3

The size of the market for fancy yarns

3.1   Introduction

In considering the market for fancy yarns, we need to remember that these goods are not commodity items, and nor will they ever be. Their purpose is to add colour or texture, or both; in other words, to create some variation in the aesthetic appearance of the fabric or garment. Therefore, the size and value of the worldwide market for fancy yarns is subject to fluctuations of fashion and of season, and is extremely difficult to determine at any one time. In size and value, the market for fancy yarns is also likely to appear to be negligible when compared with other textile markets, although given that fancy yarns are more expensive than plain yarns, the value of that market will be disproportionately high in relation to its size. Large volumes of textile materials are required for geotextile and other industrial uses, which include activities ranging from teabags, cigarette filters and sanitary materials to tyre cords, road linings and conveyor belts. The extensive use of these materials and others makes the combined industrial volumes sufficiently large to rival the worldwide apparel volumes. As stated, the small size of the market for fancy yarns is to some extent counterbalanced by the relatively high values for the yarns, but the variations in the type and detail of data recorded make it extraordinarily difficult to gain a true picture of the market for fancy yarns throughout the world.

We do not consider it necessary to attempt the Herculean task of providing an accurate snapshot of the world market for fancy yarns at the time of writing. Such information is of little direct use to the student of yarn structures and applications, especially since the data available do not extend to such details as the yarn structures concerned and their methods of manufacture. Further, since the market size is heavily subject to the fluctuations of fashion, any figures so derived would be of little benefit to the industry as a whole. We do, however, contend that it is of some value to offer a description of a *method* by which it might be possible to use the published data available to attain some estimate of the global market size and of its

financial values. The method we describe here is referred to as 'the successive scenario technique'. The advantage that this method offers is that it makes it possible to conduct research in market sectors where complete data are unavailable. The method is 'seeded', or initialised, by developing a possible 'scenario' that can subsequently be offered for discussion with informed respondents. This then generates a further scenario that can, in turn, be offered for comment to other respondents. In this way, the model of the market sector can be refined until it reflects the situation more or less confidently. This method was chosen because one of us [RMW] has a detailed knowledge of the workings of this method relating to studies of the markets for chemicals for textile finishing,[4] and for cosmetics and toiletries.[5] This technique was later used to study the European markets for fancy doubled yarns,[6] and discussions of their prospects with some 80% of the UK producers of these yarns gave a final estimated production volume in the UK of about 4200 tonnes in 1998. Unlike the present situation, in both of the 'chemicals' cases the range and trajectory of the application groups was such that a very large proportion of the *total* population were concerned with contributing to the volumes and values. Even more importantly, a high proportion of the participating companies could, at a cost, be approached. In the present case, the producers are geographically highly dispersed and form a relatively small proportion of the total population, which would make research of the global market a very expensive proceeding, to be undertaken in detail only where some benefit could be expected from the knowledge gained.

The degree of confidence with which the results of the successive scenario technique can be presented or used as the basis for business decisions is related to the proportion of possible producers actually approached. In our present case we have a large degree of uncertainty, which means that estimates for the production of fancy yarns of anything between 0.1 per cent and 5 per cent of the total yarn production can be proposed and logically defended. As the degree of uncertainty increases, so too does the importance of contacting a large number of respondents. In turn, therefore, this is reflected in the significant cost that would be involved in approaching even a small proportion of the hundreds of spinners throughout the world who may or may not manufacture fancy yarns of various types. First enquiries designed to establish a spinner's estimate of the total volumes of fancy yarns used in a country or Continent or market area, are likely to receive a response of 'about 1 per cent'. Perhaps this is simply a reflection of the underlying dismissal of fancy yarns as 'a slow, expensive nuisance' which was mentioned in the introduction to Bellwood's 1977 article on the subject in *Textile Industries*.[7] In fact, the figure for the UK in 1998, as it was determined after many iterations of the successive scenario technique, turned out to be closer to 2 per cent.

The successive scenario technique starts by developing an initial quantitative scenario using the published general economic or demographic information available for the target countries. This is done by extrapolating from the collected data for some product groups of some countries in order to provide 'notional' data for other countries, the data for which are not known. In an elaboration of the method, these theoretically derived figures are modified by a factor which combines the theoretically derived figures with the relative standards of living in the countries under consideration. The factor used is the ratio of the published gross domestic products using a known country's statistics as the reference basis. This process yields a pattern that can be checked and rechecked with individual, knowledgeable respondents who, for one reason or another, are especially familiar with a particular country, group of countries, or product group.

