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pk  
D04617



Distr.  
LIMITED

ID/WG.149/1  
19 February 1973

ORIGINAL: ENGLISH

United Nations Industrial Development Organization

Joint Regional Consultations  
on Packaging in Arab Countries, *Cairo*  
Egypt, 21 - 29 March 1973

THE ROLE OF PACKAGING IN THE NATIONAL ECONOMY 1/

by

J. M. Montresor

F. A. Paine

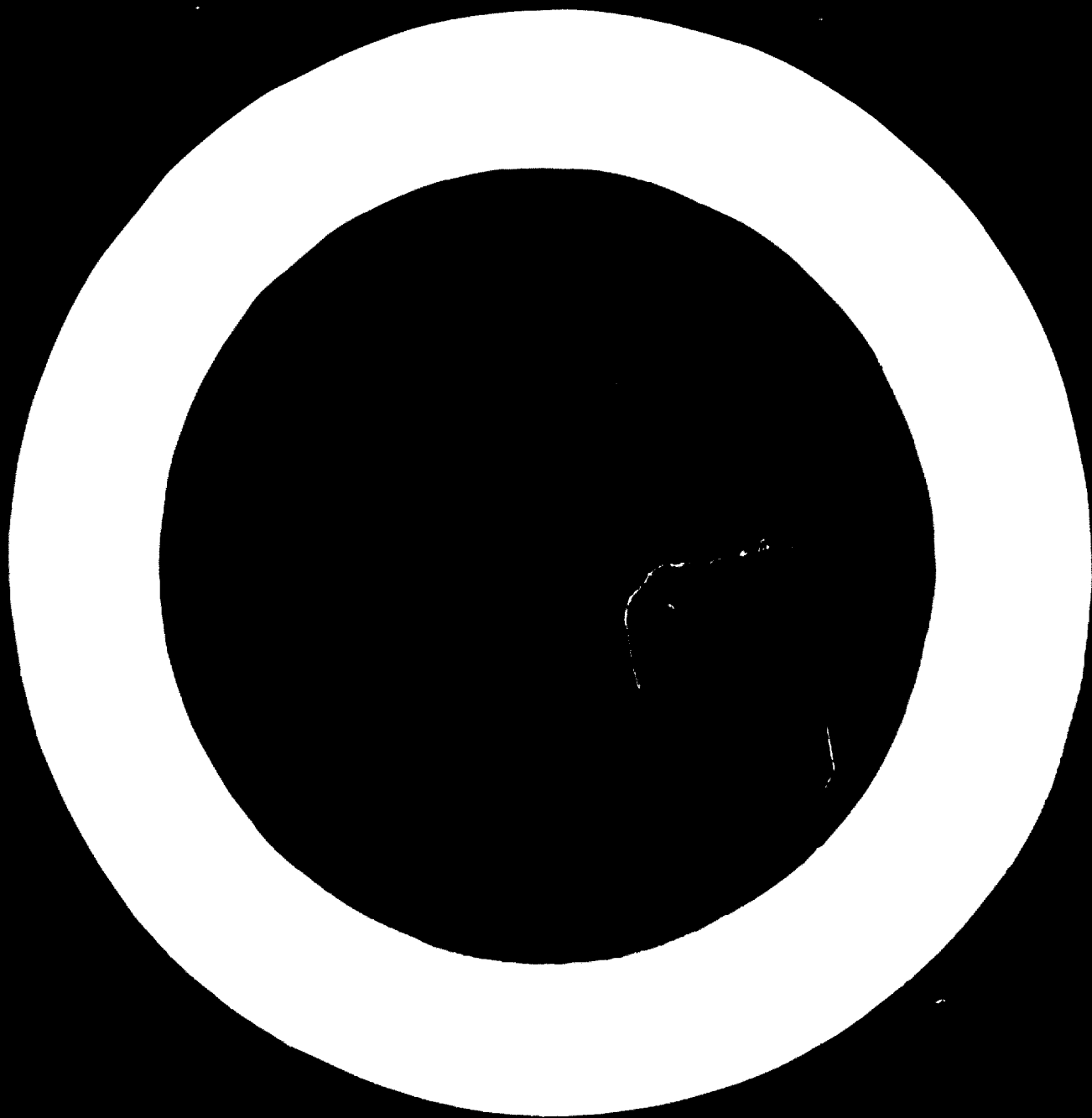
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1      FUNCTIONS OF PACKAGING

The functions of packaging are broadly to contain, to protect, and to communicate.

