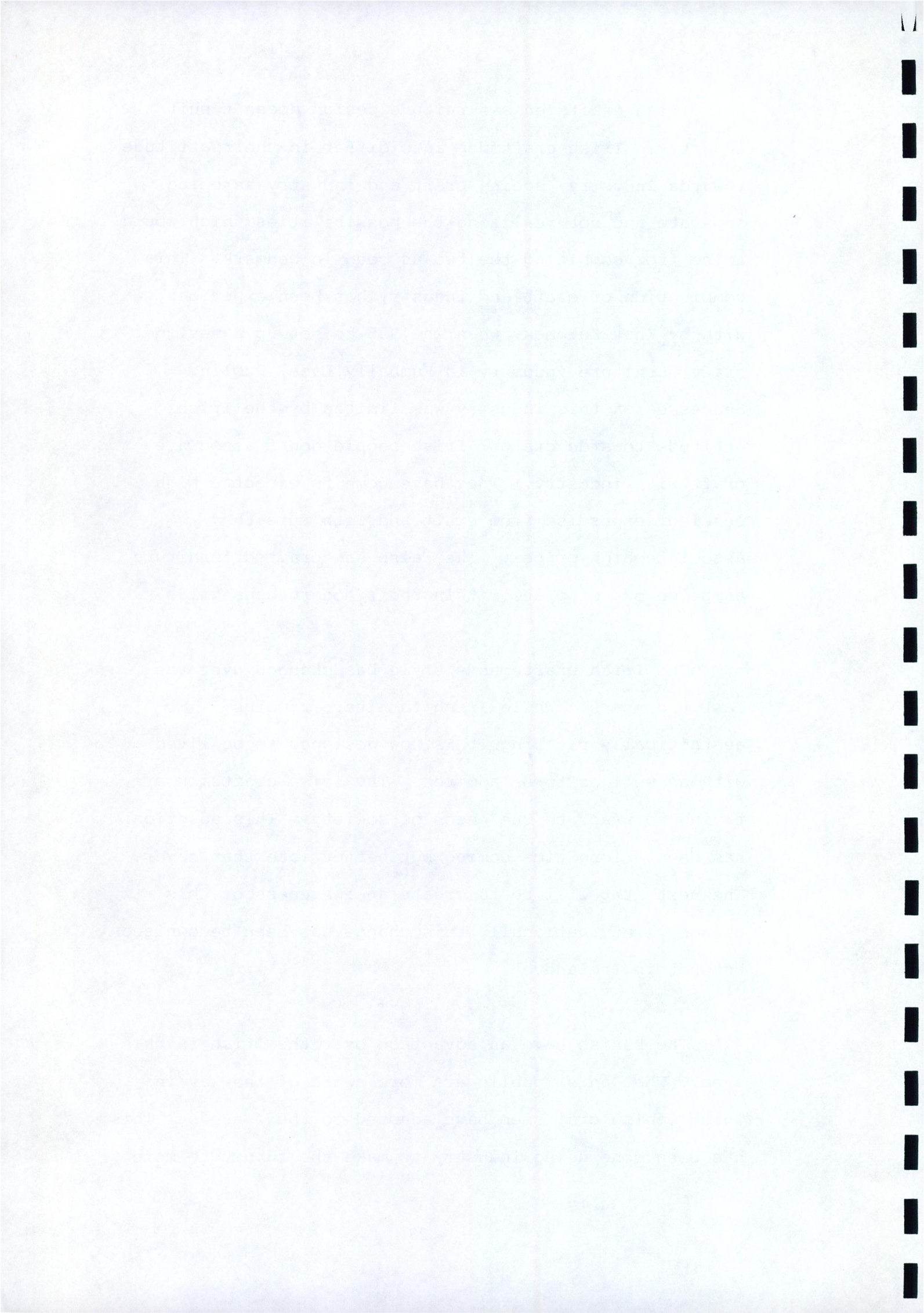
Both Denmark and Ireland provide a huge inspiration for their craftsmen through the natural beauty of their country and their tradition in furniture design. This can be seen in the work of Irish craftsman Eric Connor Fig. 9, whose influence relies on the traditional Ireland. One could easily picture this chair at the fireside of some early rural home.

Industry has a part to play in the education of craftsmen. This can be seen by looking at the Danish situation. Danish furniture design, which emphasises simplicity and functionality by its nature, lends itself to industry. The craftsmen of Denmark deal with their style in relation to industry, in that they try to hold on to their creative style but they also adapt towards industry. Similarly the industry attempts to adopt to suit their style. The industrial structure of Denmark is composed of many medium sized firms and also a lot of international firms. This structure, being both versatile and flexible, can cater for Danish craftsmen. Attitudes in Denmark towards the craftsmen differ to Irish attitudes. Danish craftsmen are welcomed into industry due to their ability to design furniture that works well both in the craft as well as the industry.

Irish craftsmen's furniture design doesn't suit industry. Irish craftsmen also differ in their attitude towards industry, seeing craft and industry as being separate and not realising the possibilities which would arise from combining the two as seen in Denmark. This combination of craft and industry has been experimented with by Knut Khimmek, when in 1986 he set up a designer-craft furniture industry in Fumbally Lane, Dublin. Successes of this industry was limited by the Irish attitude towards craft. Irish people don't associate craft with industry. They have come to expect a high level of expertise from craft and with this they associate high prices. They also see crafted furniture as being out of place within their modern households.