Even with small market sectors, it is possible to identify the gross application groups, such as hand knitting and heavy gauge machine knitting for acrylic fibre, and upholstery for cotton fibre end uses. The method will generally give a useful first approximation even when the market sectors considered are of recent date and therefore immature. It will certainly provide an approximation that is good enough to justify a conversation with an informed respondent. It is this point which is of such crucial importance. The development of the first scenario is only the first stage of the process – it needs to be modified and re-modified until the scenario presented is felt to reflect the actual situation. Obviously, it will quickly become apparent that there is no single 'typical' market, so that, in the present case, excessively high figures will be obtained if the Italian or Turkish production of fancy yarns are taken as the basis for extrapolation.

The greatest advantage of the successive scenario technique is that it provides a means of crystallising the latent knowledge of the industry that the respondents have acquired. The collected and published data do not include the details of yarn production in which we are interested, while at the other end of the scale, the precise details of an individual mill's production would offer too great a level of detail. We need to find a way of deriving the intermediate stage, which in effect concerns the production volume of individual countries. The first, extrapolated scenario takes no account of local variations, and is therefore usually so grotesquely inaccurate that even the most diffident respondent will feel encouraged to offer suggested alterations. As the model is refined, it gradually reaches a point at which it reflects the market situation as a whole. Clearly, for this method to succeed, it is necessary to speak to respondents who are in a sufficiently senior position to have some inkling of the world outside their doors. That fact accepted, however, it is often the case that even these people do not realise how much they know, but feel themselves to be limited by their personal horizons.

The greatest danger presented by the technique is one of infinite circularity of argument and of finishing up with the number first thought of, and so the necessity for constant checking and rechecking cannot be emphasised too strongly. In the market for fancy yarns, one form of cross checking would be to work in reverse; that is, starting from the mill production. In this case, the production per week is estimated and the total market figure extrapolated therefrom. In either case, the details of the figures are unlikely to be entirely accurate. It would be impossible, for example, to be at all certain of the derived figure for chenille production in any one country, although that derived figure is very likely to offer a reasonable approximation, at least for the major application groups. The gross outline of the situation (that is to say, the relative proportions of the production in different countries) is likely to be plausible, however. Absolute precision at this stage is neither sought nor claimed. The aim is simply to gain some impression of the relative volumes of the markets being considered, at a specific time.

3.2   Starting the successive scenario technique

In the original study[6] it seemed a reasonable first assumption, based on the examples of fancy yarns found in retail outlets, that the production of fancy yarns within Europe would be related to the consumption of wool and cotton. Initially, therefore, the overall consumption of wool and cotton fibre was combined with the population figures to give an average per capita consumption. To put this figure in context, and allowing for the production of cellulosics and synthetics, the *per capita* consumption for all fibres has now risen as high 7.5 kilos in 1999 and 8.5 kilos in 2000. It is worth bearing in mind at this point that the fibre consumption figure has risen, even as the world population has risen, so the total world production of textile materials must rise to keep pace. For the last two decades of the twentieth century, the consumption of wool and cotton together varied between five and three kilos per capita, and seemed to be in decline. This will be a reflection of a complex matrix of influences, but among them we can be sure that the increasing use of synthetic fibres has played a part, as has increasing poverty in some parts of the world, and increasing affluence in others. More detailed enquiries, beyond the scope of this volume, illustrate the background to this point: the proportions, for individual markets, vary from that 0.1 per cent mentioned earlier to 2 per cent of the mill consumption values.

In order to develop the initial scenario it is necessary to make an estimate of the proportion of the total market that is occupied by the target market. In this case, as a first approximation we can choose to accept the estimate first offered at the beginning of the study in 1998, that fancy yarns form 1 per cent of the total textile production. In offering an outline of this

Table 3.1 World fibre consumption, 2001.

