

**A STUDY OF THE BEHAVIOURAL VARIABLES INFLUENCING
CONSUMER ACCEPTABILITY OF
FISH AND FISH PRODUCTS**

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**DEDICATED TO MY FAMILY
WHO LIVE ON THE HILL AND
EAT MEAT, NOT FISH**

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ABSTRACT

The UK fishing industry has been fraught with difficulties over the past decade in the form of increased fuel prices, the imposition of catching quotas and the extension of Icelandic fishing grounds. In addition to these problems, demand for fish in the UK appears to be in long term decline and largely because of consumers rejection of many potentially edible species, and resistance to products containing fish.. Yet few studies have attempted to identify the factors which determine acceptability of fish and fish products in the UK.

This thesis addresses the issue of food choice and behaviour from the consumers perspective, identifying market trends in demand since 1977 and the current 'profile' of fish consumers. This is followed by qualitative research to identify the main issues which determine food acceptability with specific reference to fish, and the way in which fish fits into meal patterns. This work is then complemented by a study into food usage in one hundred households over a two week period, using food diaries to identify specific use of fish across meals and to verify some of the qualitative findings. A national survey of attitudes towards meat and fish helps to substantiate the qualitative findings and identify salient factors in food choice.

The main findings highlight the restricted place of fish in the UK meal system and emphasise the importance of considering the overall appropriateness of fish for meal occasions. Fish is generally perceived as having a limited number of uses within the overall pattern of meals, and not to fit into the most common meal formats. The nature of meal occasions is changing as a consequence of wider social change. As major food events become less formalised , new opportunities are likely to arise for convenient fish products.

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INTRODUCTION

"Its no fish ye're buying - its mens lives"

Sir Walter Scott (The Antiquary 2)

The uncertainty of supply has always been a problem for the UK fishing industry, but the imposition of catching quotas, the extension of the Icelandic fishing grounds and the ensuing 'cod wars' have taken their toll on the industry. However a new threat lies with the decline in demand for species of fish currently landed by the UK fishing fleet and the increasing dependence on imports to satisfy current tastes. Other potential sources of supply such as mechanically recovered flesh from current filleting operations, small sized fish, and species not currently acceptable are presently underutilised. The impact of all this on the fishing industry is reflected in the words of Sir Walter Scott, as true today as they were in the early nineteenth century. One way to improve the fortunes of the industry is to increase demand for fish, especially those species which are currently underutilised. The technical means to present these resources for the consumer as food products is largely available but little is known as to why fish consumption remains so low in the UK.

A rationale of choice based on availability, psychological or nutritional requirements is insufficient to explain why we choose the foods we do. This behaviour is often economically inefficient, but then the justification of our behaviour serves more than the rudimentary laws of economics. Fish is no exception to the rule. Technically it is possible to overcome many of the negative features of this foodstuff (Whittle, 1983), yet despite this and its healthy image fish consumption remains low in the UK. However, research into new product developments are largely confined to the 'palate and the plate', focusing on sensory analysis and 'eating'.

The need for a broader understanding of fish consumption to complement the sensory work resulted in a project funded by the Ministry of Agriculture Fisheries and Food into the influence of behavioural variables on fish consumption. This thesis, based partly on that research, addresses the broad issue of why fish consumption remains so low in the UK. The search for the answer to explain our 'aversion' to this abundant food supply extends into the area of social and cultural influences on behaviour, and it is concerned with understanding consumption with respect to fish and fish products.

The objectives of the research were to

- 1) identify causal behavioural factors involved in food choice**
- 2) identify main features of the UK cuisine with regard to fish**
- 3) examine the image and use of fish in the UK diet**
- 4) suggest new areas for product development and the appropriateness of fish for specific meals**

To fulfill these objectives the research adopted an 'integrated 'approach utilising several research methodologies, and focused on all stages in the food provisioning process from acquisition to disposal. Market trends (desk research), characteristics of consumption and the associated 'meanings' (qualitative research), actual usage (quantitative 'diary' research), along with attitudes and general perceptions of fish relative to meat (quantitative 'attitude' research) were all investigated.