The Irish craftsman's style has changed over the last ten years. While Irish furniture remains aesthetically pleasing it is now designed to be lived with as well as to be admired. The Irish craftsmen are trying to adapt to the needs of society. This adaption has been a long time coming but better late than never. The next step will be to create an awareness of this change. Internationally this change has been recognised but not in Ireland.

The Danish have an advantage over the Irish in this area. The Danish public are more aware of the way in which Danish craftsmen have adapted to their needs. This has been done using industry to make the furniture more



cost-efficient and so within the reach of the general public.

The link between industry and craftsman was an important connection for the Danish economy, creating a stable structured industry.

The Irish link hasn't been established, as craft has remained distinct from industry both in the eyes of craftsmen as well as in the public eye.

Furniture College

In this section formal furniture design education and the importance of this type of education in relation to industry is discussed.

The Furniture College in Letterfrack is an educational partnership between Connemara West and Galway Regional Technical College. It is based in the Connemara West Centre, Letterfrack and is home to the National Certificate in Furniture Design and Making. Connemara West is a local community and rural development organisation which has been actively involved in the education and training of young people in furniture making since 1982. The location of Letterfrack is in the heart of Irish culture and tradition.

The course in Letterfrack is the only direct way of studying furniture design in Ireland. It aims to provide skilled and educated people who will assist the industry through high standards in production, on understanding of the importance of quality, the relevance of the design process and good management and business practice. Letterfrack graduates are equipped to work in small to medium sized furniture workshops, whether involved in production furniture, batch or specialist products.

The course in Letterfrack was introduced when it was realised that a formal education in furniture design and



Fig.10. Umbrella stand by Paul Ryan.



Fig.11. Ash chair by John Lee.

making was needed to preserve the crafts and to improve the industry. The formal education in furniture making and design at Letterfrack is centered around the use of wood - including mahogany, oak, bog oak and maple.

Even though Letterfrack is directed towards industry in its teaching, the students are encouraged to experiment with the wood. From this comes the creative "artistic" craft of designing. This can be seen in Fig. 10. It's as if the tree was carved to uncover the umbrella stand. The fine dedication to detail and highly personalised style is allowed to develop within this educational structure. And so the students develop their creativity by learning through experimentation. In looking at an industry directed design Fig. 11 is examined. This figure shows a chair is easy to make, elegant and simple in construction and fine crafted. This piece of furniture shows features similar to the Danish style which is industry orientated. From the two examples given above, it can be seen that formal education doesn't stunt the growth of furniture design. It gives the student a firm foundation on which to build an understanding in furniture design and making. At present the training at Letterfrack suits the Irish furniture industry, but in the future Letterfrack will have to focus on other materials as well as wood, in order to be able to cater for the changing demands of the market.

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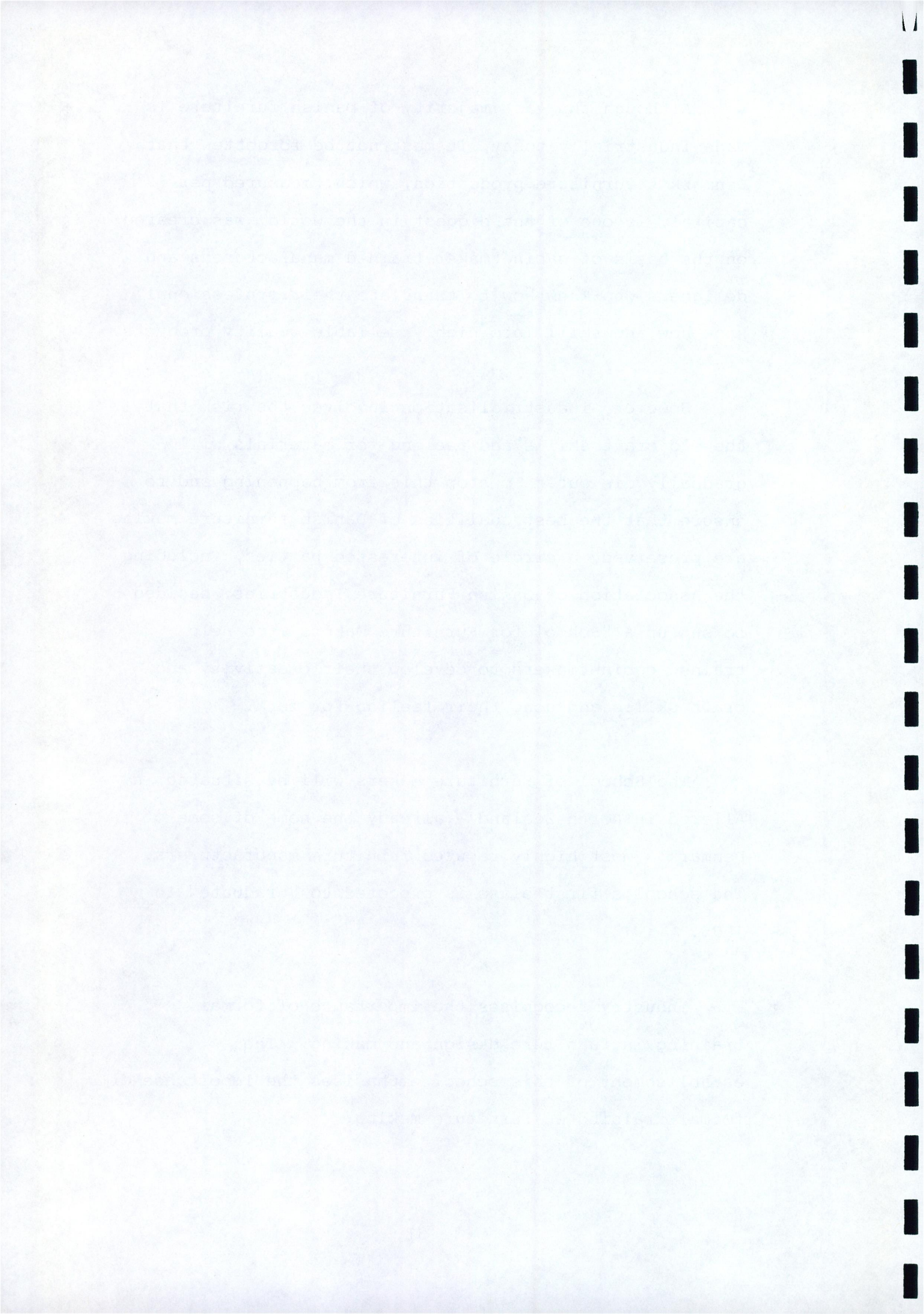
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Although the vast majority of Danish furniture is made industrially today, it must not be forgotten that Denmark's furniture production, which, measured per capital, is one of the biggest in the world, was created on the basis of cabinetmaker-trained manufacturers and designers who knew how to translate their professional know-how and skill into highly sellable quality products.