Fibre	Mill consumption data (million tonnes)
Wool	1.3
Cotton	19.2
Synthetic	28.3
Cellulosic	2.7
Total	51.5

Source: Derived from data made public by CIRFS, 2001.

method, we are not making any attempt to develop the model and complete the process to create an accurate assignment of the production figures to the different countries, since we wish simply to offer an estimate of the proportion of the total world textile production that relates to fancy yarns, and a means of evolving further results. It is then possible to cross-check the estimate to ensure, for example, that the estimated total for fancy yarn production does not exceed the production of a particular fibre. Table 3.1 shows the unmodified mill consumption data for 2001, which gives a total all-fibre mill consumption of 51 400 000 tonnes. If we accept the initial estimate of one per cent, the production of fancy yarns will therefore be around 514 000 tonnes. Since at the end of this chapter we will be comparing the estimates that are made in the course of the discussion, we shall refer to this estimate, of approximately half a million tonnes, as *Estimate 1*.

We can expand these figures to show possible levels of production for the various synthetic fibre types. Making the allowance for the historical record, which shows that the changes (in volumes of fibre, filament or staple) have always been very slow, we can derive the approximate figures as shown in Table 3.2.

We clearly wish to make our revised second estimate credible, and we know that by no means all of the world fibre production can include fancy yarns. In particular, of the common divisions into Apparel, Household and Industrial, we know that Industrial uses will not involve fancy yarns. We have an estimate of 32% of the total volume to be assigned to Industrial applications[4], with 55% applied to the Apparel sector and 13% dedicated to Household uses. Thus, we can calculate that the Industrial uses involve 16 300 000 tonnes, which leaves us with some 34 700 000 tonnes in the candidate group for the use of fancy yarns. The Industrial sector uses a disproportionate amount of synthetic fibres, leaving rather less than the 55% that might be expected from Table 3.1 to be used in Apparel and

Table 3.2 Estimated world fibre production figures,
2001.

Fibre	Production (million tonnes)
Polyester	13.0
Polyamide	8.5
Polyacrylic	4.5
Others	2.0
Cellulosics	2.5
Cotton	19.0
Wool	1.5
Total	51.0

Household materials. Perhaps around 30% of that figure will be the 'synthetic' fibres, which we can divide in two, for convenience assigning 50% to remain as continuous filament and the other 50% to be cut into staple.

Of the candidate group of 34 700 000 tonnes, we can estimate that only 15 to 20% will in fact have the potential to involve fancy yarns. This gives us a possible market of between 5 200 000 tonnes and 6 900 000 tonnes. We can attempt to make this more precise by eliminating from our calculations some considerable portion of the Household textiles, since blankets, carpets and sheeting will certainly not include fancy yarns either. Thus, rather than 34 700 000 tonnes, we have perhaps 21 700 000 tonnes of textile production offering possible likely markets for fancy yarns. Again applying our estimate of 15 to 20% offering more likelihood than the rest, we now have between 3 and 4 million tonnes as our suggested upper and lower boundaries. We maintain our estimate that only a fraction of the potential market will actually involve fancy yarns, and one percent of that potential market is, taking the upper limit, 40 000 tonnes (this in the future will be referred to as *Estimate 2*). Obviously, this is significantly less than our initial estimate of half a million tonnes (that is, the figure of 514 000 tonnes mentioned previously) but equally, it offers us a clear lower boundary against which we can check our estimates. In Estimate 1 and Estimate 2, therefore, we have derived what we expect will prove to be the upper and lower limits of the potential production of fancy yarns. Already it is clear that only slightly differing premises and lines of reasoning will, at this stage, produce radically different results. Far from discouraging further research, we should now be encouraged to investigate further. In this work we will not be following the final necessary procedure that involves discussions with respondents, although we will show later in the chapter the type of alteration we can expect to make based on such discussions.

