National College of Art and Design

Dublin, Ireland

FROM RAGS TO RICHES?

TEXTILE RECYCLING IN IRELAND

By

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INTRODUCTION

This thesis aims to assess the situation with regard to the recycling of textiles in Ireland by examining some of the companies concerned with this activity. Research has been carried out using both secondary and primary sources. The secondary sources that have proved to be invaluable have included the work of Victor Papanek, Nigel Whitely, Penny Sparke and Dorothy MacKenzie as well as the plethora of articles contained in the archive of the Irish Times and the library of the organisation ENFO. Perhaps most informative was the report produced by the Department of Environment.

Given the lack of written material relating to my chosen case studies, much of the information gathered here has been obtained directly from the companies through interviews, questionnaire and photography. An example of the questionnaire is included in Appendix 1. The thesis is structured as follows:

Firstly a discussion of waste management and recycling in current Ireland. This chapter reviews the importance of recycling as a way of dealing with waste. It assesses the possibilities that lie in establishing a solid recycling process in Ireland especially in the textile industry. It also tackles the already existing policies that deal with textile and other material recycling. This is generally approaching a support system by various funding and management schemes within the requirement of the European Union regulations on waste disposal. In the second chapter the issue of textile recycling is discussed in a

perspective of social responsibility. It also looks to ways that are 'environmentally friendly in production, consumption and waste disposal. The designer's role in ensuring the above are outlined and an insight into industrial developments that could have future potential for textile recycling by vehicles of new trend fabrics. Trend fabrics engage in mixing skills from traditional textile crafts, computer development and laboratory discoveries. The third chapter is a historical breakdown of various other methods of recycling that existed in Ireland. This chapter is to help in illustrating the reason for the current social stigma towards recycling and especially in the 'second hand' textiles. It periodically illustrates this from hand me downs and cast-off clothing in the eighteenth century to the craft of necessity during the war years, utility period and make-do practices, the 19th century, sixties and seventies hippy movement of alternative style, and into the current issues of 'greens' textile recycling is now a great part of.

The final chapter covers a discussion of recent textile recycling in Ireland by the presentation of actual case studies of various companies involved in the process of textile recycling. This cover from the first stage as consumer and industrial waste, to the collection, then the processing various methods, as each company discussed, illustrates until the textiles in their various forms return into the re-useable items in the market.

My conclusion shall give various other ways in which I think textile recycling can be adopted in the Irish waste management programmes.

CHAPTER 1

Waste Management and Recycling in Ireland

In this section, I hope to discuss the current situation with regard to recycling in Ireland, and more specifically to the recycling of textiles. This will be done with the view to examining the context within which the case studies that follow, can be understood.

Ireland is perhaps best known abroad for its 'green' image. This has become very important at an economic level, given the number of tourist who visit Ireland for that very reason. The development of environmental concerns has perhaps followed a similar pattern to those elsewhere in Europe, at both social and political levels largely as a result of European Union policies. This is evidenced by the fact that a representative of the Green Party, a relatively small political body, has won a seat in his constituency in the last two elections.

'Green' issues, particularly those related to waste management, appear to have been particularly contentious at both local and national levels. There have been indications of numerous articles written in the Irish Times in the last three years about this issue.

Source UCD survey

Table 3.5: Composition of Household and Commercial Waste Landfilled in Ireland

Material	Household				Commercial		Total	
	Urban		Rural					
	(%)	tonnes/ annum	(%)	tonnes/ annum	(%)	tonnes/ annum	(%)	tonnes/ annum
Paper	22.9	145,212	16.3	56,939	55.3	223,222	30.7	425,373
Glass	5.3	33,768	4.6	15,950	4.8	19,419	5.0	69,138
Plastic	10.3	65,089	10.2	35,626	9.5	38,274	10.0	138,983
Metals	3.5	22,023	3.2	11,202	1.1	4,603	2.7	37,828
Textiles	2.5	15,885	3.4	11,839	0.0	0	2.0	27,724
Putrescibles	39.6	250,469	29.2	101,690	22.3	90,112	31.9	442,271
Other	15.9	100,713	33.1	115,310	7.0	28,100	17.6	244,122
Total	100.00	633,154	100.00	348,556	100.00	403,729	100.00	1,385,439

Table 3.7: Disposal and Recovery Rates in the Household Waste Stream in Ireland

Material	Quantity Landfilled	Quantity Recycled	Gross Quantity Available	Recycling Rate
	(tonnes/annum)	(tonnes/annum)	(tonnes/annum)	(%)
Paper	202,151	31,639	233,790	13.5
Glass	49,718	7,905	57,623	13.7
Plastic	100,710	159	100,869	0.2
Ferrous	20,958	368	21,326	1.7
Aluminium	8,406	940	9,346	10.1
Other Metals	3,862	0	3,862	0.0
Textiles	27,724	3,500	31,224	11.2
Putrescibles	352,159	30	352,189	0.0
Other	216,022	0	216,022	0.0
Total	981,710	44,541	1,026,251	4.3

Table 3.8: Disposal and Recovery Rates in the Commercial Waste Stream in Ireland

Material	Quantity Landfilled	Quantity Recycled	Gross Quantity Available	Recycling Rate
	(tonnes/annum)	(tonnes/annum)	(tonnes/annum)	(%)
Paper	223,222	52,361	275,583	19.0
Glass	19,419	20,595	40,014	51.5
Plastic	38,274	235	38,509	0.6
Metals	4,603	0	4,603	0.0
Textiles	0	0	0	0.0
Putrescibles	90,112	0	90,112	0.0
Other	28,100	0	28,100	0.0
Total	403,729	73,191	476,920	15.3

The suitability of using landfill sites as dumping grounds has proved to be a concern to many residents' groups and other local organisations.

Objections are aimed at their unsightly appearance, associated smells and issues regarding hygiene. Given that, in Dublin alone, each household produces approximately one tonne of waste a year illustrated in Fig. 1(d). The volume of Dublin's domestic waste was in 1997 growing at 3% a year and landfill sites are becoming both unacceptable and impractical. Recycling must play an increasingly important role in Irish waste management systems. Indeed in the Department of the Environment commissioned UCD to compile a report documenting the state of recycling in Ireland. The current systems of waste disposal in practice in Ireland, in the report covered collection systems and landfill sites that were the major policies in application in Ireland then. Today the collection systems are two types. The bring system and kerbside collection. Also compulsory recycling for local authorities governed by EU regulations, charges for waste disposal to every waste producer in taxes, taxes to collectors and industry for landfill sites and increased subsidies for recycling schemes for example by grant schemes.

Ireland's membership of the European Economic Commission has resulted in a number of demands being made with regard to waste management. A number of regulations have been enforced by the EEC that requires the Irish government to formulate policies with regards to all forms of waste disposal. The policies I will discuss here are geared towards encouraging the Irish consumer to choose recycling as a form of disposal, and to ascertain ways in

which textiles in particular might have an impact both from environmental and economic perspectives:

> *Irish households and companies are generating 38% more waste than a decade ago. There is a significant increase in household waste from 1.4% in 1993 to 4.3% in 1995."*
>
> (Irish Times, 1996, Homenews)

Fig 1 (d)

A tonne ! The amount of waste produced in a Dublin house @ year

Fig 1(e)

A Pile of textile waste an approximate one weeks' collection by Rehab

ENTERPRENUERAL APPROACH TO TEXTILE RECYCLING

Textile recycling in Ireland is not a popular business endeavour for many reasons. The first barrier to this development is a technical one. Because the collection of textiles is done using 'causation' processes where the textile articles are unsorted. The operation of separating garments into groups of specific fibres and the removal of contaminants before storage or processing requires a lot of investment in terms of time, staff and equipment. Due partly to the fact that no machinery or technology has been developed yet that can carry out these processes, companies engaged in this work can have significant overhead costs with little financial rewards. Mainstream systems of waste collection, such as those undertaken by local authorities, are funded through national or local taxation. In terms of recycling waste matter, the disadvantage of this form of collection is that it is almost impossible to recycle the dumped textiles because they have been already contaminated by organic waste. Inevitably, it ends up in landfill sites. This system is the more convenient one for the consumer – an important consideration in modern Ireland, because all waste is collected as a single entity rather than having to be separated prior to collection and disposal. Importance of convenience is a principle encouraged by every field of life – one only has to consider the ability of large and small-scale costs in supermarkets available for carrying shopping right to customers' cars and automatic washing and drying machines.

Recycling is not convenient when one considers the necessity of separating recyclables from the rest of the waste. The separating into different categories to enable recycling and the taking of the waste to designated locations of collection. Recycling collection centres have been largely located in supermarket and shopping centre car parks to help curb this last problem, by making it convenient for shoppers to bring their waste for disposal when they come shopping. This also contributes to the safety of the bins given that being around a busy place discourages vandalism and contamination.

There are also demographic problems in Ireland, especially with regard to rural areas. Rural Ireland has a comparatively low population and communities are relatively sparsely placed on the land. This low density can cause some households to have to travel widely to find recycling collection facilities. This, in turn, encourages incineration that by law is disallowed due to the toxins emitted. But this is by far a more convenient way of disposing of waste. The progressing recycled clothing or other textiles have faced a considerable decline in demand largely because of both the perceived image and economic concerns. Where recycled clothing might once have been considered a cheaper option for the consumer, the development of new technology and the shift towards employing cheap labour in third world countries, has increased the level of profit to be made in Ireland, where manufacturers like Fruit of the Loom are closing their operations here in Ireland and seeking cheaper

alternatives like Morocco in this instance. The available supply of textiles for recycling originating in Ireland is not significantly large enough in economic terms.

The importation of second hand textiles is therefore necessary to run a recycling mill or plant here. It is largely because of this problem that recycling in Ireland is largely limited to activity of collecting rather than milling bodies. Coupled with this, the Irish market for recycled textiles is also small and the textiles once collected tend to be used elsewhere. Because the raw materials generally originate elsewhere and the end product also supplies markets outside of Ireland, it would appear that recycling bodies in Ireland are involved in a single part of the process.

New textiles have an endless captivation for the consumer because of constant changes and developments in colour, textures, yarns and fibre mixes. There is a lack of promoting of the values of choosing recycled textiles. This is repeated in the lack of interest or serious coverage by the mass media on the subject. This is evident also by the lack of available information on textile recycling in Ireland.

POLICIES OF RECYCLING

In this section I will discuss ways in which Ireland can tackle textile recycling from an environmental and economic perspective, with regards to new demands and regulations made by the EU concerning waste management. The policies I shall discuss are geared towards first encouraging Irish society to

recycle. This information has largely been adapted from the Department of Environment's 1992 Report of Recycling Strategies.

Options that are currently available for recovery of recycled materials include the "Bring" and "Collect" schemes, alternatives for sorting and separating materials including the operational options for centralised material reclamation facilities (MRF's), and finally the processing options available for treatment of recycled materials.

The "Bring" system is where materials are recovered by means of the householder delivering their own waste including textiles to a temporary storage facility in the form of a large container. Usually this is clearly labelled in writing and colour according to a recognisable system attracting attention to the various recycling materials contained therein – see Fig. ??????. these containers vary in type from modular banks, igloos and wheelie bins of various sizes, holding up to three tonnes of waste, bearing legal vehicular capacities in mind. The containers of most recycling banks are rigid and made of steel or fibreglass. Another form of the "Bring" system is operated by charities, environmental groups and other organisations that use the waste to raise revenue. This is done by encouraging the public to take their textile, and other waste, to regular collection points at regular dates and times, usually fortnightly or monthly. Collection of the waste is made immediately by the appropriate businesses, which is advantageous because there is no need for long-term storage and the facilities can be sub-contracted from any tenants for specific short-term periods. There are various ways of funding these systems.

Firstly, local authority funds designated to offset against collection or disposal costs. Secondly the local authority that manages waste disposal is financed by a textile merchant or other recycler to collect waste in the proper manner. Alternatively commercial enterprise could act as a sponsor for initiatives undertaken by environmental, charities or other interest groups.