However, industrialisation involves the risk that the old craft skills and feeling for materials will gradually die out. To stop this from happening and to ensure that the best qualities of Danish furniture making are preserved, a circle of interested parties, including the Association of Danish Furniture Industries, decided to set up a "School for Furniture Makers", to help trained cabinetmakers to develop their creativity and craft skills and hone their feeling for form.

The School of Furniture Makers will be situated in Allerød in North Zealand - already the home of some of Denmark's most highly reputed furniture manufacturers. The school's first class is expected to "graduate" in 1996.

Industry recognises the importance of formal training in furniture design and making. The establishment of this school emphasises the importance of formal training in furniture making.



By examining the furniture industries in Denmark and Ireland, the role of the craftsman is seen to be of great importance. In order to maintain this role and to help in the development of the furniture industry, formal education will prove an invaluable asset.

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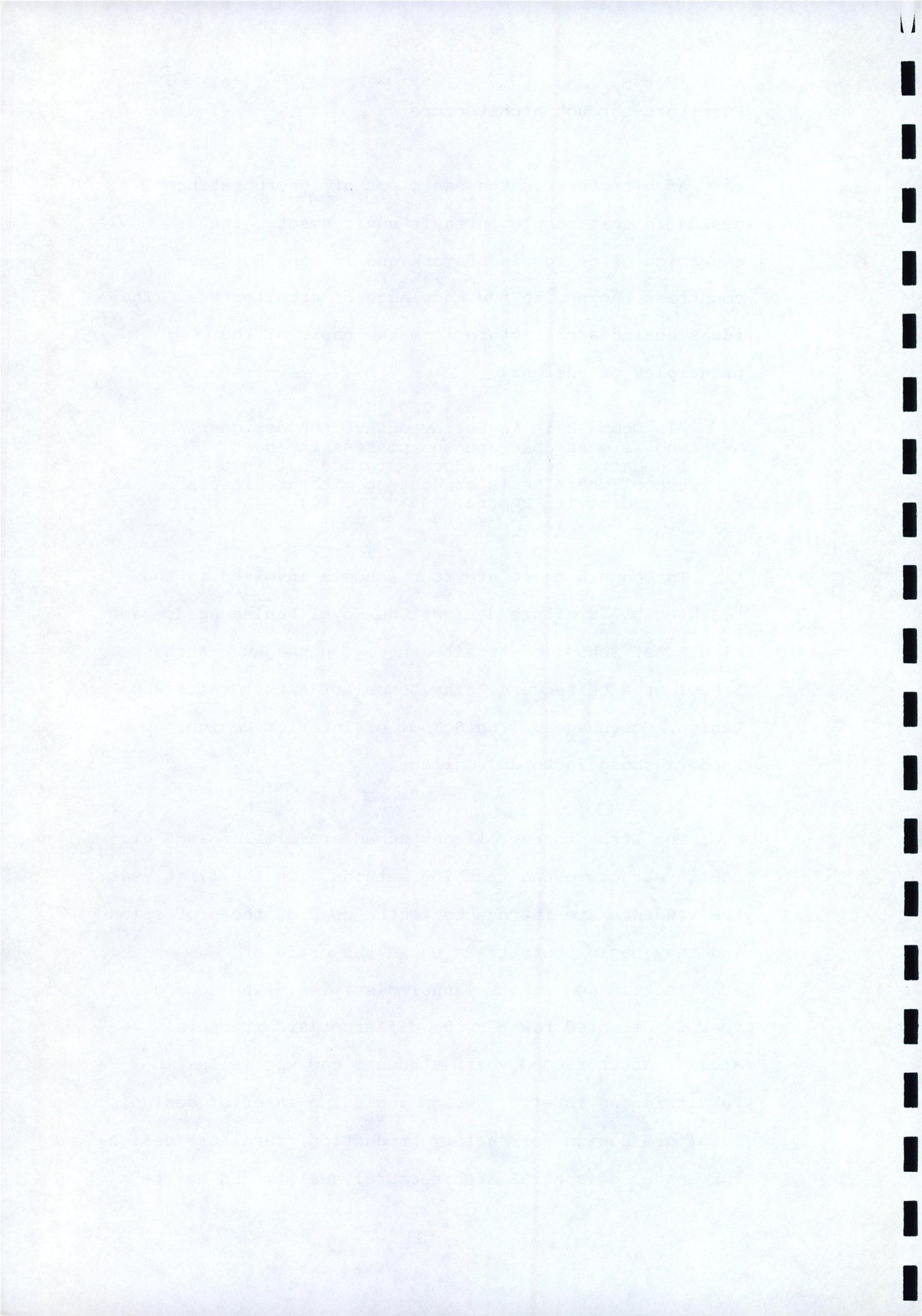
Furniture through architecture