Perhaps another line of reasoning will offer us an estimate closer to one or other of the boundaries. So, if Estimate 2 seems a very small figure in comparison with the total, we should remember that a significant portion of the total textile production is destined for industrial use, and that none of this will involve fancy yarns. We must therefore exclude all the industrial textile materials, for example tyre cords, cigarette filters and conveyor belts, and much of the household textile production, which includes carpets, blankets, sheeting and so on. We are seeking, in fact, that portion of the market which is engaged in producing textile materials for apparel and household furnishing. We estimated earlier that between 15 and 20% of the apparel and household sectors might offer some scope for the use of fancy yarns. If we choose 17.5%, as offering an intermediate value, we reach the conclusion that the potential application of fancy yarns lies in 8995 thousand tonnes of the market. Since fancy yarns are included for their aesthetic qualities and for the sense of 'difference' they convey, it immediately becomes clear that only a small portion of that percentage will actually make use of them. Fancy yarns, we should emphasize, are used primarily in the ultra-high value and high margin sectors of the market, even though some specific structures now appear at the mid-market level. In fact, the use of fancy yarns lies in the subsection of the apparel and household market we have sought to define, since there are further exclusions to bear in mind – sheer fabrics, jersey knits, and fabrics woven for printing all (usually) exclude fancy yarns. If, again, we choose to accept the suggestion that that small percentage is one per cent, then we have an estimate of approximately 90000 tonnes, which we shall call *Estimate 3*.

3.3   The method of the successive scenario technique

Starting from the assumption that the estimates of fibre consumption and production are valid, we can make the initial estimate for the fancy yarn production of a reference country. To avoid the complication of real quantities, we shall refer to this initial estimate as x tonnes.

Approximations of the possible sizes of these markets can be derived demographically. First we multiply by the target country's population relative to the reference country. Then we do the same with the Gross Domestic Product (GDP) to account for the relative purchasing power. We need make no assumptions in the first instance, and no further data need be used. Our adjustment factor is therefore given by Equation 3.1.

$$f = \frac{\text{Population of Target Country}}{\text{Population of Reference Country}} \times \frac{\text{GDP of Target Country } \textit{per capita}}{\text{GDP of Reference Country } \textit{per capita}} \qquad [3.1]$$

In Equation 3.1, the ratio of the *per capita* GDP expresses the following relationship, shown as a fraction in Equation 3.2, which represents the relative standards of living of the target country and the reference country:

$$\frac{\text{Purchasing Power Parity of Target Country}}{\text{Purchasing Power Parity of Reference Country}} \qquad [3.2]$$

The factor f, which is the result of Equation 3.1, when applied to x, gives an answer in terms of the units of the figure x, that is, in tonnes. The reference country will always have f equal to 1. The first 'scenario' is therefore $xf_{\text{(target country)}}$ for each target country or group of countries. These results, R, which can be described as the 'extrapolated production figures', can then be listed and discussed with suitable respondents who can comment on the likely accuracy of the figures and suggest changes to be made to them. Equation 3.3 offers a reminder of the derivation of R.

$$R = xf_{\text{(target country)}} \qquad [3.3]$$

To offer an example, we show in Table 3.3 a possible result of applying this technique to some of the available figures for 2001, using the United Kingdom as the reference country. Williamson's 1998 study[6] of the European market for fancy yarns provides us with a reasonably accurate starting figure of 4200 tonnes produced in the United Kingdom, since it was obtained after having spoken to a large proportion of the United Kingdom's spinners of fancy yarns then operating.

   We should emphasize here that no modifications based on general market knowledge have been made to the figures shown in Table 3.3. Nevertheless, we shall base our next estimate of worldwide fancy yarn production on this Table, and say that *Estimate 4* is of 68 000 tonnes. The Table includes only a selection of the countries active in the textile industry throughout the world, so the same factor applied to all countries could give an initial estimate that might very well be much higher. However, closer examination of the production patterns in some of these countries may reveal that their production of fancy yarns is, in fact, negligible, which would reduce the estimated overall production figure significantly. The overriding point to be borne in mind is that the estimate *is* only an estimate, intended to offer the respondents a figure with which they may agree or disagree, depending on the knowledge available to them.

   After discussions with a number of respondents, changes can be incorporated to create a new list R_2, and the process can then be repeated with different respondents to refine the model. The second scenario will be modified by the impressions and assessments of the market collected from the respondents, and quantified in some way. As an immediate example, it is generally agreed that activity in the fancy yarn sector is proportionately much higher in Italy than in any other European country. When we begin

Table 3.3 Extrapolated production figures for fancy yarn production in various countries, 2001.