The advantage of "Bring" systems is that it can be small-scale and relatively cheap to set up and operate. Also because of the nature of waste (being mixed), it offers greater opportunities to separate textiles from the mass and into specific categories. The disadvantages to this system; it is an inconvenient system to most householders because they have to temporarily store recyclable textiles before taking them to collection points. The distance of these collection points in some areas can be a transport cost. For those living nearby minor disadvantages include night deposition of bottles and associated noise and littering around banks.

The "Collect" system requires the householder or other waste producer to place textiles and other waste in separate collection containers. All recyclables are placed in single container for further sorting by the collectors, or segregated into separate compartments of a single container to be collected in this pre-sorted form. It was noted, by the Department of the Environment, that this particular system might encourage the choice of waste that is recyclable when it is initially purchased. There are various ways in which the "Collect" system can operate. One is that textiles or other materials to be recycled are separated and sorted in different compartments by the householder making it easy for the

materials to be stockpiled for delivery to recyclers. Secondly, is the recyclable materials being stored together in a single container and separated by the collection team on the collection vehicle (that has separate purpose designed containers for each element of waste). A third way can be to collect co-mingled recyclable materials at source and having the separation carried out manually or mechanically or by both in main recycling facilities. Finally, all materials collected, i.e. recyclable and unrecyclable, can be taken to a central facility for sorting. However, waste tends to be heavily contaminated. The advantages of the "Collect" system are that recycled materials being collected saves the waste producer travel costs and inconvenience. Also the proportion of textiles captured for recycling is considerably higher than the "Bring" system. The drawback is that the waste producer has to store textile and other waste until collection, which is less frequent than other disposal collection systems.

Today, the costs of separation cannot be maintained by income received from recycled textiles here.

POLICY INSTRUMENTS

To enable recycling to successfully and constantly carry on different methods are used. Firstly, a charge on waste disposal can be introduced. This system of charging currently exists in commercial and industrial waste and some areas of household waste in Ireland.

The charges can depend on the weight of waste produced and the amount of waste containers used, for example tag bags or bins with specific identification, as in parts of rural Ireland. This system is simple to implement, although it would require separate provisions to be made for recycling schemes, for example, the division of waste prior to collection. This implies that additional charges would apply to individual households. Subsidies can be used to support recycling programmes or to increase demand levels for recycled materials, and are available in the form of grants and soft loans. Such programmes in the UK are used to support research and into development of recycling in all areas including textiles. In Ireland this type of support for recycling programmes has been running for four years. Within reason all recycling is possible if adequate funds were dedicated to it. The types of problems with this system include the risk of supporting new, inefficient firms. This can be overcome by distributing the funds available according to amounts of waste recycled. For grants, applications are made to the Department of the Environment directly, but are circulated amongst relevant local governments for recommendations. Between 1989 and 1992 the grant had assisted 30 recycling projects with grants of approximately £1.2 million in total, also, more recently, it is now seen as crucially important to recycle waste in Ireland. Two such projects have received £1.5 million in total from the EU fund to promote such initiatives at industrial and local levels (Irish Times, Aug 5, 1998, Ireland). Very few of these projects were textile based but rather had textiles as a subsidiary collection item. The taxation of local authorities for use of landfill sites might encourage recycling. Such a tax should be set at a level equal to the estimated level of environmental damage and resource costs

attributed to each additional waste delivery, and to costs of replacing landfill space in the future. There is a significant increase expected in landfill costs associated with sites as a result of the environmental controls implemented by the European Commission. The most relevant is the land directive. (ENFO, 1998, p.77).

The effectiveness of this form of tax as an incentive to textile recycling will depend on the price difference between landfill disposal and recycling. At the moment untaxed use of landfill disposal is significantly cheaper. Problems are that this system requires taxes to be very high and might encourage incineration, particularly in relation to textile waste. Compulsory recycling can only be effective if local government can be actively involved in providing additional funding to cover the costs of introducing textile-recycling schemes. Costs should, in effect, be covered by the central government using funds allocated to environmentally related issues. Possibilities also include two market intervention policies. One would give incentives for the supply of recoverable materials by maintaining prices above the market rate. These incentives can be provided, because at some point in the whole production cycle, the price of collection and processing materials may exceed those obtained by their sales and sometimes may be less. A constant support is necessary for the first few years of production. A levy would be paid, by a central marketing authority, when prices fell. The only problem with this system is that it might work for textiles but not for all recycling initiatives because of the insignificance in textile proportions in relation to other

materials, in particular recycling companies there is a high chance of the policy being skipped.

The deposit fund system works on the basis that when products are sold they include an extra amount (the deposit) in their purchase price. This is refunded to the customer when the product is returned after use. Depending on the level of the refund this system can encourage the local market to return some forms of textiles for recycling – for example towels, bedding and rugs. This system has been applied to beverage containers, car bodies and batteries. Establishing a collection deposit separate from retailers' general collection fee to compensate for their extra costs can help the system work.

The policy, raw material taxation relates to taxation of virgin material used in product manufacture. In Denmark, for example, there is a raw material tax on everything except oil and gas. This tax can apply to all raw materials used in textile production in Ireland. However the increase in levels of recycling might vary significantly between other materials. Secondary materials need to be a financially viable option relative to virgin material use by introducing a tax. The problem associated with this system is that it is difficult to calculate the appropriate level of tax to apply to the importation and exportation sectors with the possibility of posing serious problems for the economic success of the textile industry.

This chapter has established that waste management and hence recycling has become an issue of concern in Ireland. It would also appear that textiles form a considerable proportion of waste but that they have not yet reached the same level in terms of recycling as glass, paper or other materials. The concentration on waste management or disposal also raises questions regarding the design and manufacturing processes involved in textile production and begs the question: What can be done before disposal to encourage recycling?

CHAPTER 2

Recycling and Socially Responsible Design: The Case of Textiles

This section aims to consider the concept of socially responsible design, and specifically design which aims to encourage the manufacture of products which are not detrimental in any way to the environment in the course of their production, their consumption and use or their disposal.

The idea of design as something that has a role to play, in protecting the environment, has concerned many design critics since the 1950s, mirroring the growth of consumer and political interest in the wide society. This chapter will examine the role of the design profession and the choice of materials of manufacture generally before turning to consider those aspects of the design process in relation to textile production. I will draw widely on the work of Penny Sparke, Victor Papanek, Nigel Whitely and Dorothy Mackenzie in this discussion.

THE ROLE OF THE DESIGNER

In relation to design as a process and as a profession, Papanek admits that "there is much needed humility in the field". Design activity has shifted from

something that solves daily problems to something, which simply offers petty changes in style, affected by the desire for material possessions or greed. Papanek also recognises that designers are responsible for their own actions, be it through bad design, defaults, not using their creative abilities or by not getting involved in depth in certain situations. In many cases asking designers to use less materials or be socially or environmentally responsible causes great discomfort for both manufacturers and designers. (Sparke)

Although manufacturers should be able to see beyond narrow short-term ideas about profitability, for example the choosing of cheaper fabrics or materials, and consider the production of better quality and more durable goods, very few actually recognise this. A profound reconsideration of the values and priorities of a wasteful and exploitative system is necessary. Motivated by the alternative view of those critics mentioned above, designers and producers of different fields, all engaged in the slow process of trying to encourage socially responsible design. Papanek notes the need to reassess the making of safe designs used in vehicle production, for example seat-belt design. Other ideas are in flame retardant clothing for firemen and functional helmets for industrial and construction sites. Papanek and others also mention the design of needed products for disabled people that are usually funded by marginalised voluntary and local groups who are perhaps not as lucrative an option as other groups. This specialised equipment is expensive because a lot of research goes into its production. Furthermore, very few designers actually concentrate on this material. Getting more designers to consider these areas will increase the options available in the market and subsequently lower the prices. Papanek has

successfully introduced such projects in the course of his teaching career to students, perhaps encouraging further interests in the area.

Recycling must certain rank as a high-risk business with low returns. This further discourages both designers and entrepreneurs from working with recycled materials in mind or indeed from taking many other ecological problems into consideration in their work. Small-scale business is advantageous in this instance in that it is far more flexible. There is a greater chance to adapt systems successfully according to new innovations, regulations, public concerns, fashion and the availability of raw materials

OBSOLESCENCE AND DISASSEMBLEY

Recycling can be carried out using different methods but not all are applicable in the arena of competitive business. The initial design should consider the potential recyclability of products, allowing for future recycling on a larger and more potential scale. After the choice of material has been made consideration should be given to the pattern of disintegration, its potential for re-use, issues of the product's life span in its original form and its disposal in textile and fashion production the use of natural fibres should solve some of these problems. However, statistically speaking man made fabrics are fast replacing demands for natural fibres and it is perhaps in this field that solutions must be found.

The production of short-lived styles in design further encourages the current throwaway culture. Classic designs seem to work in industrial design, standing the test of time. When products are made easy to maintain and repair they can carry on being used for many years. In-built obsolescence simply leads to the continued consumption of entirely new products and some waste. This is seen in third world countries where, for example, in-built obsolescence is seen, discontinued versions of goods are sold from developed countries and spare parts are unavailable in the long run. In all markets many products are designed so that they either become stylistically unfashionable or certain elements are irreplaceable or irreparable. Some manufacturers have begun to address this. Zanussi have begun to produce washing machines that can be disassembled so that the parts can be re-used to produce new machines. Now many other electrical goods producers and car manufacturers are adopting the principal of 'trading-in', having realised how efficient recycling can be. Large enterprise industry in crafts of utility goods and decorative items are now a large income generating part of many third world countries' economies.

Another issue in the hands of designers is the imposed lifetime of a total product, for example the functional life-span of a watch may be three years, but physically it will only be in existence for just over one year if it uses fragile materials in its manufacture.

Designers seem to encourage the maxim of replacement rather than repair. Also of importance for manufacturers to address is poor or exclusive labelling. Textile manufacturers and designers leave out information on garment

production processes covering up exploitable systems involving the abuse of labour or the environment, often in developing or third world countries.

MATERIALS

The materials used in the manufacture of products not only have a major impact on the environment during and after manufacture, in its productive life and as waste. In fashion and textiles the trend is to discard items as frequently as possible. This is no excuse for choosing bad quality materials for there are other channels through which to continue the life of a garment made of durable fabrics. One should consider the use of alternatives that function equally well for chosen items.

Designers should make use of local materials. This not only saves on transport costs and consequent pollution but it also encourages the manufacture of other products incorporating parts after disassembly - the re-use of concrete and glass for example. Areas of frequent disposal such as hospitals and restaurants should use recyclable plastics or biodegradable materials. Processes that render materials generally unrecyclable should be avoided, for example plastic coating over fabrics. Because the processes of trying to separate the two would involve detrimental chemical activity or if dumped, will never degrade. These general issues all apply in one way or another to any consideration of the role of the textile designer or producer in caring for the environment.

TEXTILES AND THE ENVIRONMENT

MacKenzie has outlined some of the principal effects which the production, consumption and disposal of textiles can have on the environment (MacKenzie, 1997, p.134).

In terms of fibre production fabrics produced using natural fibres, regenerated fibres made from natural sources or man-made synthetic fibres derived from petro-chemicals can all have a detrimental effect on the environment if produced on an industrial scale. This section will concentrate on some of these issues, focusing mainly on the potential of new developments in textile production, so called techno textiles for recycling.

'TECHNO' TEXTILES

DO THEY COMPLEMENT TEXTILE RECYCLING?

In this part of the chapter, I feel it is necessary to study new technological and other developments in the textile world, in order to assess the part, if any, that recycling can play in these new developments.

In the laboratory, exciting new textiles are being created daily which are remarkable for their aesthetic appeal and for their quality of performance.