Chapter one illustrates the variety of influences on food choice and the structure they impose on the choice of foods. It highlights the fact that foods cannot simply be regarded as 'nutrients' and emphasises the need to look to other areas, such as sociology and anthropology for a fuller explanation of behaviour with respect to food choice. Chapter two takes a brief look at historical influences on fish consumption, the role of the crown and the church in shaping our behaviour, the influence of industrialisation and the importance of food preservation advances. Chapter three sets the scene for the research which follows by examining market demand trends, features of the market and the customer. The focus of this chapter is on the retail market, household consumption and characteristics of individuals who consume above average amounts of fish. Chapter four looks at the range of methodologies used in the integrated approach and the reasons why they were adopted. The advantages and disadvantages of each method are outlined and their contribution to the research. The aims and objectives for each stage are identified along with the specific design of research methods to meet these objectives.

Chapter five reports the findings from the qualitative research, highlighting the complexities of food choice and the place for fish in the meal system. Chapter six goes on to report the findings from the diary study looking at the characteristics of meals in general followed more specifically by meals which contain fish. It then goes on to look at the various purchases, preparation and cooking regimes

used with fish, comparing them to those appropriate for meat products. Frequent, intermediate and infrequent fish users are then identified and their behaviour examined. Chapter seven reports on the analysis of the attitudinal survey focusing on the multi-dimensional scaling (MDS) analysis. It identifies salient features of fish and meat products with respect to twenty seven attitudinal statements related to food provisioning, and the meal system and looks at the image of each of the products along with differences in attitudes across specific groups of respondents. The conclusions draw together the main findings of the research and relate the limited use of fish to its restricted place in the meal system. The centrality of meat in the UK cuisine and its impact on the perception of fish is highlighted along with the need to examine consumption in the overall context of food provisioning. Finally, it outlines the research limitations and suggests possible areas for further research.

Each of the later stages draws on earlier research findings. Thus the desk research 'primed' the qualitative study which in turn provided statements for quantification in the attitudinal survey and contributed to the diary design. Using findings from all the research stages synergistically contributes to a fuller view of fish consumption and offers an holistic perspective on fish consumption in the UK.

CHAPTER 1

FOOD CHOICE AND BEHAVIOUR

1.1 FOOD CHOICE

Limited focus on specific products and brands is unlikely to generate much new information on consumption. This chapter therefore considers a range of perspectives on the subject of food consumption, and the rules underlying this behaviour.

If the rationale of food choice and usage was based simply on the satiations of hunger, then the study of behaviour in this area would be much easier. Food consumption involves more than simply hunger satisfaction and food choice, more than simply nutritional evaluation. 'People eat food, they do not ingest nutrients' (Pyke, 1971, pvii). Eating, for most of us, is an everyday activity alongside work and leisure. Food provisioning¹ is a social process but, research into food habits often fails to take sufficient account of social and cultural factors. Emphasis on the individual often makes consumer choice appear idiosyncratic. An over-emphasis on psychological factors has 'desocialised' the individual and removed consumption from the social context (Nicosia and Mayer, 1976; Douglas, 1984). Food choice tends to be regarded as rational transaction behaviour between individuals, related to self identity and private objectives, and the study of cultural structuration has been restricted primarily to 'primitive' cultures, resulting in the misconception of its inappropriateness for the study of 'modern' consumer behaviour. Furthermore, current research appears firmly rooted in the present. Analysts show little regard for the past, or methodologies used to study other cultures (Hirschman, 1985).