Architecture is the basic art of incorporating design to suit people in their environment. The education of design in Denmark and in many European countries begin with the knowledge of architecture. The ideas behind architecture form the basis of the principles of design.

"In Denmark it is believed that the designer who is most able and who possess the best foundation of knowledge is turned out in a school where he is brought up with architects". (Scandinavian Report, 1961, Pg. 46)

In Denmark there are four schools involved in the teaching of furniture design; The Royal Danish Academy of Fine Arts, School of Architecture, Copenhagen. Aarhus School of Architecture. The School of Arts, Crafts and Design, Copenhagen. The School of Interior Design, Frederiksberg Technical College.

The first three colleges named are similar in their course structure and teaching methods. In the first year the students are introduced to the span of the profession and they begin their training in the craft of architecture and in its manual disciplines. The second year is directed towards the different architectural areas. After second year, students can specialise in furniture and interior design including interior design, furniture design for factory production, furniture design for spaces of special architectural quality and built-in



furniture. Shorter projects are concerned with the subject closely related to furniture and interior design such as exhibition design and fittings for furniture design for particular materials, production techniques and historical studies. Lectures, courses, factory visits and study trips are all a part of the furniture design education in these colleges.

The School of Interior Design runs a three year course in interior design. The student studies the broad aspects of interior design, without specialising in to any particular area. The broad knowledge gives the student the opportunity to design furniture. In Ireland the way furniture design is studied through architecture is through Architecture, U.C.D., and through Environmental Design, D.I.T.

In the Architecture Course, U.C.D., students study architecture for five years without specialising in to any particular area. A major project is required of final year students and occasionally students decide to design a furniture piece for this project. The architectural link between furniture design seems strong, as if architecture students can express their ability through furniture. From discussions with architectural students, it has been found that the reason students choose to design and make a furniture piece is because they feel that they can apply their knowledge of design and materials to complete a full size functional piece of



Fig.12 "Vision" by Torstein Nilsen.

furniture. Student architects rarely see their designs in reality but through furniture design it is possible to fulfil the entire design process. Going from concept to the completion of a full-size model, gives satisfaction to the student at seeing the design in reality both physically and visually.

Environmental Design, D.I.T. students study for three years in which furniture design is an important aspect of their study. The course establishes the student's working knowledge of furniture design in industry.

Architects look at a large number of materials, from the traditional craft use of textiles, wood, glass and ceramics, to modern industry's use of plastic and fibre glass. The knowledge of materials allows the architect to have a broad understanding of its strength, its visual appearance and the nature of it. The architect doesn't need physical connection with the material (such as craftsmen do) to produce a design. They create the design through the knowledge of the material and the production of it.

Since furniture design is directly related to people, and the functional aspect is of vital importance, ergonomics is studied in all furniture design courses both in Ireland and in Denmark. Fig. 12 shows an example of architectural furniture design. The design is