These new fabrics have many advantages over textiles produced previously through chemical processes. Polyamide fabric is a combination of nylon and viscose. Synthetic fibres are created in liquid form which allow for flexibility in methods or shapes of fibres produced. Fibres all produced by extrusion of the chemicals through fine holes making the fibres compact and sleek. They can be made using this process and be of an extremely lightweight. The introduction of these qualities makes the fabrics far from cheap as compared to traditional luxury fabrics. Interestingly though the most successful mixes are those which combine traditional and new fibres. While only fifty percent of synthetic fibre content has to be used in a mix to achieve its full qualities, more is used in practice. In this case recycling can be made possible in some cases chemical processes allow for the separation and revitalisation of at least one component of a mix. Some new fabrics make use of salvaged elements of wool, copper, silk and stainless steel (see Fig. 2(b)). All of this can be obtained from waste matter. More and more money is being invested by large-scale textile companies especially in Europe, so that they are able to compete successfully with the East in terms of technologically advanced textile production in future. It seems that recycling does not get due and deserved portion of these funds. The range of new developments is extraordinary ranging from micro and regenerated fibres to specific mixtures by textile and non-textile materials.

Synthetic fibres have gained popularity in research into micro fibres - these are developed by manipulation of actual molecular structures of materials. These can be synthetic or natural. The main synthetic ones are polyester,

Fig ( )
S ocks of Polyester
fibre from plastic bottles

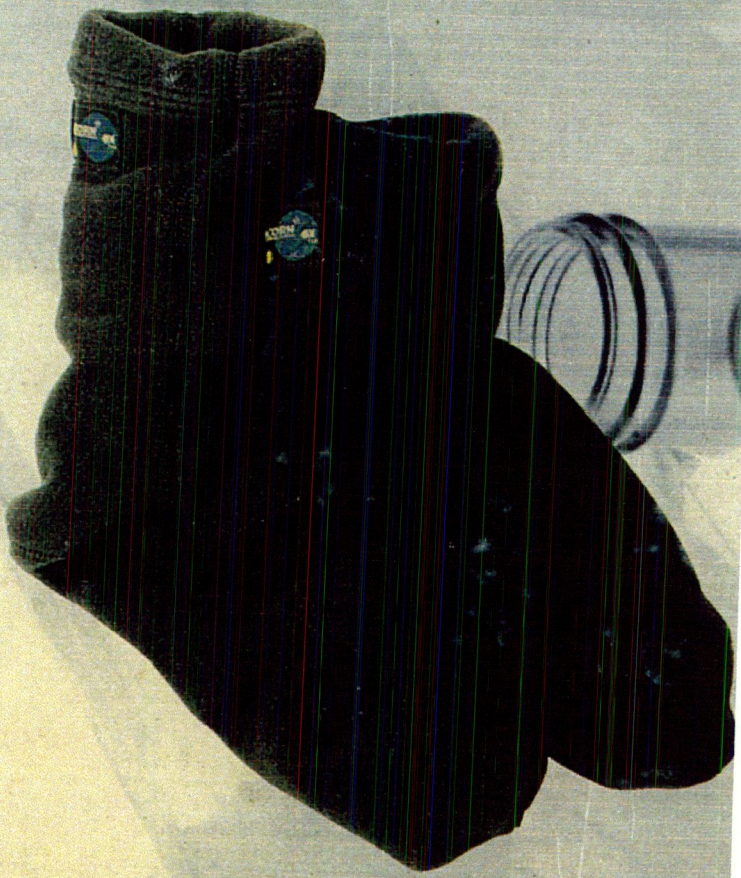


Fig ( )
Seat belts recycled into Fashion
In 1994 International Smirrnoff
Fashion Awards by Irish Contestant

polypropylene, Polyamide and acetate, just to name a few. Micro fibres such as polyester are very similar in component behaviour to human skin. This has made them popular in areas such as surgery. Other properties such as breathability, protection from the elements, quick evaporation and various possibilities for surface manipulations such as rugged, matt, shining textures make it suitable for sportswear and underwear. Dupont Dacron, and Tactile, a polyester microfibre justify their cost due to the fact the quality of its yarns are a range of Polyamide 6.6. Both of these have the ability to blend well with other yarns and so have a huge recycling potential.

Another group of fibres to look at are the regenerated fabrics. These are made from natural elements chemically treated to create new fabrics. Viscose rayon is such a fabric, discovered in France as something that could be produced from cellulose for Courtaulds since 1904. It has made ecological issues a great importance in the production of their fabrics. The cellulose is turned into an intermediate material that is dissolved in a solvent of caustic soda and carbon sulphide. The solution is spun to form cellulose that takes natural dyes well. Another such organically spun cellulose fibre is Lyocell. Being a vegetable product it is one hundred percent recyclable and biodegradable. It is strongly predicted by experts that Lyocell will be cotton's future competition.

Some of the production processes are a form of recycling. Tencel, another regenerated fibre is made from wood pulp. Its cellulose is dissolved in a non-toxic solvent amino-oxide to create a solution, which is filtered and spun. In this case there is no intermediate product so the filaments are precipitated, the

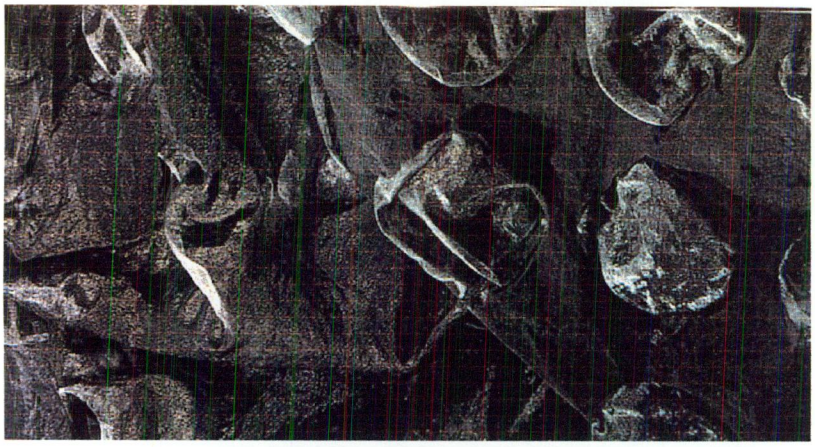


Fig. 2(a)
Relief weave using Recycled alluminium Thread.

Fig 2(b)
Recycled Copper sprayed on a fine weave

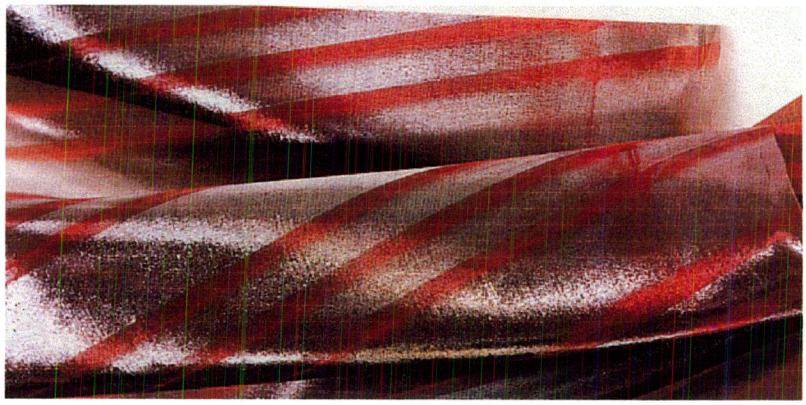


Fig 2(c)
Mixture of Traditional spun silk and metalic thread

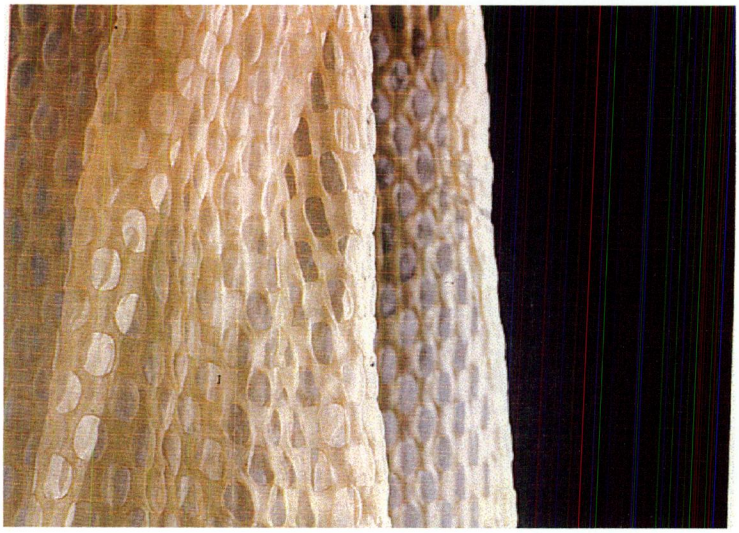


Fig 2 (d)
Traditional weave methods applied to modern texiles using pro-recycling techniq

water evaporates and the amide oxide is purified. All bi-products but the yarn are recycled. Unblended Tencel is a totally new and exciting fabric. When blended with silk or cashmere it is still totally biodegradable and produces a healthy alternative to virgin oil based products.

Another group of fabrics that are recyclable are new flexibles – even though they are not pure textiles. Sometimes traditional yarns are fused with totally different materials. Very fine metals have been woven to form 'fluid as silk' fabrics, for example, Lurex (made of thin threads of aluminium) and coated in coloured plastic to prevent tarnishing and skin irritation. Lamé is another flat fluid metallic thread fabric. It is used for evening wear. Copper can also be used extensively in the same way and can be mixed with silks to form other sorts of fabrics (See Fig. 2(c)).

Non-woven fabrics are another important group of textiles, especially in terms of fluff. Heat and pressure are the two ways in use to ensure a permanent bond in the fibres. Like micro fibres they are highly flexible and their qualities in making can be controlled from beginning to end to meet specific needs. Fluff can be obtained from recycled textiles.

It has been generally noted (Braddock, 1998, p.30) "that instead of recycling existing waste, textiles, encouragement is being given to develop new fabrics which are recyclable from the onset." For example, the sanitary wear sector that used to use a significant percent of recycled non-woven fabrics now use a polymer. 'Geosynthetics' refers to textile fabrics, which are permeable. Other

related fabrics include geonets, geomatts, geomeshes and geogrids. They are hand woven and used as reinforcements on walls, along roads or rails to cut into the earth and resist vegetation establishment that would encourage soil erosion on such slopes. Occasionally natural fibres are used in geotextiles but most are made of polyester or Polyamide because of the physical properties for mass and permeability. (See Fig. 2(e)).

While I have spoken of newly made textiles conceived with recycling in mind and some of the chemical processes involved in their breakdown, what of the bulk of textiles remain in their original form or are not broken down?

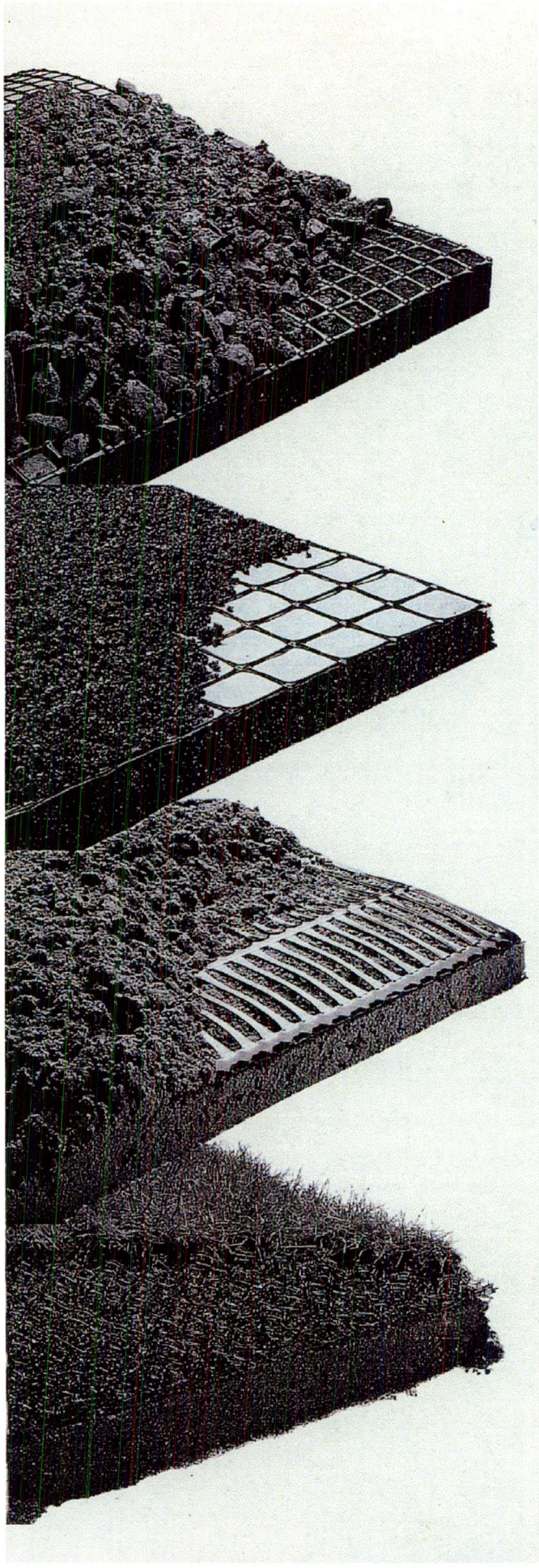


Fig 2 (e)
From top to bottom, Geo-net, Geo-mesh, Geo-grid and Geo-mats made of recycled textiles, used in various fields of Construction.