In reviewing food habit research methods Grivetti and Pangborn (1973) comment:

"The presence of a potential food in a favourable environment does not imply that it will be eaten and the development of a quality diet has little to do with environmental determinants. Instead, diets develop in accord with cultural perception. Individuals and

¹Food provisioning includes acquiring, preparing, cooking, consuming and disposing of any leftovers, it relates to all stages in this process, rather than focusing solely on eating.

societies exploit those food resources perceived as offering satisfaction of social needs. Until recently, nutritional needs were not considered. For these and related reasons, most urbanities would starve in the Arctic or Mountain Highlands and not recognise the abundant food resources available to them. Likewise, citizens of other cultures can starve in the midst of plenty, even when foods widely consumed by visiting nutritionists are available" (Grivetti and Pangborn, 1973, p205)

They conclude that no single approach to the study of food habits is sufficient. Rather a combination of approaches offers scope for new discoveries. Research into changes in the patterns of drinking behaviour in the North East of England illustrates the need to consider behaviour in the context of social change. The changes in drinking behaviour are not simply related to product features but reflect wider social changes - the demise of heavy industry, changing roles of women, occupational changes, the changing form of lifestyle and the household. (University of Newcastle upon Tyne, 1983, 1986; Gofton, 1983, 1986; Smith, 1983; Harrison, 1971).

1.2 FOOD AVOIDANCES

Consideration of the food consumer acting as a rational being under economic and geographic constraints fails to explain at the extreme food avoidances, and the more moderate rejection or limited use of nutritionally valuable foodstuffs (for example fish, pulses, soya). For Simoons (1961), this can partly be explained by the degree of familiarity, or 'social proximity' to foods. Many food taboos relate to animal flesh, for example, 'pets' are seldom eaten. Tambiah (1969) in his study of a Thai village shows how edibility rules are strongly related to rules on spatial boundaries. He proposes that dog flesh is taboo in this society because, on the one hand of its 'likeness' to man and at the same time, its unclean and 'incestuous' sexual behaviour, in terms of village taboos. In contrast, attitudes towards eating domesticated buffalo and ox reflect social distance, and positive attitudes concerning sex and marriage. Following Levi Strauss, Tambiah argues that animals are not just 'good to eat' but also 'good to think or prohibit'. Similarly, animals which are unfamiliar to a culture may be avoided, for fear of the unknown. This is common where the animal flesh is not native to the country, or has been introduced by a feared donor group (Simoons, 1961; Powers, 1984). The animal may also be unsuited to the practical aspects of a way of life, as well as symbolically tabooed. As Simoons illustrates.

"The avoidance of pork in the Middle East may have come about because of the unsuitability of the pig to the pastoral way of life common to much of the area. According to this view the pastoralists were relatively unfamiliar with the domestic pig, came to look on it as symbolic of their despised antagonists, the settled people, and thus rejected it. The same factors may have been involved in the widespread rejection of fish among pastoral groups in the Middle East. The fish, too, may have been symbolic of the settled people, whether of farmers living along streams or of fishermen living along rivers or by the sea. Numerous observations support this idea: The importance of fishing among settled groups in the Hadhramut and along the Red Sea and Persian Gulf margins of Arabia, together with the rejection of fish by many Bedouins, except as feed for their animals; the contempt many pastoral Somali of Northwest Africa have for fish, for the Negro farmers who fish in the rivers, and for the coastal groups who fish in the sea; the rejection of fish by many East African cattle herders who use fish only after they have lost their cattle and with them, their self respect; the concentration of prejudice against fish in arid sections of the Indian sub-continent where pastoral traditions are stronger; and the case of Piankhi, the pastoral conqueror of Egypt, who refused to admit to his presence those delta princes who were fish eaters" (Simoons, 1961, p 113)

These unfamiliar foods may be accepted into a culture after undergoing a 'symbolic' transformation. Such was the case with beef and coffee acceptance by the Oglala Sioux of Pine Ridge Reservation in South Dakota (Powers, 1984). Others relate food avoidance to practical and economic reasons (Harris, 1985).

1.3 DISGUST

The idea of disgust is grounded in societal beliefs. Rozin et al. (1986) highlight the difference between inappropriate and disgust items, both requiring the mediation of culture. Elias (1978), sees the "civilising process" reflected in the development of food habits and manners which view 'natural' dimensions of food items at table (the roast of whole/part animal) and also human actions (such as breaking wind, or other natural functions) as disgusting or uncivilised. He relates the development of such beliefs in medieval Europe to changes in the form and function of households, where food production is divorced from the family to specialised enclaves. Thus animals are gradually removed from the home and slaughtering is taken on by others.