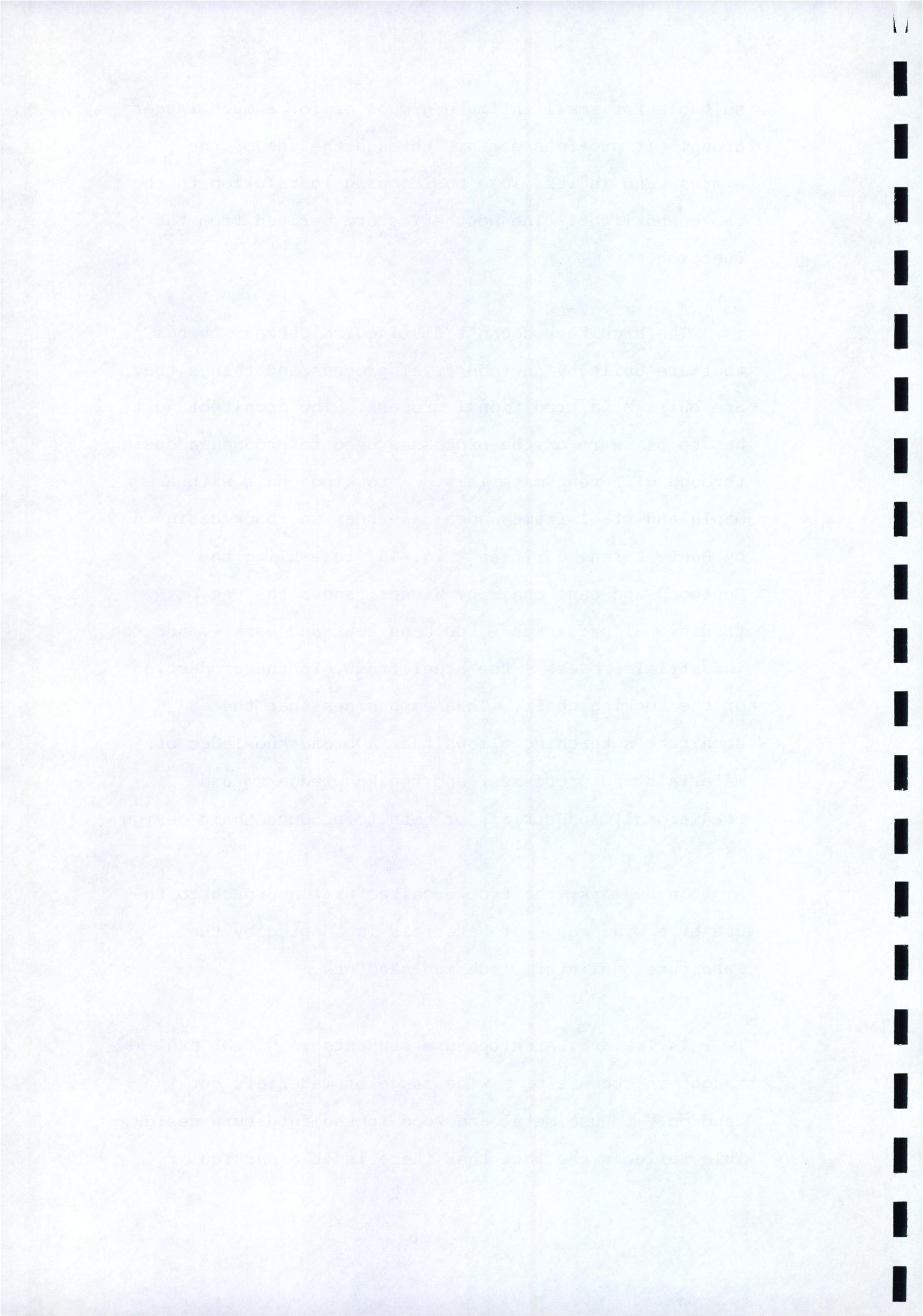
Fig.13. Rocking chair by Bente Koren Moritsen.

suitable for small intimate groups or for a much larger group. It provides comfort through the use of the armrest and in its close positioning in relation to the table and light. The aesthetics are derived from the function.

The architect doesn't distinguish between things that are built by an industrial process and things that are built by a traditional process. The architect just has to be aware of the processes used to produce a design through different materials. A rocking chair with a maple and steel frame and a cane seat and back designed by Bente Karen Mouritzen (Fig. 13) resembling the Bentwood and cane chair by Wegner, shows the use of traditional processes - the cane seat and back -, and the industrial process - the steel frame, in the production of the rocking chair. This emphasises that the architect's teaching allows them a broad knowledge of materials and processes, and the knowledge to use traditional, industrial, or both to produce their design.

In Denmark, the true architectural approach to the use of a wide range of materials is adopted by the Furniture and interior design students.

In Ireland, Architecture students in U.C.D. are taught in the use of a wide range of materials but they tend only to use metal and wood in the furniture design. This reflects the fact that there isn't a particular



course in furniture design within architecture, so that students don't relate certain materials to furniture design. Details of textile and quality finishes which are part of Danish furniture education are not made familiar to the architecture students in U.C.D.

The Environmental Design Course, D.I.T. has links with architecture in the same way that interior design courses are related to architecture. The teaching in the use of materials in 'Environmental Design' is similar to the Danish teaching in this area in dealing with their furniture and interior design students. However, Environmental Design is much more business orientated and so they are very much directed at industry.

The teaching of furniture design through architecture has worked well in Denmark and in other European countries. In Ireland there are no specific courses in furniture design although the designing of furniture has come about randomly through architecture. It is doubtful that architecturally designed furniture will ever gain precedence over the designs of students taught at Letterfrack. The Irish connection between tradition and design is strong and the change to architectural principles would lose the spontaneous response that traditional methods display.

There are many differences between the architectural approach to furniture design and the approach taken by

students of Letterfrack. However, certain elements of architectural principles could be incorporated successfully into furniture design in Ireland. An important feature of architecture that could be used is the consideration they have towards people in their designing. Architects tend to cater for groups of people in their design (Fig. 12) and are able to adapt their design to suit the individual's needs.

The use of various materials in design, creates different styles and the application of certain materials such as textiles, (which already exist to a limited extent in Environmental Design, D.I.T.) could be effectively applied to the Irish furniture design industry. The Irish use of wood can be restrictive in style and textiles could be applied to create a number of designs from the one structure. The use of traditional textiles could be very beneficial in developing the furniture industry in Ireland.

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Furniture design through industrial design

Through industrial design, the effect of industrialisation of furniture design can be seen. Industrial design gives a broad outlook in designing products for industry. It involves the interaction with the user, solving a problem with the operation of the item (simplifying it) or making it aesthetically pleasing. These problems need to be solved not only in relation to the idea, but also in relation to the product of this idea.