CHAPTER 3

Standing the Test of Time – Second Hand Clothing

"A length of cheap – because flawed – cloth is not what you want for making a rag-rug. You want bits and pieces, a variety of colours and textures, otherwise it would be just that unrelieved, soil colour of the boarder."

(Steedman, 1998, pg.272)

The recycling of textiles has been part of both domestic and industrial spheres for some time. Paper was traditionally made from rags, the collection and sorting of which were almost an industry in their own right. Quilting and rag making were important domestic crafts in Ireland and other cultures, and has also been recognised for their ingenuity in recent years. However, given the nature of most recycling of textiles currently carried out in Ireland, this author will concentrate on second-hand clothing or on the creation of clothing using recycling textiles. Dorthy MacKenzie suggest that "the continuous throwing out of wardrobes" has significant potential for recycled textiles. She identifies two problems with this, however. Firstly people are likely to discard clothing, even though they may have ceased to wear them, and secondly, there is still a reluctance to accept them (second-hand clothes) as a logical part of the normal wardrobe. Increased fashion interest on behalf of particular designers. She

Fig 3(a) 18th century second-hand textile collection in Ireland.

Fig 3(b) below
A rag -rug domestic Textile recycling, standing the test of time.

sees such designers as being instrumental in the removing of the social stigma associated with such clothing. (MacKenzie, 1997, p.141-142).

It is this social stigma which appears to impinge on the recycling of clothing, or on the inclusion of previously used fabrics in the construction of a new garment. If designers, manufacturers and retailers can understand the origins of these negative associations, perhaps they can produce and market goods that dispel them.

DRESS FOR THE POOR

Dunleavy documents the use of second-hand clothes throughout the eighteenth and nineteenth century in Ireland. The demands of the poor were largely responsible for the apparently lively trade in second-hand clothing, although there were many who "sported the uniform of their trade (vagrancy), the single set of tattered rags in which they lived and slept" (Dunleavy, 1989, p.111). Apart from the clothes, which they inherited directly from neighbours and relatives, the poor clothed themselves through both charity hand-me-downs and "select purchases from hawkers of second hand clothes".

The reuse of clothing did not always however, have such negative connotations. There are some accounts in the diaries of court ladies which refer to the re-use of old trimmings from other gowns to adorn their latest dresses, and newspapers advertised the private sales of second hand clothing amongst this class (Dunleavy, 1989, p.112). For some servants, the inheritance

Fig 3 (c)
A market sales stand, in Rural Ireland simil to second hand ones

Fig 3 (d) below
" Saturday market"
hustle and bustle
outside a second-hand
textile merchants'

of their employer's cast-offs allowed them to sport relatively fashionable outfits in fine fabrics.

During the nineteenth century, the custom of pledging one's best clothes, or Sunday clothes to the pawnbroker during the week had become widespread. (Dunleavy 1989, p.135). Generally speaking second-hand clothes markets continued to prosper. Dunleavy suggests that as well as necessity, the wearing of second hand clothing was acceptable because of the practice of borrowing clothes from neighbours and friends for special occasions and because of "lack of concern about clean clothes – outside of times of cholera epidemics" (Dunleavy, 1989, p.135).

In 1842 William Makepeace Thackery commented on the relatively well-dressed working class girls of Belfast and Limerick, while other travellers seemed concerned at the number of beggars with their "wit and humour as proverbial as their rags and wretchedness (Dunleavy, 1989, p.162). However, the second hand clothing that seemed acceptable to some was surprisingly acceptable to others although it may have been of better quality. "As late as 1904, the Athy Urban Council purchased second hand clothes for their officials" (Dunleavy, 1989, p.162).

Because textile production was extremely important in terms of home industry and income, many could not afford to make clothes for themselves from their homespun tweeds or flannels. Those who were in this position were second-hand clothing. Described by one man in 1850 as "the refuse of English and

Scottish cities, especially Glasgow where the second hand cast off clothing is got by the ton weight and sold by hawkers at the monthly fairs." (Dunleavy, 1980, p.164). It is perhaps the tone adopted by this man that is also evident in the popular belief that there was ill-luck in wearing clothes owned previously by others. The method of sales was considered by some appalling. Dealers sold their merchandise in shops that were concentrated in specific areas of each city, on stands or stalls or markets or by hawking on the street and in open-air markets. (Dunleavy, 1989, p.136). It is this attitude which perhaps signals the desire to distance oneself from poverty through the purchase of new clothing.

During World War II, there was a great shortage of labour in Britain. This, alongside limited supplies in clothing materials for civilians faced both manufacturers and consumers to reassess and reinvent more economic ways of handling available resources. Designers such as Ernest Bevin led an action group in Churchill's coalition government to encourage designing for utility rationing. In 1941 bi-annual coupons were given to families to purchase clothing in limited amounts. The government included sanctions limiting cut and styles, thus regulating the amount of fabric used per garment. Fashion did not reflect the wearer's choice or purchase abilities. Slowly, recycling returned. As the saying goes "Necessity is the mother of invention." Domestically people began to re-use buttons, trimmings, cuffs and even clothes to save on coupon usage. This creative economy may have been perceived negatively due to the economic frustrations at its basis.

At domestic level recycling in any form – hand-me-down, deconstruction and reconstruction of garments, re-use of clothing items in forms other than those originally intended, has been credited as an ingenious craft. In the United States of American an interesting case of such recycling was also happening in the form of the re-use of animal feed sacks and flour bags to make clothing. Both direct and indirect oral information provide evidence of similar practices in rural Ireland (Connolly, 1990, pg. 17-33). The bags were also well suited for use as quilt backings and candlewick spreads. Housewives outfitted their kitchens with dishtowels and aprons made from muslin flour bags, softened, with repeated washes. The writer admits that during the 70's as she recycled men's ties and jeans into hippie skirts she made a thrilling examination of depression-era dresses sewn from flowered cotton feed sacks. Such textile bags were originally home spun and hand sewn for family rather than industrial use. Farmers stamped their initials or names on the bags so that the same bag could be retraced after mixing flour.

The flour milling industry saw this need for bags becoming the first commercial bag makers. These commercial bags were crudely stencilled with mill names and brands and were usually utilitarian, rough but strong while of natural brown cotton. Over a yard of fabric (36 by 42 inches) could be gleaned from a 98-pound flour bag. Some frugal housewives as Loris explains, who frequently recycled attempted to hide this evidence. Where these women had every right to be proud of their resourcefulness, an obvious flour company trademark on clothing was an unmistakable 'trademark' of poverty or at least of inability to afford store-bought goods.

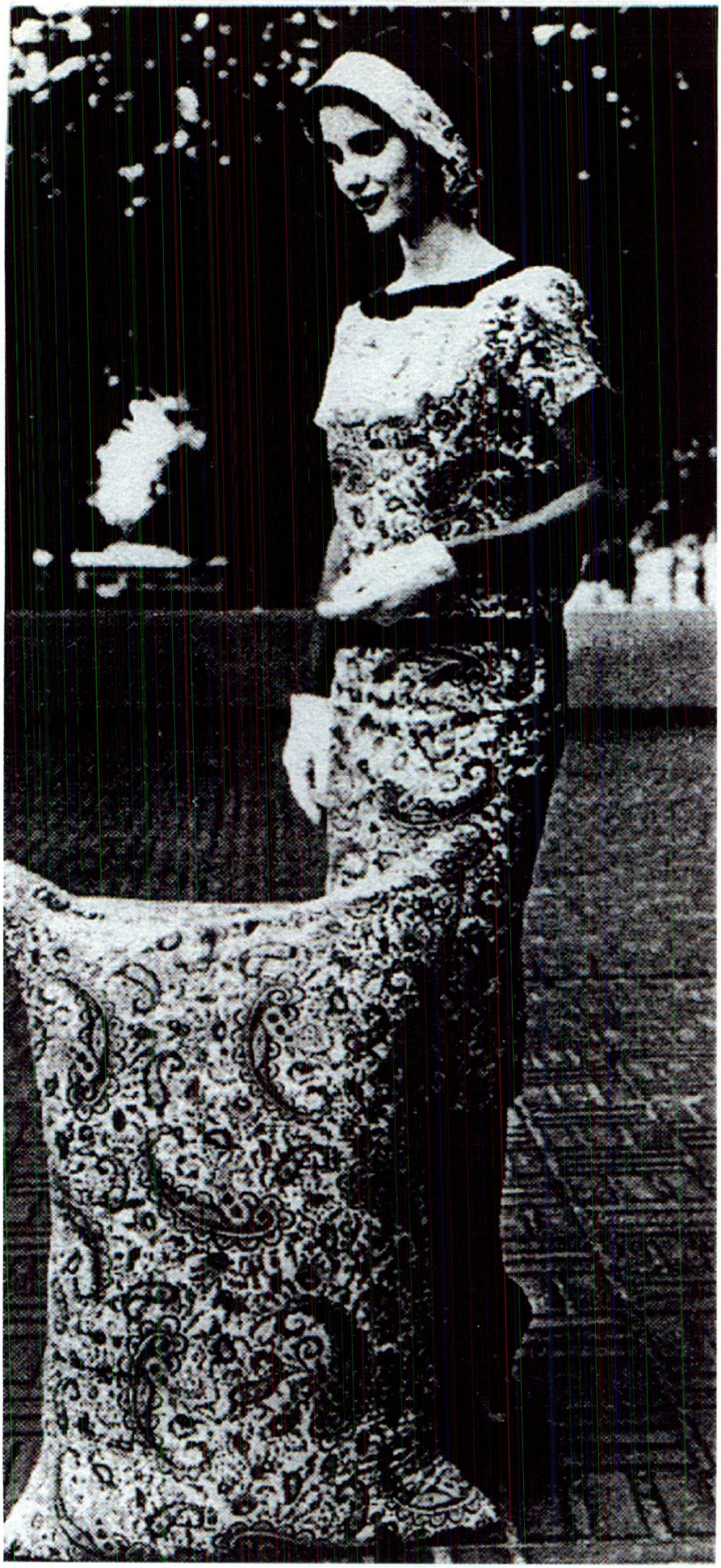


Fig 3(e)
1958-Advertisement of
Recycled feed-bags' fashion

Associations with poverty and distress were strengthened when these flour sacks were used by refugees during the war to make clothing in camps. As Loris Connolly illustrates a series of 1920's Bernis company Blotters and Inkbottles included photographs of orphans in Poland and Armenia dressed in flour bag frocks. These were intact bags slipped over the head with holes cut for the neck and arms (Connolly, 1998, p.19). Sewing with Flour Bags was a 31 page publication sent to sewing institutions, home demonstration agents, club leaders and other interested groups. Catalogue items were made from the bags. Helpful hints on how to remove the trademarks and patterns for clothing wee also documented in the article. This was perhaps a first attempt in the United States to blur the association of the bags with poverty.