For Angyal (1941) disgust is related to the 'animalness' of the object. Particular features of animals resemble humans, e.g. eyes, and hence lead to rejection. Much of the fish on display in the fishmongers is 'whole wet fish' which may evoke disgust for the reasons cited above, it conveys the 'animalness' which may lead to rejection.. Removal of the 'animalness' through preparation, processing, cooking and presentation helps to dissolve the disgust elements.

Disgust, Mary Douglas argues may relate to dirt and 'disorder' or 'matter out of place' (Douglas, 1966). Where particular species transcend cultural classifications based on physical domains, they are perceived as threatening or dangerous. A bull is an animal in a field, food on a plate, but trouble in a china shop. Soup is food in a bowl but dirt on a tie, or on the floor. Fish out of water is fish out of place.

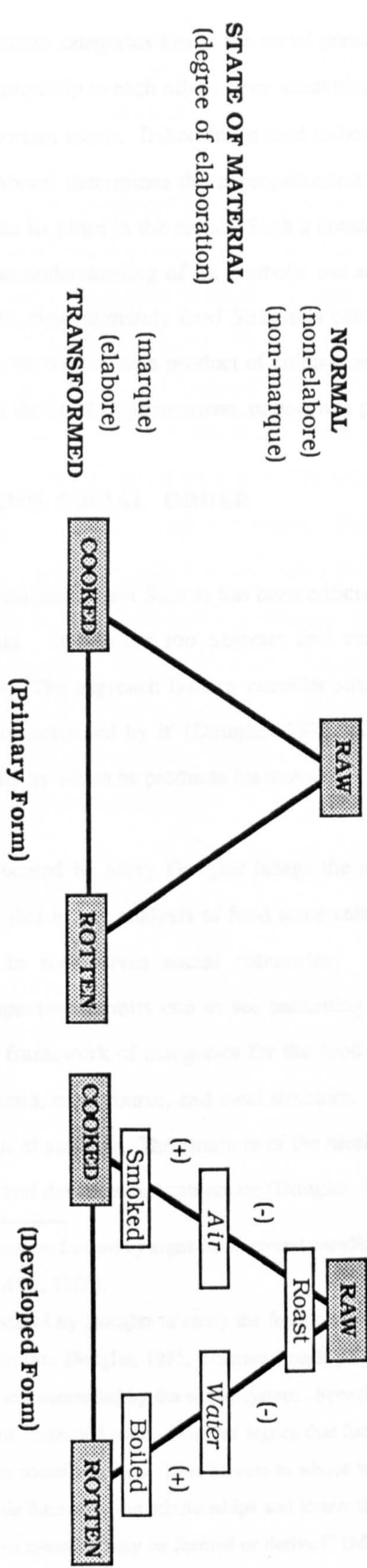
1.4 THE CULINARY TRIANGLE

For Levi Strauss (1970) animals just eat food and identify instinctively what is edible. The human once weaned from the mothers breast possesses no such instinct. What he/she eats will be determined by society. It is society which identifies what is edible and what can be eaten. Structuralists argue that since food occasions are social events

"there must be some kind of patterned homology between relationships between kinds of food on the one hand, and relationships between social occasions on the other" (E. Leach, on Levi-Strauss, 1970, p32).

In this respect foods become associated with specific types of occasion. Levi Strauss attempts to show that food categories and food preparation are elaborately structured, by universal underlying principles. Just because something is good to eat does not explain the complications we inject into food classifications. Food must be 'good to think' as well as good to eat. When we eat we establish an identity between ourselves (culture) and our food (nature). It is this distinction between culture and nature which distinguishes human from animal species. This progression from nature to culture involves physical and symbolic transformation of food by cooking. Cooked food is raw food which has been transformed ('elabore') by cultural means; rotten food is transformation of raw food by natural means (Figure 1.1). Levi Strauss then develops the idea that categories of cooking are appropriate for use as symbols of social differentiation.