"unlike design for ceramics, glass or textiles, it is not confined to one material, nor as in furniture or interior design, to a particular category or artefact or environment. It can frequently overlap with other areas of design, indeed, practitioners have claimed its range of concerns from a lipstick to a steamship or from a match to a city" (Conway, 1987, Pg. 71).

Furniture design is a project among many in an industrial design course, but it allows for furniture design to be looked at with an extreme influence from industry. Industrial design covers a broad area of design and so learning is derived from consecutive projects. An understanding of design, material and industrial processes is established from these projects.

Both courses develop the person's ability to design, bringing the designers and manufacturers closer together. The main areas of study include ergonomics, the knowledge of material, measurement, design and production



Fig.14. Chair by Søren Ulrik Peterson.

processes. The design disciplines include geometry projection and perspective drawing, free-hand drawing and theory. The education guides students directly into industry.

Danish industrial design students have distinct qualities attached to their furniture designs comparable to their education towards industry. Their knowledge of materials and techniques used in manufacturing can be seen in the design produced. The materials that are familiar to their designs include plastics and metals, with close connections towards the ease of manufacture. This can be seen in Fig. 14 when the design is simple in construction, using a soft plastic for its base and backrest, with the frame made out of chromium steel tubing. The overall aesthetics look complete and comfortable to sit on. It could be found in a variety of environments, without being a part of any of them. It give the impression that it is a machine to sit on, attached to industry by the making of it as well as the design of it.

In the industrial design department at the National College of Art and Design (Dublin), furniture has developed with the industrial design education structure through projects. Diarmuid Bradley, a graduate from the Industrial Design Department in 1992, designed a range of public furniture for Irish Rail (Fig. 15). The problem that existed was that railway sleepers were going to



Fig.15. Irish Rail Furniture by Diarmaid Bradley.

waste. The solution lied in blending the material and the furniture together to create the design. The final design resulted in a mixture of industrial design and craft influences. The influence from the craft comes from N.C.A.D. Industrial design students receive the influence from craft by learning its general history in second and third year, and having the facilities available for use. The connection between industrial design and applied arts results in a combination of influences from both sectors (the industrial design is the main influence).

Industrial design education and its attachment to industry gives an impression of furniture design as a product. Furniture design couldn't exist on this level alone, as it would then be totally industrialised and this would take away the personal attachment people have towards furniture design. And thus the furniture design would have nothing in common with traditional furniture design in Ireland.

The further industrialisation of the furniture industry in Denmark would result in an increase in the production of work such as in Fig. 14. In Ireland at N.C.A.D. the influences of industrial design and craft in furniture design, creates an interesting combination of styles (Fig. 15). From this style industry could bend to crafts' traditional values by applying craft to industry through industrial design teaching with influences from

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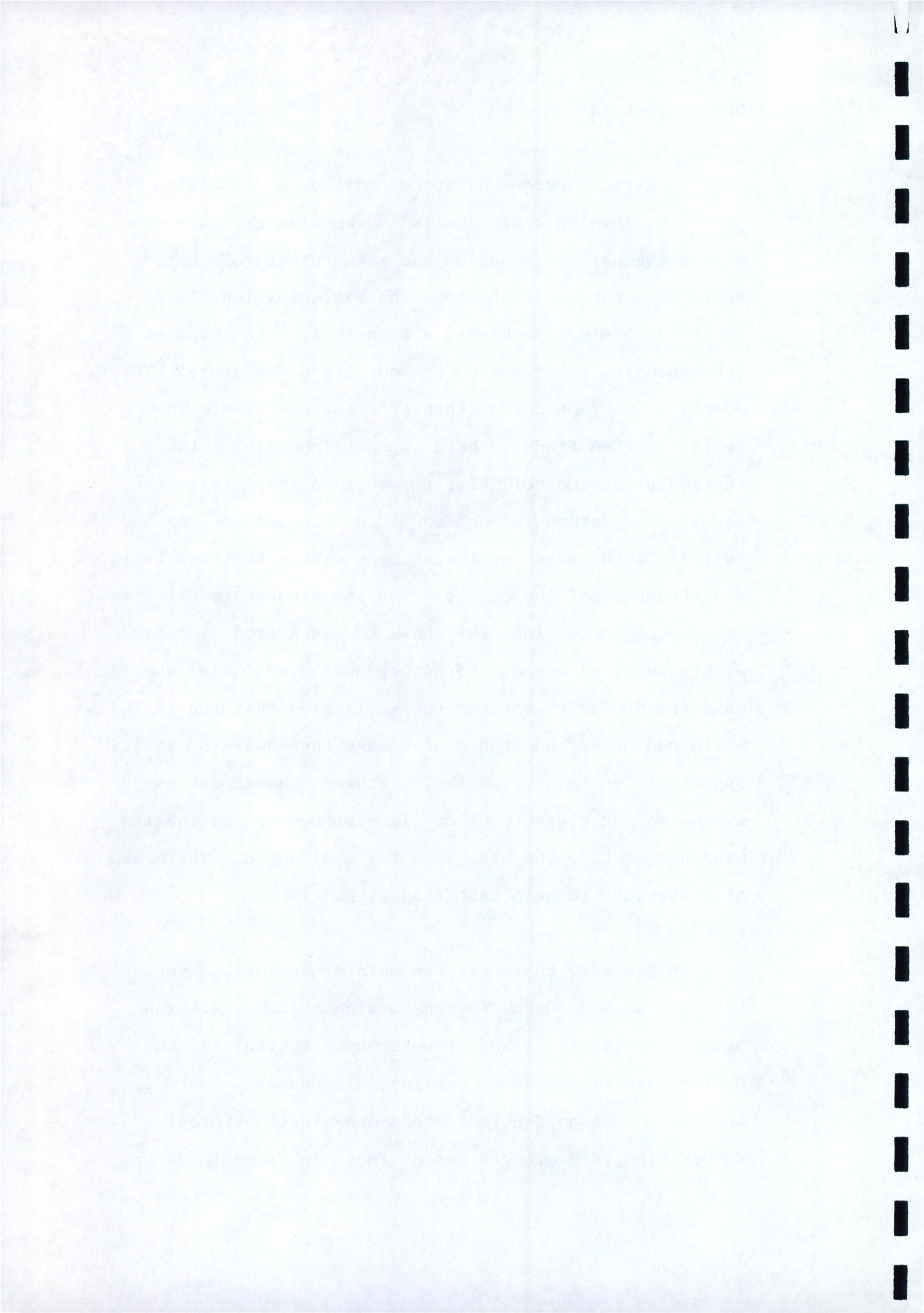
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the craft. A mixture of styles in furniture design is required, neither industry or craft.