The containment function is concerned with presenting products in a form convenient to manufacturers, carriers, distributors and customers. It will be influenced by factors concerned with filling and packing; with handling, movement and storage; and with unpacking, dispensing, and after-use by the final recipient.

The protection function is concerned with matching the vulnerabilities of the contents with the hazards that the package must withstand from the time it is packed to the time that the packing ceases to fulfil its containment function. Such hazards will vary with distance, climate and degrees of development of transport and handling.

The communication function is firstly concerned with identification whether it is the precise, accurate and detailed nomenclature of an aircraft spare part or the identification of a particular brand of domestic product with the publicity effort that supports its sales.

Other information that may have to be carried by the package may include instructions for use, consignment and storage and particulars required by statute or regulations, which will chiefly be concerned with the protection of carriers of dangerous goods, or with consumer protection.

In this context communication must be regarded in its broadest sense and often information as to the high quality of the content will be given, not so much by the written word, as by the design and appearance of the pack as it is displayed for sale.

The relative importance and means of performing these functions will differ for different products, different markets and different means of transportation. A moisture-sensitive product will need a package offering far greater moisture protection if exported to, or through, a hot, wet climate than it will need for the home market of a dry country.

A package required to contain goods over a long sea journey must be much stronger than that required for short home trade distribution systems.

But it is likely to be in the sphere of communication that the biggest difficulties arise through differences in language, religion, outlook, laws and customs.

## 2 ECONOMICS OF PACKAGING

In simple terms of containment and protection it can be seen that the cost of packaging is one of the several costs of distribution, summarised in Table I overleaf.

Table I

Costs of Distribution

Freight	Damage
Storage	Loss of Goodwill
Insurance	Packaging

(Materials, labour, equipment)

The aim will always be to reduce the costs of distribution but this can only be done by seeking a proper balance between the individual costs which are often inter-dependant. For example, an increase in protection may be achieved by additional packing materials at increased cost and, since the package is likely to be larger or heavier, freight charges will also be higher. These increases must be balanced against the decrease in the costs associated with damage, loss of goodwill and insurance.

New developments in consumer marketing techniques have however tended to increase packaging costs still with benefit to the consumer. In selling through the self service store many of the operations such as filling and weighing, previously performed by the sales assistants are now performed by machinery in the producers factories; while clear identification of packages displayed has enabled the labour of fetching the purchase from the shelf to be done by the customer with considerable reduction in staff. There is considerable variation in the costs of packaging different commodities, and within commodities according to the market in which they are sold.

For example tea is marketed both in bulk where the cost is less than 3% of the cost of production; and in individual packs, tea bags etc. when the cost is likely to be more than 10%. A similar pattern is shown for chocolate. The extremes are shown by sugar, of which the packing costs seldom exceed 3% of the cost of production and cosmetics of which the packaging costs may be as high as 35% of production cost.

It will be realised that packaging costs can be expected to increase with the degree of finish, and so the amount of protection required. For example, cotton might be exported as raw cotton, thread, baled cloth, partly-finished garments, finished garments or finished garments packed, ready for sale, with corresponding increases in packaging costs.

### 3 LABOUR & MACHINERY

In calculating the degree to which a packaging operation should be automated, the overall cost of packaging must be determined for each possible system. In calculating machinery costs the following should be considered:-

**Capital cost of machinery**

**Running cost of machinery including operating and  
maintenance labour, fuel costs, etc**

**Actual through-put rate of the machine**



In calculating actual through-put rate, it must be remembered that the rate stated by the manufacturer is based on skilled operators and the use of correct materials, neither of which may be available in the event. "Changeover Time" as will occur when it is necessary to alter the size of the package and "down time" due to mechanical breakdown or spasmodic supply of the product to the machine is an important consideration. It may well be found that, to reduce 'down time' it may be necessary to impose higher standards of quality on the packaging material used and so add to the cost.

In most circumstances, it is better to approach automation with caution and through steps of semi-automatic operator rather than make the full change in one step.

#### 4 PACKAGING FOR EXPORT

For successful overseas marketing of consumer products, it is often necessary to employ standards different from those acceptable for the home market. Such standards are not limited to the extra degree of protection required for the longer journey and changed appearance related to local needs. In all countries, Governments are under pressure to introduce Consumer Protection Legislation, covering declarations of quality and quantity of content as well as control of harmful substances in packaging. Such legislation may differ from country to country, though some harmonisation may be expected.