Figure 1.1: The Culinary Triangle (from Leach, 1974)



The importance of these categories lies in the social prestige attached to each. Food in the categories bear a standard relationship to each other. For example, if our menu includes roast meat it will take prime place in important meals. Baked foods tend to be associated with children and invalids. This transformation (elabore) determines the appropriateness of foods for particular people, places and occasions, as well as its place in the menu. Such a consideration of cooking regimes used with fish will contribute to an understanding of its symbolic use and place in the meal system. Leach (1970) reminds us however, that ultimately Levi Strauss is concerned with universal characteristics of the human mind which he regards as a product of culture, and his concern is with culture at an abstract structural level, not the level of phenomena, or concrete particularity.

1.5 FOOD AND SOCIAL ORDER

Although highly influential, Levi Strauss has been criticised for the lack of empirical relevance in his theoretical analysis. It appears too abstract and removed from the concrete practicality of ethnographic detail. The approach fails to 'consider small scale social relations which generate the codification and are sustained by it' (Douglas, 1975, p250). He also fails to examine the relative values of binary pairs by which he produces his meaning.

The approach advocated by Mary Douglas brings the investigation back down to earth (Douglas, 1976). She insists that in any analysis of food some categories are used and not others. These food meanings define in themselves social categories. Examination of these binary pairs in a syntagmatic² perspective permits one to see patterning in food activity. Douglas (from Halliday, 1961³) suggests a framework of categories for the food system, which looks at units in this system in terms of daily menu, meal course, and meal structure. The strength of this approach lies in the use of the meal as a unit of analysis. The structure of the meal and patterning of meals over the day, week, year serve to mark and define social categories (Douglas, 1984; Whitehead, 1984). Food like all goods

²A syntagm is the message formed by signs from several paradigms. A paradigm (in the Saussurean sense) is a set of signs (Glen Mick, 1986).

³ The approach advocated by Douglas to study the food system draws on the work of socio-linguists such as Halliday and Bernstein (see Douglas, 1975, 'Humans Speak' p173-180 in *Implicit Meanings*). For Bernstein language and speech are controlled by the social system. Speech involves two types of code, the elaborated and the 'context dependent' restricted code. Douglas argues that food, if treated like a code, encodes messages which can be found in social relations. Levi Strauss to whose work Douglas refers draws on the linguistic work of de Saussure. For de Saussure "the relationships and interactions between words takes precedence over individual words when meaning may be formed or derived" (Mick, 1986, p197).

acts as a social marker and consumption fulfills more than a utilitarian function (Douglas and Ishwerwood, 1979). Goods are classified as symbolically appropriate and particular social categories themselves get graded and defined in the process.

Food acts as a medium of communication embodying messages about the social system. For Douglas this food system is only one of a number of "care systems" related to the body and the family group. We must consider food consumption in relation to these other systems of care, these include the rest system, body care, clothing and family food systems. The patterns that emerge are affected by economic and political concerns and ultimately reflect the distribution of power in the social system. The rules which determine who gets served first, who gets what food, what quantities etc. are an example of the distribution power of the family. These patterns are identified by Douglas and Nicod (1974) and display a remarkably stable structure. The importance of this structure rests in the appropriateness of particular foods for inclusion, and the point in the system where they are permitted. The nature of the food, how it is acquired, prepared, cooked and consumed all relate to where and when it should be used in the meal. Douglas agrees that the "conservatism" of the UK consumer may not be so strongly related to evaluation of the food qualities, but rather to the appropriateness of foods for inclusion. Douglas sets out to identify the meal pattern and the matrix within which this variation can take place.

1.5.1 MEAL STRUCTURE

Douglas and Nicod (1974) in their research on working class diets, determined that it was necessary to distinguish between a number of different types of occasion on which food was eaten.

These include: 'food event', 'structured event', 'meal', 'snack'.

