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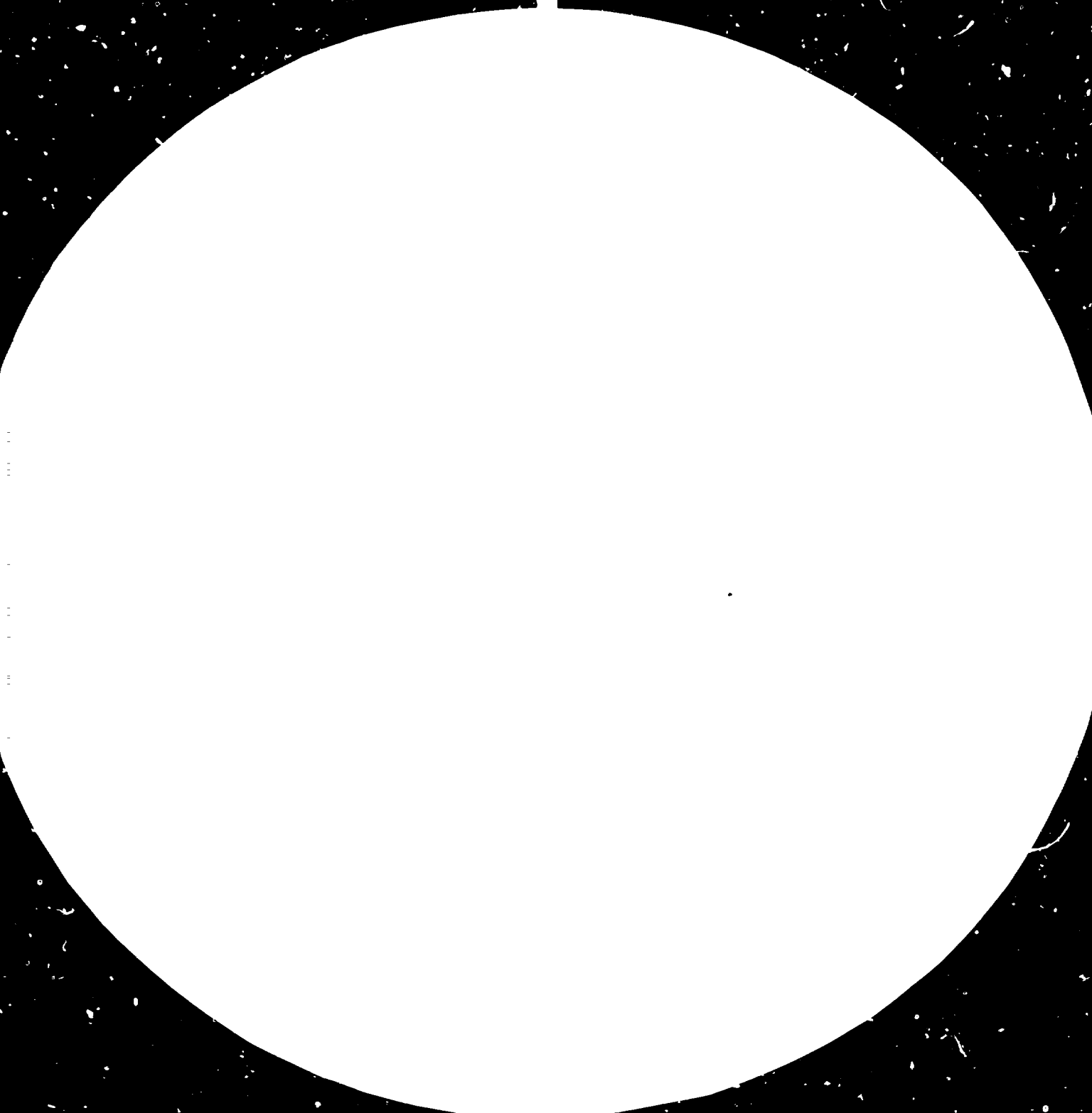
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