At the same time stricter international Regulations for carriage of dangerous goods by sea and air are currently under consideration.

It is by no means impossible that whereas home produced packaging is acceptable for the home market, packaging material must be imported if export is to be successful. Even if the export operation as a whole is profitable, it may not be easy to persuade Government departments to issue the necessary import permits. The costs of importing packaging are sharply influenced by transportation costs and this is reflected in the higher prices for rigid containers such as glass bottles and cans as compared with sheet material as paper, plastics films and tinplate.

#### 5 PACKAGING FOR THE HOME MARKET

A higher living standard and increased production and standards for the domestic market entail higher production and quality of packaging. Any programme must be at risk if the latter entails high expenditure of overseas currency and it follows that, as far as possible, the domestic packaging industry must be developed in parallel with the industries that it serves. At present the most used packaging material is paper, the per capita use of which has been cited as a reliable measure of any country's living standards. Unfortunately the basic requirement for paper is at present wood-pulp which many countries must import.

#### 6 TRAINED MANPOWER

During the past twenty-five years Packaging Technology has become recognised as a specialist activity and one in which rapid development has and will continue to occur. The necessity for some production has already been stressed and, in the user fields of industry where a significant proportion of activity is packaging, it is reasonable to

expect that an equal proportion of trained man-power should be available for development and direction of the packaging activity. It is essential that they should have status appropriate to the importance of their work.

There are two separate sides of industry concerned with packaging, the package producing industry and the many industries using packaging and their manpower requirements are not the same. For example a corrugated board plant needs detailed knowledge, skill and experience in running the specialist machines, in the necessary testing of the board to ensure quality in the design of cases and in the application of corrugated cases to the packing of a wide variety of products. On the other hand, those responsible for packaging in a food producing plant would need to be keenly aware of the special factors concerned with distribution, marketing and production of their particular products. Such men must also know the capabilities, and shortcomings of different types of package and be able to set, and control standards of packaging materials entering the plant: but need no more than general knowledge of the production of the various packaging media. It will be realised that not every firm is large enough to warrant the employment of a full-time packaging specialist and one man may need to double the roles of production manager, or purchasing officer, with packaging specialist.

It is not enough to train and distribute the necessary specialists. Packaging is a fast development technology and, once trained, the specialist needs to be kept up-to-date and have access to published

information to which he can refer.

Technological development is, to a large extent, dependant on quantitative measurement rather than subjective judgment so that test equipment must be available. Where a system of Quality Control is to be established, it is not difficult for a single enterprise to justify the cost of test equipment that will be in constant use.

It is less easy to justify the purchase of test equipment that may only be needed during the development stages of a new package and the solution here seems to lie in a central test laboratory run on co-operative lines or sponsored by Government.

It is perhaps not enough that the packaging specialist is trained and has the back-up of information and laboratory services.

Packaging is essentially a co-ordinating function and a good package a compromise between the often conflicting requirements of production, marketing, distribution, purchasing and costing. It follows that the packaging specialist needs a broad outlook and ability to work with others and a practical approach to his work.

## 7 A NATIONAL PACKAGING CENTRE

It is useful to study the fields in which a National Packaging Centre can meet the requirements discussed above to ensure good packaging in all national industries and the maintenance of a healthy domestic packaging industry.

### 1 Information Services

A well-indexed Library is capable of quickly providing

published information on packaging methods, materials, etc. either in answer to specific requests or to call attention to new packaging developments as they occur. Since most information in this field is in English, French or German, translation services must be provided.

## **2 Enquiry and Consultancy Services**

The essential here is to provide a means by which firms' day-to-day problems can be solved. By which specialist advice can be made available to those developing packs for new products or seeking improvement on existing packages. In particular this is a means by which specialist advice may be brought to smaller firms unable to justify the employment of a packaging specialist.

## **3 Testing Services**

The necessary specialised equipment for testing of packages and packaging materials can be centrally held. Facilities may also be needed for analytical and biological testing.

## **4 Training Services**

Training in package production techniques is probably best achieved by courses run by the firms manufacturing equipment such as suppliers of corrugated box-making machinery.

The centre would be in a good position to run courses, on general aspects of packaging for students, with the ultimate view of establishing a Professional Qualification by examination. It would also provide a forum for established specialists to

meet for discussions, exchange of views or training in new techniques as they occur.