"A 'food event' is an occasion when food is eaten without prejudice as to whether it constitutes a meal or not. A 'structured event' is a social occasion which is organised according to rules prescribing time, place and sequence of actions. If food is eaten as part of a structured event, then we have a 'meal'. A 'snack' is an unstructured food event, in which one or more self-contained food items may be served. 'Unstructured' means there are no rules to prescribe which items should appear together, and no strict order of sequence when more than one item appears. Snacks may be separable from, but capable of accompanying, a drink. The meal, in contrast, has no self-contained food items and is strictly rule-bound as to permitted

combinations and sequences. Together with the distinction between "special" and "common" food events, these terms were the tools of analysis whereby we matched the structuring of social relations to the structuring of food" (Nicod, 1979, pp56-57)

Within this structure they identified the importance of the staple in the meal structure. The potato served as the basis for meals restricted to family and close friends while bread sets the boundary for a wider circle of participants. Meals were further classified into major meals, minor meals and tertiary food events, located through the week and at different times of the day. There was a close correspondence between Sunday dinner and the evening meal on a week day, with a three part structure to these meals, based on potato, a centrepiece (meat, fish or eggs), vegetable garnish and gravy. For special meals the centrepiece was nearly always meat. Moving through the courses, the progression is from savoury to sweet, hot to cold, wet to dry, but the rules of combination apply.

The practical implications of the research were related to defining acceptable and unacceptable foods. Nicod concluded that labour saving substitutes or additions to a diet could be introduced in those unstructured parts of the system. Hence the increase in convenience type products for snacks, or for childrens food, women eating alone, and food events which have little effect on the dietary system. But in the structured part of the meal system, main meal innovation is less acceptable. The demand here is for better quality traditional foods rather than innovative products. It is this area where taste discriminations and standards of presentation is strictest (Nicod, 1979).

This meal structure and the 'conceptions of a proper meal and beliefs about the appropriate social place of men and women come together as a daily assurance of family identity and propriety' (Murcott, 1986, p122 , see also Murcott 1982, 1983a, 1983b). Meat formed the central place in the proper meal for the S. Wales households in Murcott's study. Chicken or turkey were acceptable substitutes, but fish was not. The rules of combination, proper cooking (meat has to be roasted) and presentation were clearly defined within the group. Time investment at the preparation and cooking stage was required for a proper meal, as emphasised by the 'Sunday dinner'. This meal served as the key social event for the family during the week. A proper meal each day is essential for children, and food is used as much to impose social order as it is to provide nutrients (Charles and Kerr, 1985). Children learn to eat with adults and satisfy their hunger in socially acceptable ways. Refusal to eat 'proper' foods and conform is a rebellion by the child against the limits imposed on his/her time (see also Murcott, 1986). There appeared to be some difference between the 'ideal' of one proper meal per day and the actual practice as identified by use of food diaries in the Charles and Kerr study (1985). This

highlights the problem of the difference between what people say they do and what they actually do. The question then is do we 'market' towards an ideal set of beliefs, or the actual behaviour?

The methodology employed by Douglas and Murcott examines food consumption in a wider social context rather than isolating it. Douglas makes us aware of the importance of considering all stages of the food provisioning process, not simply consumption, and how they interact. However, one problem with the approach is the difficulty of substantiating some of the claims. Douglas is critical of the questionnaire method, due to the rigidity she feels that it imposes on the investigation, and the degree of conditioning it may impose on the reply. Some form of quantification would however indicate the relative importance of the different social influences, by domestic, residential, and wider community groups and provide an empirical test of generality. In an attempt to empirically ground his theories about social class distinctions in France, Pierre Bourdieu has used a range of survey data. Douglas comments on his work.

"Bourdieu (1979) treats food as apart of the general analysis of dominance and subordination of aesthetic judgement within the French class system. As far as food is concerned, the contrasting principles that he abstracts - such as formality/informality, exotic/homely, traditional/experimental - are valuable guides to understanding the process of social ranking Economists treat all tastes and especially food tastes as purely individual matters, based on physiological needs or ultimate private preferences. Satirists have always known that this is untrue. But the exact mechanisms of metaphor, comparison, and social grading of events and food which make for cultural competence have not been established" (Douglas, 1984, p9)