Country	Purchasing power parity ($)	Population in 2001 (thousands)	Factor relating target to UK *'f'*	Derived and unmodified figures for fancy yarn production* (tonnes)
Australia	22 200	19 521.9	0.333	1386
Belgium	23 900	10 255.6	0.188	798
France	23 300	58 882.3	1.054	4410
Germany	22 700	81 981.9	1.429	6006
Greece	13 900	10 965.7	0.117	504
Hungary	7 800	10 054.7	0.060	252
India	1 800	1 040 281.0	1.438	6048
Indonesia	2 800	217 613.5	0.468	1974
Italy	21 400	57 989.9	0.953	3990
Netherlands	23 100	16 074.1	0.285	1218
New Zealand	17 400	3 852.7	0.051	210
Poland	7 200	38 622.9	0.214	882
Portugal	15 300	10 008.8	0.178	504
Romania	3 900	22 287.4	0.067	294
Slovakia	8 500	5 428.6	0.035	168
Spain	17 300	40 117.1	0.533	2226
Turkey	6 200	68 634.8	0.327	1386
Ukraine	2 200	50 222.4	0.085	336
United Kingdom	21 800	59 730.3	1	4200
United States	33 900	284 620.4	7.410	31 122
Total extrapolated production figure				67 914

*Based on GDP and Population figures, 2001, and calculated based on the factor relating the target and reference countries, as explained in the text.

to develop the scenario for comment, therefore, we can include that information, and any other such information relating to production in other countries as well. Again, a possible result of such discussions and modifications is shown in Table 3.4. At this stage, of course, having contacted only one small set of respondents, the derived and modified figures remain extremely inaccurate. We emphasize, therefore, that these figures serve only as a basis for discussion with a further group of respondents, and so this inaccuracy is not a flaw at this early stage in the enquiry. Indeed, this

Table 3.4 Modified derived figures for fancy yarn production in various countries, 2001 – second scenario.

Country	Alterations to figures in Table 3.3, as suggested by respondents	Derived and modified figures for fancy yarn production* (tonnes)
Australia	0	1386
Belgium	+100	898
France	−3407	1003
Germany	−4805	1201
Greece	0	504
Hungary	0	252
India	+1556	7604
Indonesia	0	1974
Italy	+15112	19102
Netherlands	0	1218
New Zealand	0	210
Poland	+2075	2957
Portugal	0	504
Romania	0	294
Slovakia	0	168
Spain	0	2226
Turkey	+4150	5536
Ukraine	+2594	2930
United Kingdom	0	4200
United States	−12449	18673
Total extrapolated production figure		72840

*Based on GDP and population figures, 2001, calculated based on the factor relating the target and reference countries, and modified following discussions with respondents. Some of the figures remain unchanged because respondents for those areas had yet to be consulted.

implausibility is likely to prove an advantage to the researcher by stimulating comment and discussion – even controversy. Those who have a more intimate knowledge of the production in a particular country will be provoked by the infeasibility of some of these results into making suggestions that allow further refinement of the model. As it stands, however, we may derive our *Estimate 5* from this table and set it at 73000 tonnes.

   In order to gain an accurate picture of the production of fancy yarns throughout the world, it would be necessary to repeat this cycle of discus-

Table 3.5 Fancy yarn production in Europe, 1998.[6]

Country	Fancy yarn production (tonnes)
Germany	1350
Italy	20000
France	900
Spain	2250
Turkey	9800
Greece	1000*
Portugal	650*
Denmark	450*
Sweden	650*
Norway	400*
UK	4200
Total	41650

Note: those results marked with an asterisk (*) have not been examined and, lacking further evidence, the extrapolated figure has been rounded and included without comment.

sion and modification a number of times, in each case consulting suitable respondents in all the target countries. Time-consuming and expensive as this would certainly be, to our knowledge no-one has endeavoured thus far to produce such an analysis.

As another example, applying this technique to the European market we can obtain the figures shown in Table 3.5. This study was performed in 1998[6]. The consumption of acrylic staple fibre was used as the basis for the synthetic portion of the results shown here because, for some time, acrylic yarns have formed the synthetic substitute for wool in the market for hand-knitting yarns and for general knitwear, and fancy yarns do appear extensively in that market. However, as manmade fibres of all types continue to be developed and more variations appear, if the study should be repeated in the future it will be necessary to reassess this choice, and perhaps to choose some other fibre as the basis for development.