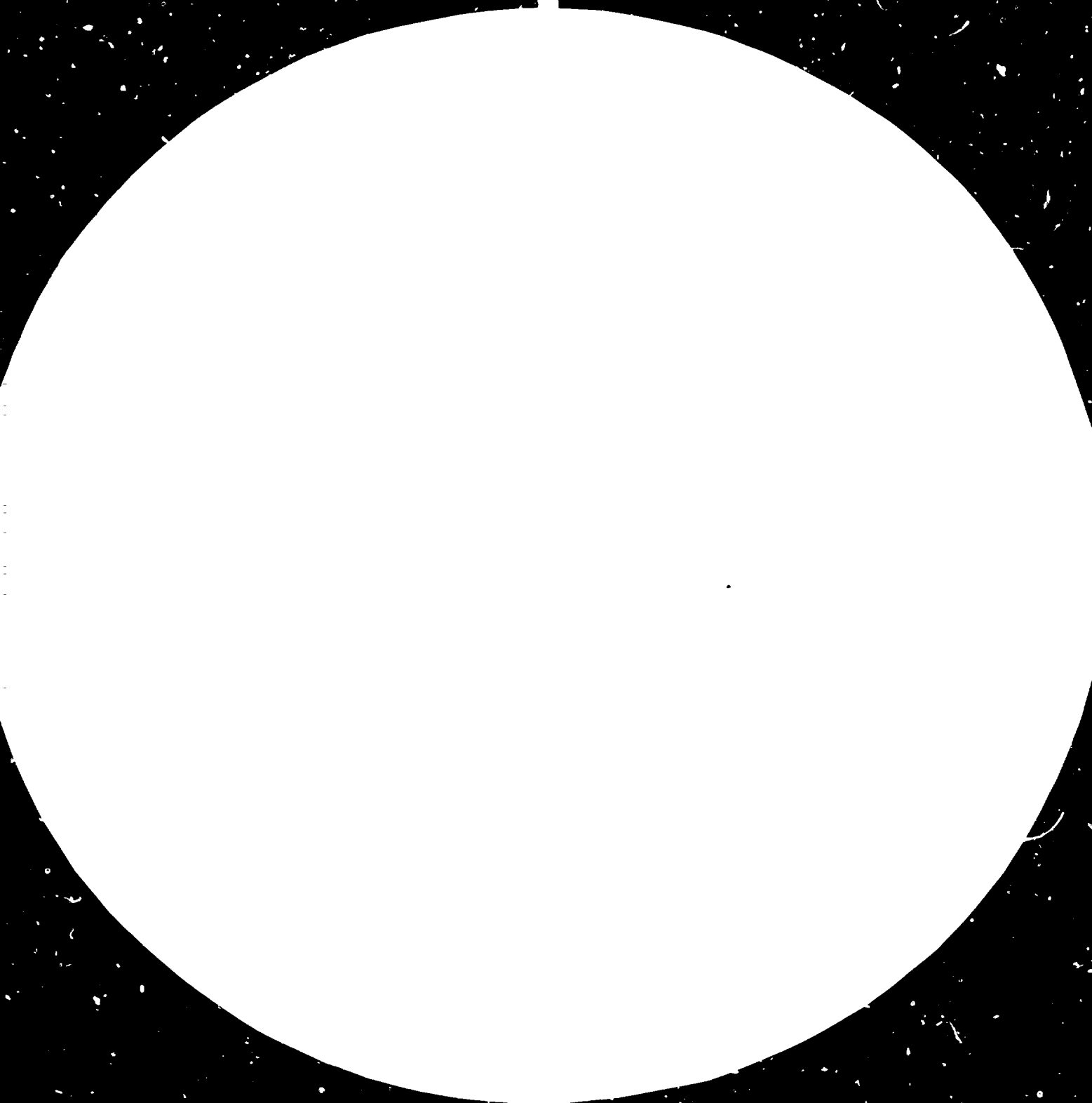
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MEASUREMENT OF RESOLUTION OF THE HUMAN VISUAL SYSTEM