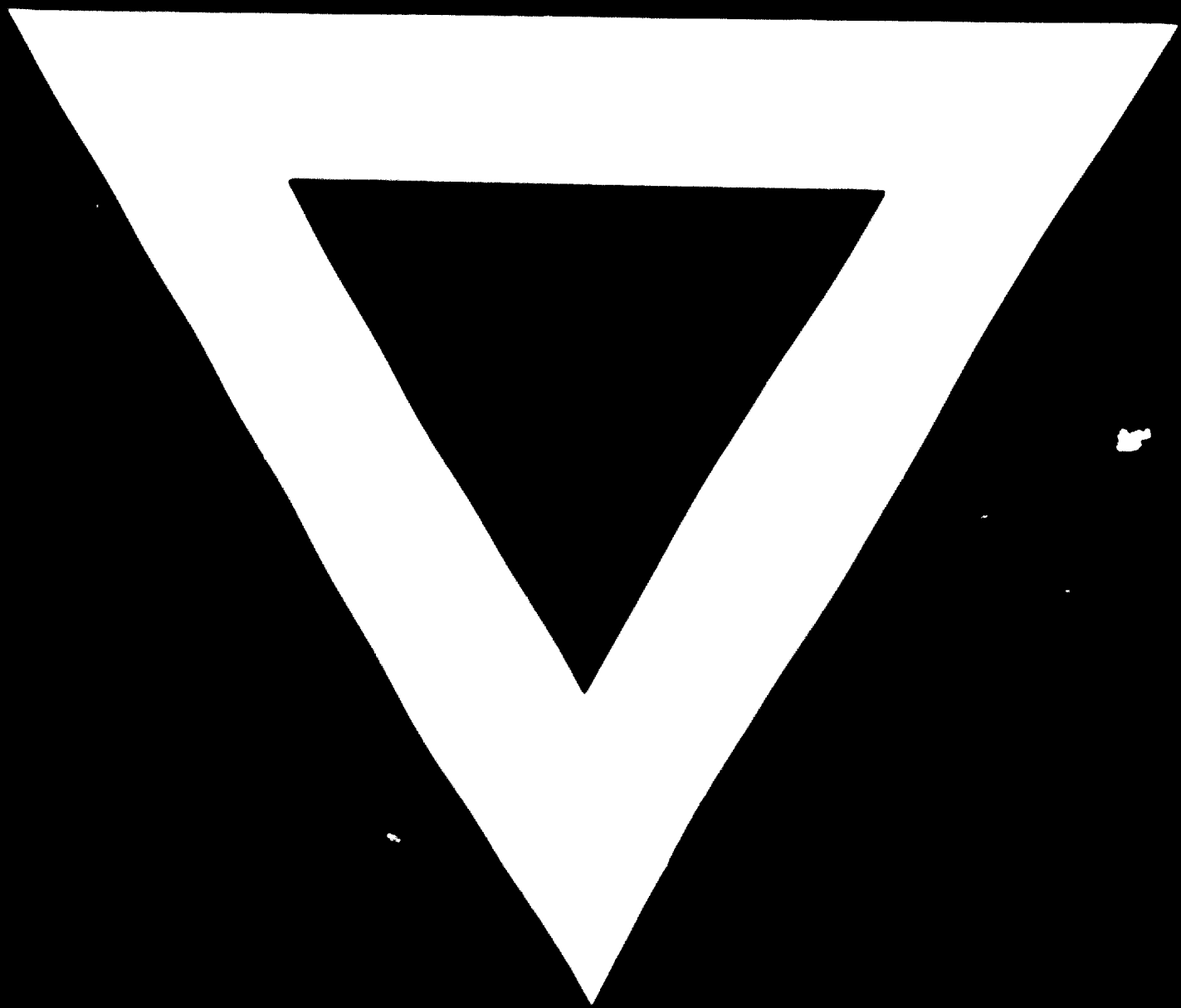
### **5 Research**

The establishment of an Enquiry Service will quickly indicate the areas in which research is required to meet the needs of the domestic package making industry. Since any research project is likely to start by a study of research done elsewhere, and the research work will likely involve testing both information and testing services will be closely involved.

### **6 Standards**

This is no place to enlarge on the benefits of standardisation and it is enough to say that the introduction of published standards is an essential part of technological development. Packaging standards are particularly valuable and a Packaging Centre is seen as a useful source of the technical expertise that is required by National Standards Organisations.





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