An affluent consumer society resulted. It craved new goods. It was imperative, if one was to express one's status, to keep up with new fashion trends. This type of consumption was previously unheard of, and was to supply the second hand market with produce in the later years.

ALTERNATIVE LIFE STYLE – SECOND HAND

During the 1960's the hippy movement emerged comprised mainly of young people. This movement objected to amongst other issues, the consumerist values of mainstream society. In America this group made the use of recycled materials part of their identity – for example one community built small igloo-like houses from car parts which became known as 'drop city', associated with a drop-out life style. In second hand clothing, or clothing which had been

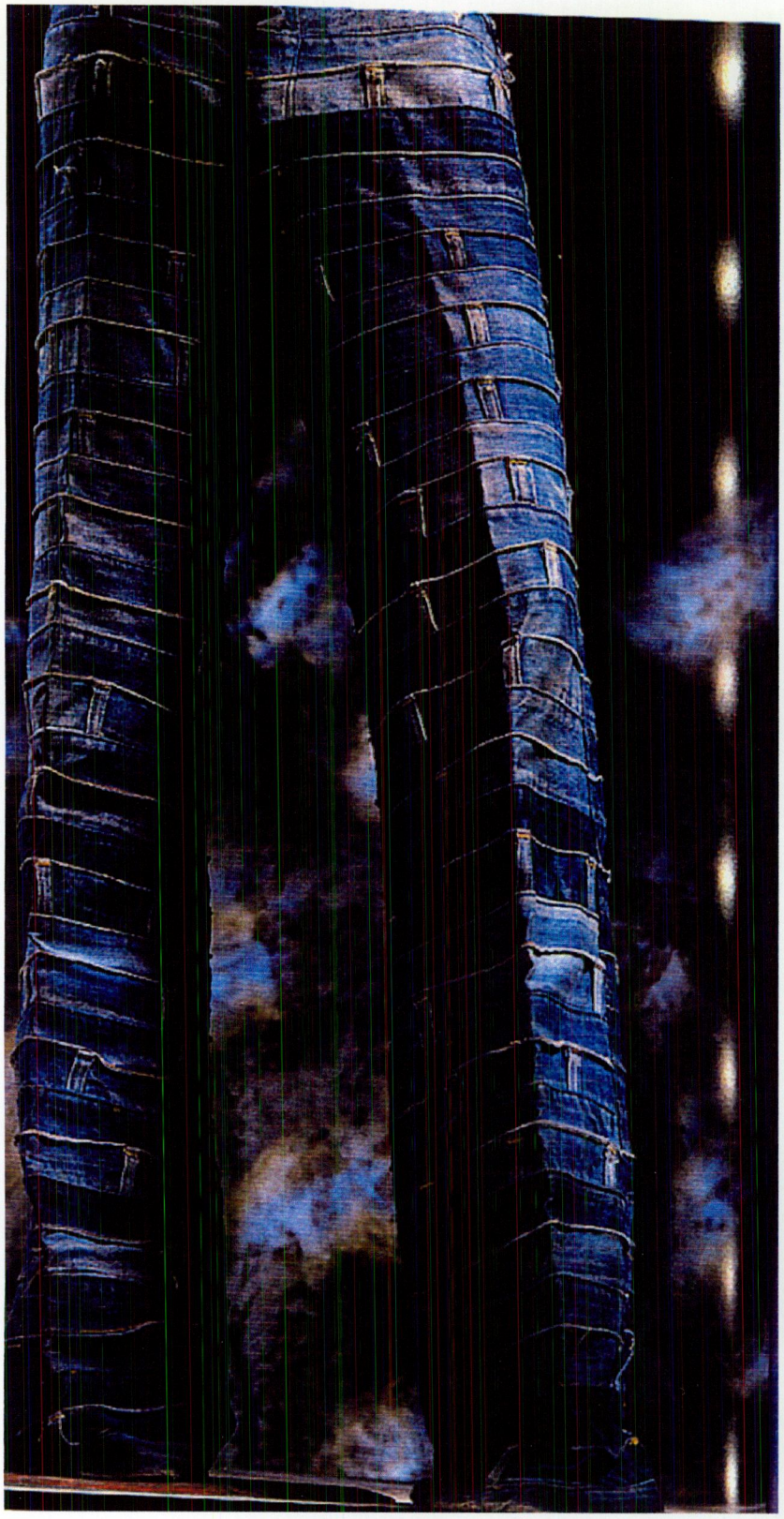


Fig 3 (f) to the left:
Denim pants construced
from waist bands

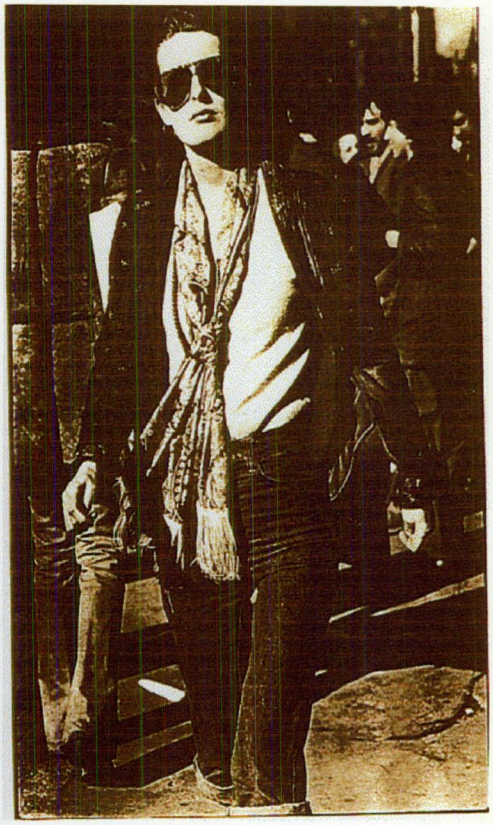
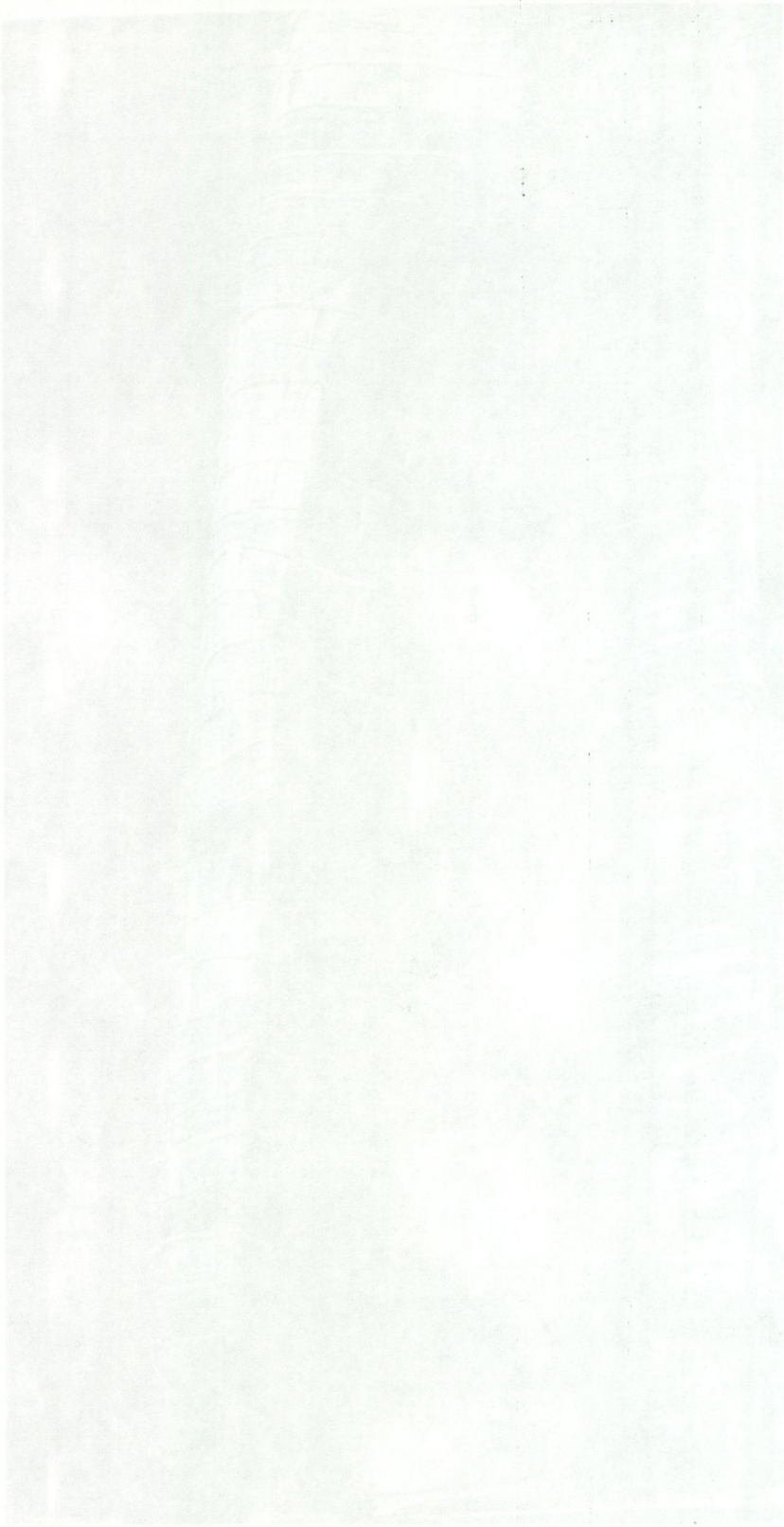


Fig 3 (g) Top right:
Alterations for new style
second hand trousers cut to a new
look

Fig 3 (h) right below:
Crafted items return
but as second hand items



constructed from scraps, creating a very distinctive style of combinations such as trousers made from ties, waistbands. This style also featured ethnic or hand crafted items, which were to make another appearance in the 1980's and 90's in similar context.

RECYCLED MATERIALS – INTRINSIC VALUE

The idea of the 'green' look in fashion in the 1990's is sometimes regarded as being superficial (MacKenzie, 1997, p.142). An exhibition at the Victoria and Albert Museum in 1996, however, awarded it importance by including the 'Eco' style as one of a number of sub-cultural styles (Victoria and Albert Museum, 1996, p.10). Although the curators found it difficult to define the style in definitive terms they did identify a general type of clothing which included "recycled clothing, patchwork clothes, hemp and reconstructed clothes." Also a component of this style was a handmade, traditional or ethical look. A designer called Sarah Ratty began designing T-shirts, many of which were purchased by both ravers and new age travellers (see Fig. ????). However, by 1990, she was designing clothes made from deconstructed knitwear and by 1994 she had introduced "ecologically sound clothing" to the top end of the market (Victoria and Albert Museum, 1996,). Other designers' work was Lyah Hakataia who uses natural materials such as raffia, shell and amber, as well as fabrics. Graham Evans another designer states that he likes to collect old fabrics and cut-offs and pieces them together to make something new. It's called "making good use of things that we find." (Victoria and