Design Centers

Furniture design education provides a foundation for people to develop their skills and knowledge. This allows the person to design and make furniture. But there is a barrier that stops their progression after education has been achieved successfully - the barrier of corresponding their design to industry and society. The adaption is often harder than at first presumed. The designer often finds it hard, if not impossible, for their designs and abilities to fit into industry in the way it was planned through education. Education cannot fulfil all the needs of the student within the time limit and structure of the course. For the student to perceive the reality of design, they have to learn from experience within the real world. Furniture design education should make the students aware of the facilities that the real world can offer and should also make them aware of their opportunities to develop their future. The education system cannot claim to be complete without preparing its students to take the step into the real world. There are organisations to help take this step.

In Ireland, there are two main organisations set up that act as a guidance for the designer. They are the Craft Council of Ireland (Powerscourt, Dublin) and the Design Yard (Temple Bar, Dublin). In Denmark, there is the Danish Design Centre. These organisations provide information, and promote design in society and industry.



They establish the connection of portraying design/ designer to a mass of people and interested manufacturers.

They have central locations within the society. The Danish Design Centre is based in Denmark's capital, Copenhagen, and the Irish organisations are located in Ireland's capital city, Dublin. This allows for the holding of exhibitions and competitions, and the location of information centres that will be viewed and attended by a number of different kinds of people.

Although the Irish and Danish centres are variant in nature, with the Irish centralisation of design being based on craft, while the Danish one is towards industrial design, they both serve the function of correlating the design to industry, designer and society. The Danish Design Centre stands as a centre where its structure, its admiration among international fields, and its significance within the Danish society and industry can enlighten the development of the Irish centres to fit into its own society and industry. Through comparison, an integration of the structure of the Danish Design Centre can increase the performance of the Irish centres.

In the Danish Design Centre, exhibitions are held on a regular basis and they travel to foreign countries to show the designs of Denmark. Design: the Problem Comes First, organised by Jens Bersen, went to France, Germany,

1. The first part of the report deals with the general situation of the country and the results of the survey.

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England, Brazil and Sweden. The exhibition shows the talent and progress of design that Danish designers have undergone.

The Craft Council of Ireland held an "interiors" exhibition in 1993. This exhibition stirred great interest in the design profession. Contemporary Irish furniture design was shown for the first time on public exhibitions. The organiser, Anja Van Gossein, guided designers in producing pieces for the exhibition that adapted to their own style. The freedom of the style can be seen throughout the exhibition. This encouragement is needed for designers to see the light at the end of the tunnel. Without this, they remain hidden, rarely seen, and easily forgotten.

A foreign exhibition in Koln in January 1993 was organised by Anja Van Gossein, once again showing Irish furniture design in an impressive manner.

The Danish Design Centre has organised competitions titled "Age No Problem" and "Industrial Design Prize Awards". These allowed for a range of designers to compete and produce designs acceptable within their profession. From this the competitors receive funding, exhibition and advice on the design produced. Within Ireland, no such competition exists, the only competition being against foreign imports, which is more of a battle. Competition gives the designer a goal and a professional

attitude to show their talents. Competition in Denmark brings out the best in design, bringing it out of the shadow and in to the limelight.

The organisations offer information on design, through exhibitions and competitions, but also through publications. Danish Design Centre publishes four annual editions of "Design DK", which cover a wide spectrum of recent design news in Denmark, and compares it to international design issues. Irish centres haven't as yet realised its importance, and due to lack of funding, are not able to produce booklets, but they have produced a reference list of manufacturers and designers that provide basic information for interested people. All these areas educate people, designers and industry to work together for the benefit of design and themselves.

Colleges should be informed of what these design centres have to offer, through exhibitions, competitions and publications the college could promote themselves, their ideas and what they represent. Student designers have a virgin creativity that hasn't been destroyed by the real life. To display this creativity, colleges have to organise exhibitions through design centres to show the people, the manufacturers what they have to offer. The student gains the professionalism of holding an exhibition, their involvement matures their understanding of design and educates them in a way that colleges cannot do on their own. Yet showing the individual creativity



Fig.16. Furniture Exhibition in Letterfrack.

and exploration of design (Fig. 16 - Letterfrack's exhibition at the department of Arts, Culture and the Gaeltacht, Dublin). Design centres have not seen the potential of what students can offer to design at an early stage of furniture design. Through the combination of design centres and education, the design student would develop and give design a link that will promote themselves as well as realise the significance of having a design centre.