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The furniture industry in Colombia ^{1/}

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Raw materials:

The availability of raw materials for the Colombian furniture industry has many limitations.

First of all, the wood, very abundant in Colombia, is extremely varied. In this way, we can find big areas of natural heterogenous forests, but there is no great abundance of one single specie. Re-forestation, on the other hand, is not enough to maintain the forest area, in such a way that the area is shrinking and getting every day farther from the consumption centers.

The production of panels also have restrictions. Particleboard is produced only by one company and the lack of competition brings about very high prices, low quality products and an erratic supply.

Hardware fittings are not being developed and updated; furniture has to be assembled in the traditional way.

Adhesives, especially waterproof glues, are sometimes difficult to come by. In fact, our industry is often beset by shortages of plywood, adhesives and paints. Of course, large and medium sized companies are not as strongly affected as the small craftsman, as they often have long or medium term contracts with factories for the supply of their materials. However, there is a need for a strong, quick setting, waterproof glue. It would appear that the market is not large enough to support an industry producing a variety of adhesives (not only for the furniture industry - problems also exist in the automobile, paper and other industries). The standard adhesive is a water soluble vinyl (PVAC) glue. It is a good glue, but other types are often needed.

Size of plants:

According to recent statistics there are in Colombia 30,000 workers in small industries, producing furniture (wood and metal) and other wooden products. No less than 200 medium size industries are located throughout the country and there are about 10 companies occupying more

than 500 persons.

Colombia's furniture industry is slowly evolving in several directions, as dictated by the income of the purchaser, climate and the availability of new materials. These, together with the increasing cost of money and of manpower have made the design and manufacture of furniture a real challenge for the 1980's.

While the average consumer's purchasing power is shrinking, he still feels that furniture is an investment, and consequently makes a big effort to buy the best he can. These factors - quality and value - are the most important things in the design of furniture today in Colombia. New materials: plastics, aluminium and others have also influenced the market, particularly in hotter climates, where informal life-styles prevail and the weather places special requirements of comfort on furniture.

Prices of furniture:

Due to the high prices of raw materials, the increasing cost of labour and taxes, and to the low degree of automation in the majority of the plants, selling prices of furniture are higher in Colombia than in other countries. For this reason recently, a good amount of furniture is being imported into Colombia and sold at a high price, despite the 85 percent customs duty on imported furniture.

This factor of high prices, has placed furniture out of the possibilities of the majority of the consumers.

Although the average consumer's income is shrinking, a class of "nouveau riche" is arising. This class' tastes in furniture has also presented a challenge to furniture manufacturers. They have risen to this challenge by producing extremely expensive furniture, which sells very well.

Designs:

Most of the designs found in the Colombian market are copies or adaptations made from foreign models, without adaptations to the local

conditions. In this field, a great help would be done to the country by assisting the furniture industry to design low cost aesthetically acceptable furniture.

A local seminar, and a design contest with foreign experts and judges, and also to offer criticism to local designers would be of great help.

New designs of wood furniture are limited by the knowledge our workmen have of different woodworking techniques and by the tooling and equipment available to them. One process, which could be used to advantage in the manufacture of wood furniture is that of making curved laminates. The technology for this work is almost completely unknown in Colombia and its introduction would allow wood to displace metal and plastic for informal furniture, as formed wood allows a freedom of design which is usually associated with aluminium and plastics.

Problems that have to be solved to develop the industry:

The use of wood in more sophisticated ways, is dependent also upon a deeper knowledge of our native woods and their physical characteristics. Tests will have to be made by the large woodworking firms and lumber companies to determine the quality of wood and also to aid in developing "tree farms" where trees of a given specie are grown under favorable conditions. Tooling, which reduces dependence upon the skill of workmen is also a requirement of our developing industry. Many of the methods used to manufacture, not only furniture, in more advanced countries, are of little use in a nation where markets are small and production runs are short. This makes it necessary to develop and use low-cost fixtures or jigs which at the end of a production run can be dismantled and its components re-used. The use of an external power source is not advisable either, as this tends to make the system too expensive.