Fig 3 (i) to the left
Recycled narural materials
applied as fasion accessories

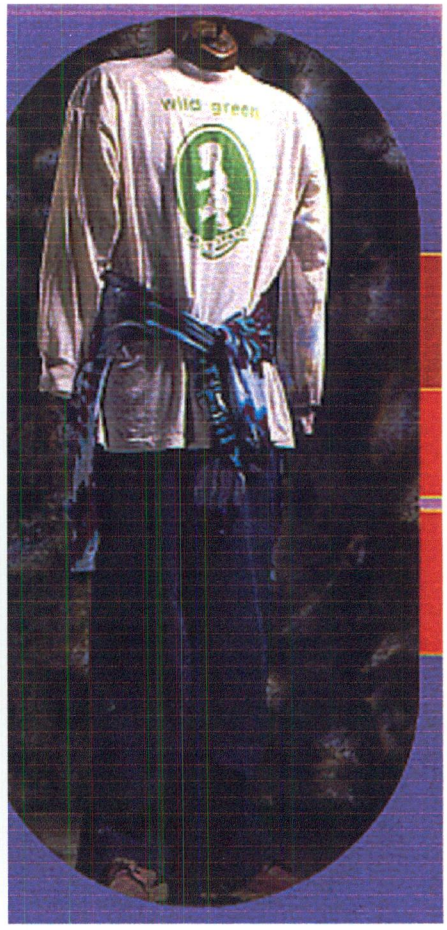


Fig 3 (j) to the top right
high lighting ecological benefits
on-recyled textiles by Sarah Ratty

Fig 3(k) to the bottom right:
Indie alternative look ,
From recycled textiles

Fig 3(l)

Fig 3(m)

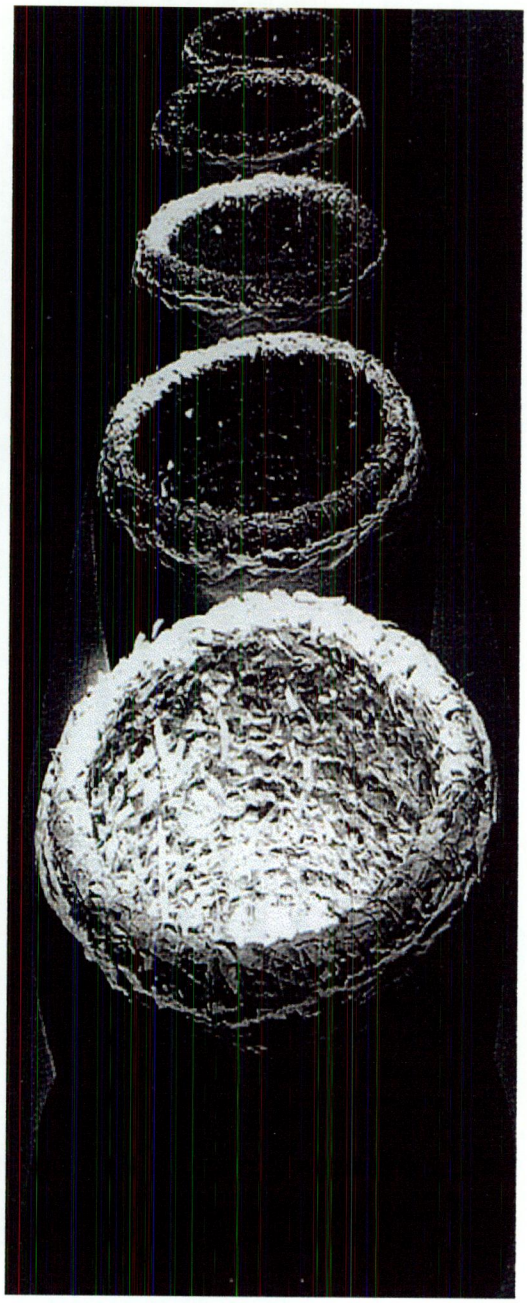


Fig 3(o)

Fig 3(n)

Fig 3 : (l) ,(m) and (n) High street bags made of Cotton and silk industrial waste.By Luisa Cevese

Fig 3(o) Kristiina Wiherheimo -a Finnish Textile Artists' Recycled wool, paper and sraw festival Pots

Albert Museum, 1998, p.16). These outfits are aimed at the young market and resemble the outfits worn by other sub-cultural groups such as new age travellers, and those who consider themselves as indie. Indeed second-hand or vintage clothing or new clothing made to look old or second hand has been a feature of many sub-cultural groups in the last thirty years. This current use of second-hand clothing or recycled textiles contrasts significantly to second-hand associations with charity.

The re-use of textiles in the construction of new garments or the resale of second-hand clothing in their original form has existed for many years. This chapter has traced their consumption since the eighteenth century in Ireland, their use in both America and Ireland during the mid-twentieth century when they were largely associated with the negative experiences of need and poverty. This chapter then went on to trace the use of second-hand textiles as part of the hippy movement in the 1960's when green concerns were emerging, and later in the 1980's and 90's when associations with 'alternative' and therefore sometimes marginal concerns. The last thirty or forty years has seen the emergence of an aesthetic which values the appearance of natural or aged materials. This has permeated both alternative and high-end markets but which often remains outside of the mainstream consumer market in specialised shops.

CHAPTER 4

Textile Recycling in Ireland

Some Case Studies

As outlined in Chapter 1, textile recycling in Ireland only forms less than 10% of the total recycling activity. This is also evident in the lack of research material relating to that activity here. This chapter aims to examine a selection of business concerned with recycling of textiles. Two of the businesses discussed are in Ireland, while another is based in Northern Ireland. The four case study examines a company based in Britain to which some of the materials handled by the two other companies is sent.

This chapter has examined three of the principal textile recycling operations based in Ireland currently. Of these, two operate as collection and sorting houses for used clothing and one concerns itself with the deconstruction and re-use of textiles as well as the sale of second-hand clothing. All three are relatively small-scale operations, as are many recycling businesses, the largest being Bunzil and the smallest being Rehab. For two of the companies, raw materials are sourced here and are largely donated voluntarily. The treated items are sent either to third world countries for re-use as clothing or to Bunzil, a company engaged in the breaking down and re-use of fibres in industrial centres. The third company is concerned with both manufacturing and retail operations, sourcing raw materials outside of Ireland and retailing them here.

The clothes and other items manufactured by this company are generally in keeping with the 'alternative' eco look outlined in chapter 3 as they aim their product at this market. This is emphasised by the location and decoration of their outlets and by the other products that they stock, all part of their 'image'. They are also subject, perhaps to some of the associations made by the mainstream market with second-hand or re-cycled clothing, which are perhaps derived from historical contexts as outlined previously. There appears to be little activity in Ireland that focuses on the production of techno-textiles, suitable for recycling, as discussed in chapter 2.

DAMASCUS – A CASE STUDY

The purpose of this section is to give a brief outline of the history and production methods of the company concerned, going on to focus on the products themselves. This will be done with a view to creating a well-rounded picture of this company's approach to the collection, manufacture and marketing of recycled textiles.

The company's history spans the period between 1992 and 1997, when it ceased its operations in collecting and manufacturing. The shop has since continued retailing.

Originally operating under the name of Gandalf Limited, the company began the production of clothing using recycled and domestic textiles in 1992. It was sharing a warehouse with a company called Damascus that had already been in


DAMASCUS

the retail business since 1987. The two companies then united., Damascus buying patterns, machinery and customer database from a UK company "Scrap Scrap" who had been a major supplier of vintage and recycled clothes for their retail outlets. As sister companies, they both produced fashion merchandise under the label name 'Natural Earth. The business was not born out of a concern for the environment nor had the owner any knowledge or commitment to the green movement and its principles before and when he commenced with his production. The setting up of the company was done using personal investments. No grants were received any other sources. At first the company produced and sold natural earth label articles to their Damascus outlet in Temple Lane in the Temple Bar area of Dublin. By the mid nineties, it was supplying shops not only in Ireland but also Europe.

The warehouse in which they were located is in Bray, conveniently situated for their frequent shipments in and out of the Dublin/Dun Laoghaire port. They employed seven people in production. These included four machinists, one presser/finisher, one designer and one cutter. The Damascus outlet at the time this thesis is being written, still sells vintage clothes, a mixture of crafts from Bali, jewellery and interior décor.

Fig 4(a)
A reconstructed tie-dye t-shirt from Natural Earth on sale

Fig 4(b) above and below
Interior nature of Damascus retail shop in Temple bar A mixture of crafts and Recycled Textiles

PRODUCTION PROCESS FROM SCRAP TO STYLE

This company's product is based on alternative use of fabrics/clothes in ways other than they were originally made. Involved are the processes of collection, sorting, deconstruction, treatment of fabrics, design and manufacture.

Collecting the raw materials for production was undertaken initially by management engaged in buying vintage clothing in Europe especially in Holland, Belgium and England. This was done during trips to various sources that included factory outlets, antique markets, fabric collectors and other second-hand shops. The materials included fabrics such as damask)from which the name of the company was derived), velvet, brocade, netting, towelling, suede cut-offs, denim and leather. They took the form of used tablecloths, curtains, bed linen, towels and bathrobes. Items were bought by weight or chosen individually, and were relatively cheap.

Changes such as dyeing of fabrics is done in the warehouse using natural and some synthetic dyes. The process has been checked regularly and had complied with health regulatory acts up to the time of the company closure. Being able to dye their own fabrics made it easier for Damascus to compile very solid and comprehensive collections. Here the actual treatment of the raw materials began. Everything is washed and disinfected apart from suede and leather, which would loose shape. The fabrics are then pressed and sorted. Sorting categories were groups of decent second hand clothes, classic vintage clothes, clothes to be mended, and materials for new garment construction. In

some cases the materials for the latter were originally in the form of old clothes. These had to be deconstructed into flat pieces along the seams. The second-hand clothes and vintage collections were tagged and folded and sorted again into individual categories of skirts or trousers, ready for order placement. As with the manufacture of mainstream clothing, recycling textiles begins with research. This is done with ideas of a competitive marketable collection --the company's approach to design will be discussed in further detail later on in this section. A major part of each season's collection is based on prior successful sales of a certain design/designs which may then be slightly varied in colour or length to suit the current trends or demand. New design marketing took off in a slightly different mode. Research based mostly on the current trend on the street, unlike mainstream markets whose research has to be forecasted to maintain a competitive edge. Damascus held a show twice a year in February and September in London.

Most of the retail outlets supplied would be small and interested in recycling and stocked mostly crafts, vintage clothing, jewellery and ethnic clothing from around the world (mostly also recycled). (See Fig. 4(b)). Design development carried out by a designer in collaboration with management and a sample collection was cut and constructed. Orders for specific garments directly with the company thereafter.

The number of individual designs produced were based on orders placed. On average, one hundred and twenty articles of each garment were created each season. There were, of course, great variations even in each design because

similar fabrics were united. Damascus designs are mostly patchwork or seamed several times. This complements their raw materials, which could come in very small pieces. This principle also ensures minimal waste during the manufacturing process. To finish the garments off they were pressed and hung in order on racks ready for delivery. Work distribution was compact between the eight full-time employees and one temporary designer cum production manager.

Because of their distinct appearance, the success of these products must be considered in the context of their consumption, particularly in terms of the receptiveness of the market to this type of ware.

THE MARKETING AND RETAILING OF RECYCLED FABRICS

Damascus began trading in 1987 when they opened a retail outlet in Temple Bar in Dublin's city centre. The shop is located on Crown Alley, directly behind the Central Bank and adjacent to the recently built Temple Bar Square. Along the same side of the street are other alternative clothing or accessories outlets, that include the famous Eager Beaver vintage and second-hand store, opposite which is a second-hand record store whose external windows are painted in splash and psychedelic designs of every imaginable colour. Another door leads into Skate City, where on ascending a narrow staircase, one enters a little shop and lounge for all interested parties. The Bad Ass Café has been a

Temple Bar landmark in almost all its publicity material. The Café caters mainly for the budget traveller and student. Next to Damascus is a retro shoe shop whose styles are based on sixties and eighties shoes. Immediate competition for Damascus is Sesi situated towards the quays off Crown Alley. It lacks in finished quality and originality of material that Damascus has. Sesi market is very young and most of its designs are by students or young designers. Damascus' target market is obviously captured from the neighbouring businesses, children, young and not so young, working class, leisure activity lovers, shoppers and visitors. To describe some of the stock in the shop will require me to first talk about its environment and how it relates to the shop's existence.

IMAGE FOR SALE

The location of Damascus' principle outlet is Temple Bar and is significant in any discussion of its product. Such information about Temple Bar area and its development has been discussed by Eamonn Slater and Michel Peillion.