If at this point we pause for a moment and compare the Estimates 1–5 that we have made at various stages in this discussion (collated in Table 3.6 for the convenience of the reader), we will begin to gain some appreciation of the true complexity of the market we have been considering. We recall that Estimate 1 was that the market for fancy yarns was one per cent of the world fibre production. This was the figure suggested by correspondents at the start of the study in 1998, although in the case of the European market

Table 3.6 Collation of the estimates made of the market for fancy yarns during the course of this chapter.

Estimate 1	500 000 tonnes worldwide
Estimate 2	40 000 tonnes worldwide
Estimate 3	90 000 tonnes worldwide
Estimate 4	68 000 tonnes worldwide
Estimate 5	73 000 tonnes worldwide
Estimate 6	42 000 tonnes in Europe alone
Estimate 7	80 000 tonnes worldwide

it produced an estimate that was shown by later information to be far too low. However, when the same assessment – based upon the respondents' complete lack of confidence in the market – is applied to the world fibre production, it gives a very high estimate, which none of our other, logically-derived figures can approach.

Our second estimate was based on a reduction of the proportion of the fibre production considered, to allow for the variety of industrial and household applications which certainly do not involve fancy yarns. This offers a very much smaller market – only 40 000 tonnes – but when we come to *Estimate 6* in Table 3.6, which is based on the study undertaken in 1998,[6] we find that the market in Europe alone was assessed to be higher than that and so, once more, we are forced to reconsider. We might choose, therefore, to estimate that the worldwide market for fancy yarns could be approximately 80 000 tonnes (*Estimate 7* in Table 3.6). Without several iterations of the successive scenario technique, and a large number of geographically widely-separated informants, we will not be able to confirm this estimate, but it should be abundantly clear that the entire question is a complex one, not easily addressed.

In the Williamson study,[6] the estimate of one per cent was shown offer a European market size of only 20 000 tonnes, which later information suggested was only half of the true figure. The assessment in this chapter shows a different picture entirely, since it seems that the market figure worldwide may be as small as one fifth of one per cent (0.2%). Two points are worth considering in this connection. Firstly, in this chapter we have been concerned with demonstrating the method and discussing its application, rather than with applying it in fact. The 1998 study suffices to show that surprises may await the unwary researcher trying to apply the method carefully. Secondly, we are aware that the markets worldwide vary according to a number of factors, among them culture, individual and commercial prac-

tices, and historical sensibility. Only discussions with respondents can bring to light the differences that result from these factors. It may be the case, for example, that the majority of fancy yarns are in fact destined for use in Europe rather than in Asia or the Americas. Perhaps this is because in Europe the matrix of cultural and historical sensibilities favours this means of introducing texture and variety into a garment above some other means (woven patterns or applied motifs, for example) that may be preferred elsewhere.

In this chapter, several of the possible market patterns have been explored. All have support from the results of similar examinations of other markets in the various market areas; all have some rational justification; all show various aspects of atypical behaviour. None can be proven to be correct. In this market area of fancy yarns, the atypical behaviour subsists in major misunderstandings of the volumes and values on the part of all respondents. The common and dismissive attitude expressed in the intro-duction to Bellwood's article in 1977[7] has perversely led to a gross over-estimation of the volumes, whilst produces as a whole, assigning a 'safe', very low, estimate of the market proportion, have as grossly under-estimated the values of the influence of the use of fancy yarns for the customers.

Whatever the background, the small percentage of total fibre production that, with present knowledge, we can estimate to involve fancy yarns should not be taken to imply that the market is a negligible one. As we have com-mented, fancy yarns appear mainly in high-margin and high-value items, so even the relatively small volumes are still a matter for interest. The impetus for fabric and garment designers provided by the novelties at present avail-able, and the challenges presented to designers of spinning equipment by the search for still more novelties, both contribute much more to the indus-try as a whole than might at first be guessed from the volumes involved. The opportunities for designers and manufacturers could be immense: only 0.2% by volume quite possibly, but about 1.5% of the total revenues, maybe influencing 15% of the fabrics and conceptually perhaps as much as 25% of the garment designs. As we shall learn later, although the primary use of fancy yarns lies in the textural and colour variety they impart, sometimes they provide the inspiration for some fabric designs or production methods created using only plain yarns.