At the moment the interaction between the Irish furniture design educational system and the design centers doesn't exist, but with further development within the education system and design centers, it would be possible for them to combine to a degree for their own interest, and so develop continuously to the awareness of design and its importance.

Conclusion

In this thesis Danish design education was chosen as a model for furniture design education in Ireland. Denmark, as a country has many similarities to Ireland. Both Ireland and Denmark have a large overpowering neighbour ; and as Ireland has been influenced by England , so Denmark has been influenced by Germany. These influences have resulted in very strong native traditions in both countries and furniture design in Denmark and Ireland is an expression of their strong traditions.

The Danish furniture industry has been firmly established . The main reason behind the establishment of the furniture industry in Denmark, has been because of the success of Denmark's furniture education system. It can be seen from this that in order for Ireland's furniture industry to develop successfully it too must have a good furniture educational system. Ireland can learn from Denmark's success. However it is not just a simple matter of applying the Danish system to our own. Architecture forms the basis of the Danish furniture educational system. In the Irish architectural framework there is little scope for furniture design advancement and little guidance is offered unless the student expresses a specific interest in the the area . Furniture design may be seen as a peripheral element in the majority of design courses be it architecture, environmental or industrial design and in Ireland there is only one formal fur-

niture design course available at present , at Letterfrack, Galway R.T.C..This course, unlike the Danish alternative offers no broad architectural foundation but a more traditional craft orientated approach. It has been shown that the Danish furniture design educational system cannot be directly applied to the Irish system. A more integrated approach is necessary whereby the key aspects of the Danish system may be integrated with fundamental Irish considerations.

The study has shown the principal Danish strengths to lie in the areas of organisation, industrial collaboration and in its well established history . Having been established in the mid-18th century the Danish furniture design education system has gained respect, not only among designers, but with industry and consumers alike . This factor has helped to strengthen the industry's position by providing a consistent high standard of design and a constant influx of design ideas .

The organisational strengths of the Danish educational system are based in its architectural background . This broader background enables the student to utilise a greater range of possibilities when the specialisation stage of their course commences . The industrial collaboration factor has played an important role since the establishment of the Danish furniture design education system . This close link has enabled the educational system to develop hand in hand with its industrial counterpart . Factory visits and work experience placements have formed an integral part of the sys-

tem and through such practices the students gain a greater understanding of the true nature of furniture design . Many Danish tutors have themselves worked in industry and as a result are in a better position to inform their students .

Having pinpointed the key relevant issues instrumental in the success of the Danish furniture industry, a series of recommendations, as to the possible directions available to the Irish educational system, can be made .

The School of furniture at Letterfrack is the only formally taught furniture design course in Ireland ,and so this school will be the starting point in the development of education in Irish furniture design . The integration of Danish principles into Letterfrack would be an effective compromise of the Danish and Irish approach towards furniture design education . As a first step in this integration, it is necessary to educate students of Letterfrack in the use of a wide range of materials . To date wood has been their sole material . Textiles which may be used in conjunction with wood , could act as a stepping stone in the introduction of a large number of materials to the School of Letterfrack . By teaching first of materials which can be used in association with wood, the change from the use of wood to the use of other materials should be a gradual .

At present furniture design is studied in Letterfrack within two years . It is hoped to extend the duration of the course to a four year course.This will allow the student time to develop

their skills towards the use of a range of raw materials . This four year period would also allow for the initiation of work experience placements and factory visits within the course . These would give students an insight into the furniture industry .It would also allow for the incorporation of Erasmus programmes . These enable students to explore furniture design abroad

The link between furniture design and industry could be encouraged within the education system. This could be done by relating projects to the furniture industry in Ireland upon the advice of leading members within the industry . Furniture design competition could be organised through the colleges and sponsored by industry . These competitions would benefit both the student and industry . Through the competitions industry will be introduced to the up and coming designers while the students learn to be professional in their approach to furniture design.

The promotion of student furniture design through exhibition., creates an awareness within society and industry of student capabilities . Exhibitions could be held in their own college or perhaps in design organisation centers such as the Design Yard in Dublin. Even if these recommendations to improve furniture design education in Ireland were implemented immediately the furniture industry in Ireland needs to be further developed before it can play a role in the furniture design education system .However this existing situation in the furniture industry should not deter these

- 1 Kvadrat textiles to furniture.
- 2 Letterbox by Paul Ryan .
- 3 Coloured textiles.
- 4 Furniture and light by Nanna Ditzel.
- 5 Ellipse table by Piet Hein.
- 6 Game table by Derek Noonan.
- 7 Louie Drawers by Paul Berg.
- 8 Getama chair by Hans. J.Wegner.
- 9 The Armchair by Eric Connor.
- 10 Umbrella stand By Paul Ryan.
- 11 Ash chair by John Lee
- 12 Rocking chair by Bente Koren Moritsen.
- 13 Soren Ulrik Peterson
- 14
- 15 Irish Rail Furniture by Diarmaid Bradley.
- 16 Furniture Exhibition In Letterfrack.

recommendations from being carried out as they will help in the development of the industry .

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