Temple Bar has been described, much to my agreement as a geographically demarcated area specifically highlighted is "south-side" name that in Dublin is perceived as solicit higher-class locality. It is a tax designated area, archaeological site, cultural and arts centre, tourist attraction and a building The history and identify of Dublin as a whole is changing.

Temple Bar was an old transport depot and the building in which Damascus is situated was an old warehouse. CIE was temporarily leasing it while waiting finalisation of plans to build a bus station and while it accumulated a large number of properties in Temple Bar. Bohemians, artists and traders both alternative and mainstream got together to oppose the move. They finally convinced the local and national government in 1991 to commit themselves to preserve the Temple Bar image and develop it into an Arts and Culture Centre. This urban revitalisation involves the linking of an accumulation strategy with a cultural parity to given an operation of what's called an artistic mode of production. operate as a cover for capitalist expansion. Aspects of good and safe business locations were not the only lucrative considerations for many like Damascus that were looking to set up in Temple Bar area. Its central position in the city was vital. This means the production, distribution and consumption of artists and culture. (Peillon and Statek, 1996, p.10). Though we must credit Temple Bar for its authenticity regardless of its new look. It is reaching out to men and women of almost every age but only of a certain class of private sector, investors and professional middle class.

Damascus' success shows through its many years of operation in the same location. Many of its original neighbours and other old tenants could no longer afford the rising rents in the Temple Bar area and have been displaced across the Liffey onto Ormond Quay. The location must contribute significantly to Damascus' success because, in the past few years, not only has it expanded from the ground floor to the occupancy of all three floors in the building, but it

has also opened another branch in Waterford, under the name of Big Whiskey in St. George's Street Arcade.

SCRAP TO JEWELS

Natural Earth's products included the following:

Lined Parka:

This is a patchwork hooded jacket made of heavy weight velvet fabric, the origin of this fabric was curtains. The style is very versatile and particularly indie look from the 'hippy' period in the 60's and 70's. The cut is adopted in mainstream fashion but the uniqueness of the garment is in its various colours and fabrics that are used in its construction. The sleeves are set in and lined with the companies label fabric damask. The processes of production are material efficient in using fabrics in their original. The seam lines in the design allows for small pieces of patchwork and total utilisation of waste fabric. The styling and size is very modern and versatile allowing for anyone to purchase it. It has been produced in four seasons with very little changes (1994-97). Special features on the jacket are the patchwork flap pockets, the fastenings using buttons crafted into floral shapes for aesthetics. (See Fig. 4(d)).

Fig 4(c) Dyed "Damask shirt"

Fig 4(d) Lined Parka jacket

Damask Shirt:

Khaki green dyed, military type shirt, fitted classic shirt collar and top stitched with gold thread. The look is very denim derived. The buttons are obtained from old denim shirts and pants and are flat brass. Two felt pockets at the breast with outer flaps gives it a military look. Set in long sleeves and panelled body allows for less material waste. Finishing of the inside is by overlocking. Very contemporary way of presentation is the label 'Natural Earth' positioned on the shirt back for advertising purposes. (See fig. 4(c))

A GANDON ENTERPRISE

REHAB

The aim of this section is to give an overall picture of how the company, Rehab, goes about the collection and marketing of recycled textiles as part of a chain of actions between three companies. The other two will be discussed individually according to their part in the use/processing of recycled textiles.

> *"Rehab is part of Gandon Enterprises – a group of businesses making a turnover of almost £9 million annually. Rehab recycling is the state's largest recycling firm."*
>
> (Irish Times, May 15, 1998).

The Rehab partnership has been in existence since 1984 and was developed through a country-wide network of bottle banks. Now, 14 years later the company has a network of 730 sites, collecting glass, aluminium cans, textiles and paper for recycling. Rehab is part of Gandon Enterprise, a group of many diverse and individual companies. Rehab the company is a partnership run by a board of directors and the government engaging in rubbish recycling to combat the amount of landfill. Rehab recycling partnership employs 45 people, 32 with disabilities, of whom 22 are based in Dublin and 10 in Cork. Indirectly 10 people are in employment supported by Rehab in services such as transportation. Its warehouse is located in the Airport Industrial Estate in Santry, Co. Dublin and is used as a collection centre for aluminium cans, paper, glass and textiles. Textile collection was the latest endeavour for the company and only commenced in 1994. The process of collecting all their raw

Figures

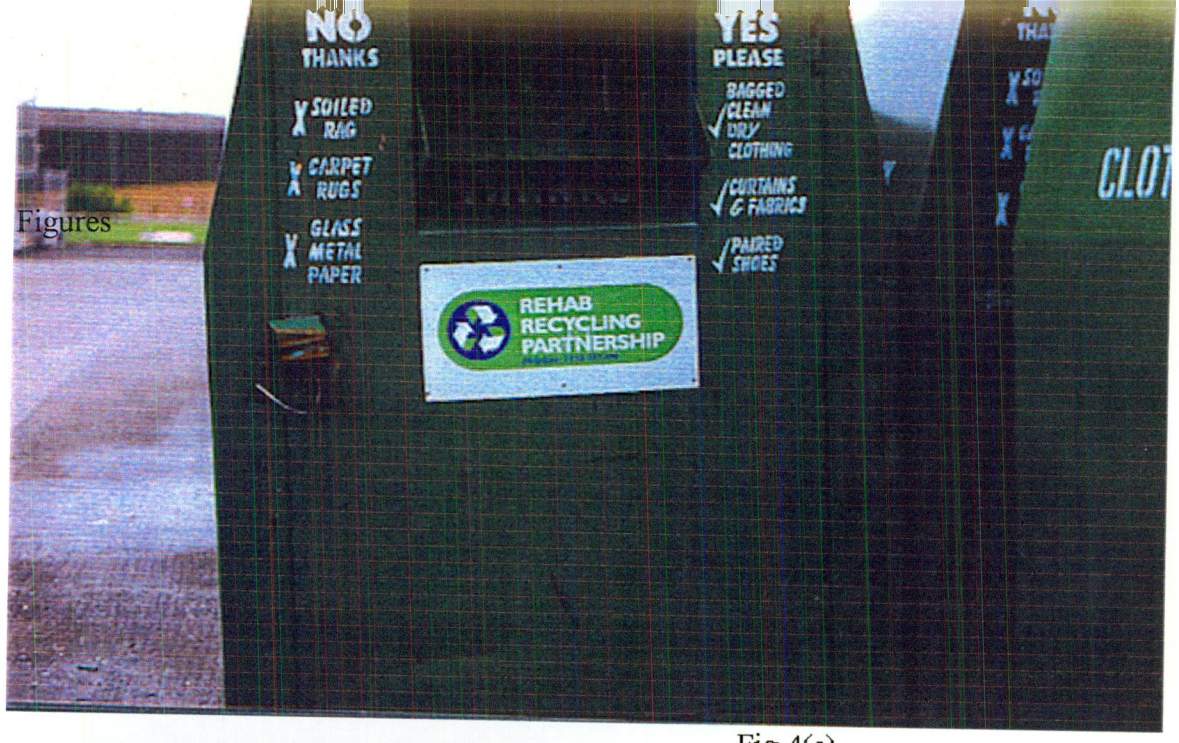


Fig 4(e)
Rehab Tetile Colletion Banks

Fig 4(f)
Rehabs paper shredding and recycling services in operation

Fig 4(g) unsorted glass collection in Rehab Recycling plant

Fig 4(h)
Alluminium can copressor at Rehab Recycling

material is done through plastic and metal banks. Positioned around Dublin and other cities on public land, they are usually outside supermarkets for the convenience of shoppers and for the safety of banks and distinguishable by name and colour for different classes of recyclables. Items are socks, shoes, blankets, curtains, and all items of clothing though the target market is at domestic level other institutions and some charity shops dispose of their unwanted property in the banks. Having discussed the history of recycling in Ireland in previous chapter we can see why it is sensible to start recycling at domestic level. The banks are emptied on a weekly basis. (See Fig. 4(e)). For textiles, Rehab does not engage in actual recycling processes but is a collecting body for other companies, e.g. S and B in Northern Ireland. This discussion will therefore concentrate on the activities of collection and disposal.

The bags arrive and are sorted into different types of material such as woollens, synthetics, acrylics, silks, nylons and cottons. The clothing is then sent to a sorting plant.

SUCCESSFUL AND NEW STRATEGIES FOR REHAB

The success of Rehab since its beginning says a lot about public feeling towards waste disposal and more so recycling in general. There are other similar organisations that operate in similar areas but none as recognised as Rehab. Some of these companies include CPI Ireland, Kerbside (that collect in green boxes) and Smurfits. The organisation was partly aided by the government that pays a percentage of its employees' wages as it is Ireland's

Textile & Clothing Processors Limited

Recyclers of Textile Waste and Quality Used Clothing

largest single employer of disabled people at a net cost of £145 per annum per job. The local authorities in many towns contribute banks allocated in their jurisdiction. There has been a great deal of support coming from the school and educational systems concerning recycling. A survey carried out at the Terenure Village recycling banks found that 70% of the people visiting banks were school children Rehab has been supported by more funds from bodies such as the European Economic Union since 1977. Some problems, Rehab encountered in the collection process are of security – some cases of banks having been broken into and turned upside down or even trashed with the wrong type of waste.

Some mills that rehab deals with, especially in paper recycling demand to be paid some percentage towards recycling which is not profitable due to the cheap supplies of paper from South America and parts of Asia.

S AND B

S and B is another company dealing with the recycling of textiles. S.P. and B. as they were originally known as, was started as a partnership by Sammy and Bernie McAtamney and Paul in 1990 in Ballymena, Northern Ireland. It is only in the past year and a half that the company changed hands to Mr & Mrs McAtamney.

S and B solely deals with the collecting, sorting and resale of second-hand clothing. The idea of recycling textiles emerged from a previous business Sammy had run – collecting newspapers for export to mills in England. The company produces sorted wearable or unwearable clothes.

The company employs 48 full-time staff and seven people in administration. It collects from charity shops in Northern Ireland's areas of Ballymena, Belfast and Dundalk. On a regular basis ware is brought to a warehouse for sorting and reselling. The company's total operations take place in the same warehouse and compound that occupies an area of 20,000 square feet.

PRODUCTION

Bags of clothes are collected weekly by the company's four lorries and one van, also used to transport products to Belfast Port for export in containers. A tractor is used to pile the collected bags in to one corner of the warehouse to a height of a small hill. Manually one or two men load the bags on to a belt where another persons splits the contents. The sorting then begins. There are approximately thirty people along the conveyor belt, each assigned to specific jobs. For example, the first sorter checks for dampness (which is a major problem), a case that calls for total disposal of contents. Another pulls out accessories to be resorted separately. Another pulls out heavy sweaters, another light sweaters, heavy coats, light coats and so on. Each category is thrown into bins placed along the belt next to the relevant sorter. Fifteen percent of raw materials in S and B comes from Rehab, 83 tonnes of textile is

Fig 4(i)
S and B Recycling facilities

Fig 4(j) Sorters along the belt in Sand B

Fig 4(k) Loading the coveyor belt in S and B

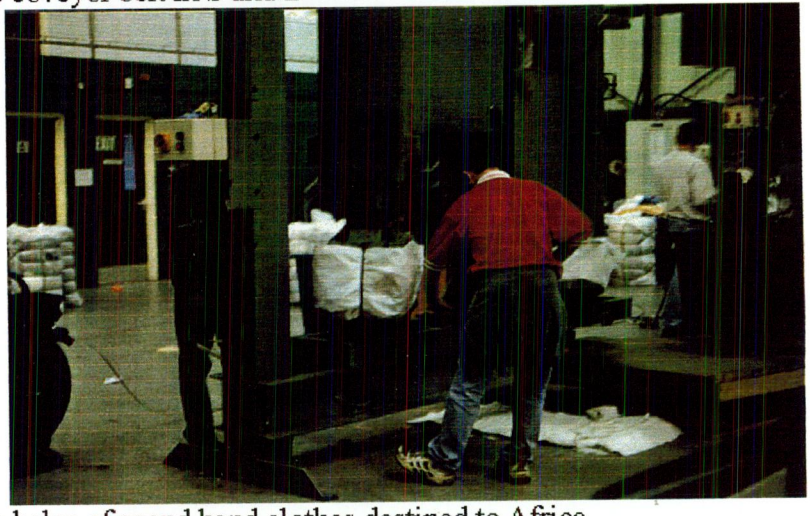


Fig 4(l) compessing bales of secnd hand clothes destined to Africa

sorted bi-weekly and a forty foot container is filled for export to third world countries. The reason that sorting is a major part of this company's investment is because its markets are specific. After sorting the clothes, they are packed into rectangular bales of fifty kilograms, compressed, wrapped in nylon jute bags and sealed using metal strips. The bales are visibly labelled with the category of clothing, for example, 'blouses'. Eighty percent of the export goes to Africa, namely Nigeria through Olazi International, Benin through Ufat and Kenya through Wida, to Asia namely Pakistan and India. Because of warmer climates, the markets require light weight garments. The heavy and undesirable coats, curtains and suits are called 'Flock' and the woollens 'Jazz'. Usually 20% of each sorting is exported to England to recycling mills and further broken down to fibres

BUNZL TEXTILE
PRODUCTS LIMITED

BUNZIL

I feel that it is crucial to discuss the process that recycled textiles undergo after they have left Ireland in order to understand the full effect of the recycling process.

Bunzil is a mill that converts recycled textiles of all sorts into fibres for spinning or for use in non-woven fabric production. To my surprise Bunzil Textile Products began in 1938 in Austria. Despite changing management in 1990, the production people remained the same. The mill occupies 110,000 square feet and 5 acres of surrounding land in Yorkshire, England. It differs extensively from the other case studies I have already discussed in this chapter in that the methods of recycling the company undertakes are on a large scale, and the company considers its produce mainstream.

It employs 40 permanent staff. It buys its raw materials from textile producing mills or clothing dealers in both second-hand and new sectors from companies both in England and Ireland. Such companies are like S and B. Bunzil pay for raw materials from S and B.

This includes: old rugs, acrylic fibres and viscose fibres (per tonne), polypropylene, woollen garments and various other products. Most suppliers deliver to Bunzil. The raw materials on arrival are hand sorted into colour or grades depending on the end product. Fabrics are shredded by cutting machines of various grades in fineness of shredding. Some selected fabrics are

Fig 4(m)
UBRA shopping bag made from recycled leather "fibre" similar to Bunzil products

Fig 4(n)
Work gloves-100% recycled
Lined with Bunzil product

cut into patches for use by car upholstery companies. The fine fibres are then compressed and packed ready for resale.

Bunzil's main market is the blanket, bedding, spinning and non-woven product industries who make mattresses, insulation material, car interior padding, groves, household cloths, mops and felt.

The most important aspect for Bunzil's success is the constant supply of raw materials. As the management describe it "no one makes sub-standard or waste goods intentionally." Cutting down on production costs helps to maintain a profit margin that is usually low in relation to the high volume of processing. The company receives no aid or support of any sort from any other sources other than their own profits.

The company specialises in some fibres because of the difficulties arising in the processing of some textiles. Bunzil prefers acrylics, viscose, rags and threads of natural fibres that suit the machinery they have. Problems they encounter in production are that some fibres resist cutting resulting in production of undesirable lengths of fibre that do not meet customer requirements. Also during processing some plastic fibres fuse in the heat emissions from machinery movement.

The company experiences what can be a great burden caused by government regulations as regards pollution policies. The company produces both fumes and dust that are harmful, during processing. This also creates a lot of waste

fibre in fluid form that in some cases is not organic or bio-degradable. Due to the nature of the production process it is very much against environmentally friendly practices. So far nothing has been suggested or designed to curb problems by the local or national government. One form of economically viable textile recycling would appear to cause one set of problems while solving another.

CONCLUSIONS

The funding of recycling projects by the Department of the Environment emphasises non-profit making, voluntary schemes largely based in the local rather than the national arena, and also administered at local rather than national level. This might suggest that national policy sees recycling as a relatively marginalised activity rather than a central concern relating to waste management. The funding of businesses engaged in recycling as a profit-making activity is administered through the IDA.

The current mainstream waste management schemes funded and administered by local government emphasise the use of landfill sites, except for very recent and isolated schemes, which are designed to encourage kerbside collection and recycling.

Economic incentives are central to the success of alternative waste management systems – the making of recycling into a profitable enterprise will encourage its success as a firm protecting the environment. The IDA has implemented such programmes here. Rehab, because of their charitable status also receive funding.

A holistic approach with regard to recycling is absolutely necessary if it is to survive as a viable business. The absence of programmes to encourage the

consumption or use of recycled textiles means that there are little or no home markets.

Waste management has become an important issue in developed countries with high consumption rates. This is no less the case in Ireland.

Recycled textiles, particularly those which are highly visible, hold particular meanings for consumers, which are either associated with negative connotations of poverty, dirt and disease derived from historical usage or with 'alternative' fashions associated with sub-cultures. Although the latter has provided a market for companies like Damascus, it has resulted in alienating them from mainstream markets, and has perhaps contributed to their demise.

There are three main methods for the recycling of textiles. The first involves the deconstruction of the fibres that make up the textile, with a view to their re-use in another form. The second is in the treatment and re-sale of second hand clothing or other items. The third is in the deconstruction of garments, which are then reconstructed into another garment. All three produce significantly different end products.

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APPENDIX

Wanjiku Muigunda
6 CORRIB Rd
TERENURE 6W
DUBLIN IRELAND
6. NOV 98
e-mail. chiiku @ hotmail . com

Att. "TREVOR"

I am a fourth year student at the National College of Art and Design (Dublin) I am currently researching and writing my thesis on Textile Recycling in Ireland.

This led me to S+B Textile + clothing processors in Ballymena N. Ireland, where mr Ricky McAtamney (manager) gave me your contacts as an actual recycler

It would be of great assistance to me if you could please answer my questionnaire and return it as soon as possible. I am truly sorry for any inconvenience it may cause you.

Please feel free to add any information that I may have left out that you feel is relevant

P/S - could you please give me figures of eg amount of textiles in weight that you get in and send out per month / per wk.

- I would highly appreciate images of your products (priced) and those of the actual production process if you have them

I am very very greatful for your time and assistance and look forward to hearing from you soon

Yours faithfully
Wanjiku

QUESTIONNAIRE

BY Wanjiku Migunda

N.C.A.D. Dublin ,Ireland

Textile Recycling

1. what is the name of your company /business ? BUNZL TEXTILE PRODUCTS LTD

2. what does it mean or signify? We buy, convert & sell raw materials

3. when did it begin to operate? 1938 (BUY OUT MANAGEMENT. 1990)

4. where is it situated? DEWSBURY

5. what amount of space does it occupy? 110 000 Sq Feet + hard total 5 Acres.

6. what does it / used to produce? We convert materials into articles for spinning or non-woven products

7. is it large scale / small scale industry? large

8. do you consider your produce mainstream or marginal in the market? Mainstream

9. is the business a partnership, sole proprietorship or co. ? Company Ltd.

10. what are your raw materials? Old Rags, Acrylic Fibres / Tow Viscose Fibres / tow, polypropylene & various others from time to time.

11. where and how do you collect your raw materials? We buy from fibre producers or mills or clothing dealers.

12. what is the general structure in your process of production, from beginning to the end?

We buy raw material, sort into colour or grades cut, machine & Dresspack.

13.how many employees do you have?
-permanent- 38-40
-temporary- NIL.

14. what are your priorities in production?
-quality goods X
-delivery (2)
-collection (2)
-production (1)
-design X

and why? Our main need is supply since no one makes substandard goods/waste by choice so supply is important.

15. was the business an initial idea or did it emerge from another business you had?

Old business originally in Austria.

16. how do you dispose of your produce?

Sell it.

-wholesalers
-retailers
-individuals

17. who is your main market? Blanket Industry, Bedding Industry
Spinning Industry. Non Woven product manufacturer.
Car lining + upholstering

18. have you changed since you began or even diversified? yes.

19. what do you think of recycling, especially textiles? It is our business, low margin high volume.

20. do you think Ireland has taken off very slowly in textile recycling as compared to other countries ? Slow compared to some but quicker than others.

if so in what ways? can you please give an example?
2/ 3rd World are slower to take up processing wastes are using.

21. other than company profits do you get funding from else where for recycling? NO HELP FROM ANYONE ELSE.

if so, from whom?

22. is it significant to production? N/A.

by how much? NIL.

23. do you know of any designers who used or bought your products?

24. do you think designers in your country consider recycling? NOT REALLY — THEY DESIGN TO SUIT CLIENTS (CUSTOMERS WHO WILL BUY) NO POINT DESIGNING THINGS THAT, DONT SELL.

if so how seriously?

25. how do you see your company contributing to societies well-being?
Yes in that we employ 40 people.

26. do you consider your co. environmentally sensitive? NOT REALLY
WE make the best use of all wastes but don't consider the so call modern recycling people as having much idea

27. how do you ensure you stay that way?

28. do you consider your produce recyclable?

how? yes.
Most textile products can be broken down + re used after machining

29. did you have any problems in production? Sometimes.

30. what were they? 1/ Being able to cut fibres to given lengths effectively.
2/ Processing "plastic" fibres without fusing

30. do you specialise in any kind of fabrics?

if so which ones and why? Acrylics Viscose Rags Threads & types That suit our machines.

31. does your company take the responsibilities of collecting your raw materials or do you have agents? No agents to collect, we buy direct from companies.

32. what government regulatory policies do you face in production?

do you have copies?

Usual burdens caused by government interfering in things they don't understand.

→ finish trousers
+ jacket

→ Telephone + fax friend + claire

→ Photocopy + post Questionnaires to miss glynn.
Glenn

→ call mary

→ See images of poses option

Draw speed sheets-
hangers today

- Buy rubber stamp inc

QUESTIONNAIRE

By Wanijiku Migunda
N.C.A.D., Dublin, Ireland
Textile Recycling

1. What is the name of your company/ business?
2. What does it mean or signify?
3. When did it begin to operate
4. Where is it situated?
5. What amount of space does it occupy?
6. What does it/used to produce?
7. Is it large/small scale industry?
8. Do you consider your produce mainstream or marginal in the market?
9. Is the business a partnership, sole proprietorship or company?
10. What are your raw materials?
11. Where and how do you collect your raw materials?
12. What is the general structure in your process of production from beginning to the end?
13. How many employees do you have?
    -permanent-
    -temporary-
14. What are your priorities in production?
    -quality goods
    -delivery
    -collection
    -production
    -design
    and why?

15. Was the business an initial idea or did it emerge from another business you had?

16. How do you dispose of your produce?

    -wholesalers
    -retailers
    -individuals

17. Who is your main market?

18. Have you changed since you began or even diversified?

19. What do you think of recycling, especially textiles?

20. Do you think Ireland has taken off very slowly in textiles recycling as compared to other countries?
    If so, in what ways? Can please give an example?

21. Other than company profits do you get funding from else where for recycling?
    If so, from whom?

22. Is it significant to production?
    By how much?

23. Do you know of any designers who used or bought any of your products?

24. Do you think designers in your country consider recycling?
    If so, how seriously?

25. How do you see your company contribute to society's well-being?

26. Do you consider your co. environmentally sensitive?

27. How do you ensure you stay that way?

28. Do you consider your produce recyclable?
    How?

29. Did you have any problems in production?

30. What where they?

31. Do you specialise in any kind of fabrics?
    If so, which ones and why?

32. Does your company take the responsibilities of collecting your raw materials or do you have agents/

33. What government regulatory policies do you face in production/

34. Do you have copies of any policies?


DAMASCUS
2 CROWN ALLEY
DUBLIN 2
IRELAND
A unique collection of
original arts, crafts, &
garments from
exotic places of the world