1.6 FOOD AND SOCIAL CLASS

For Bourdieu (1984) the distinction between the classes involves not only economic but also symbolic wealth, the possession of particular skills and cultural competences. The education system itself cultivates the development of particular tastes, and access to such competence is very much a function of class location (Murdock, 1977). Possession of these aesthetic judgemental abilities is exploited for social purposes (Douglas, 1975). As Gofton reminds us 'tastes are socially transmitted' and, as such, are carriers of the order of things in general, and of the order of society in particular' (Gofton, 1986, p 130). For Bourdieu food is an integral part of this system of distinction between classes, supporting Douglas's view of goods functioning as social markers. The process of learning to

make these distinctions starts in the family. The style of meal served on special occasions is a good indication of the image one wants to project. Terms like 'good and plentiful', 'simple but well presented' reflect how cheap nutritious foods satisfy working classes, where concern is with the strength of the body. The tendency amongst the petite bourgeois is towards 'original' or 'pot-luck' meals, while the upper class go for 'original and exotic meals'. Bourdieu in his study found that as income rises, as one moves up the social hierarchy, so the proportion spent on (cheaper) heavy, fatty foods - pasta, potatoes, beans, bacon, pork - declines. More income is spent on leaner, lighter, non-fattening foods (beef, veal, mutton, lamb, fresh fruit and vegetables)⁴. Food is another aspect of consumption through which social distinctions are manifest.

"The art of eating and drinking remains one of the few areas in which the working class explicitly challenge the legitimate art of living. In the face of the new ethic-sobriety for the sake of slimness, which is most recognised at the highest levels of the social hierarchy - peasants and especially industrial workers maintain an ethic of convivial indulgence" (Bourdieu, 1984, p179)

Bourdieu, like Douglas, recognises that eating habits cannot be simply considered in terms of products consumed but involves cooking and preparation, a "whole concept of domestic economy" and the influence of division of labour between the sexes. Food consumption involves consuming time and part of the move towards saving time and labour in preparation involves the search for light, low-calorie products. This points towards grilled meat and fish, raw vegetables, frozen foods, yoghurt, and other milk products. These are diametrically opposed to popular dishes - chiefly in that they involve less preparation and cooking time (Bourdieu, 1984, p185). However, differential movement between the social classes towards what we might term 'convenience' foods, and away from the heavier traditional dishes seems related, according to Bourdieu to class perceptions of the body. The plain diet of the working classes focuses on a "body-strength" and the provision of 'plenty' - arguably related to the imperatives of physical labour. In contrast it is the upper classes who are more concerned with health giving, light, non fattening foods as an adjunct of fashion and style, since they value slimness and physical appearance. One suspects the use of fish in this situation would involve two very different objectives. For the working class it is less likely to appeal, other than on the basis of price (for reasons outlined below). For the upper classes health may figure more strongly than the need for sustenance. Bourdieu makes an interesting reference to consumption of fish.

⁴French example cited in Bourdieu, 1984, pp180

"At a deeper level the whole body schema, in particular the physical approach to the act of eating governs the selection of certain foods. For example in the working classes fish tends to be regarded as an unsuitable food for men, not only because it is a light food, 'insufficiently filling' which would only be cooked for health reasons, i.e. for invalids and children, but also because, like fruit (except bananas) it is one of the 'fiddly' things which a mans hand cannot cope with and which make him 'childlike' (the woman adopting a maternal role, as in all similar cases will prepare the fish on a plate or peel the pear), but above all it is because fish has to be eaten in a way which totally contradicts the masculine way of eating, that is, with restraint, in small mouthfulls, chewed gently, with the front of the mouth. On the tips of the teeth (because of the bones). The whole masculine identity - what is called virility - is involved in these two ways of eating, nibbling and picking as befits a woman, or with wholehearted male gulps and mouthfulls, just as it is involved in the two (perfectly homologous) ways of talking, with the front of the mouth, the throat" (Bourdieu, 1984, p 190)

The social roles reflect the abundance of the food, nearly always available to the man rather than the woman and children who face certain restrictions, for example small portions, and no second helping (Murcott, 1983a; Braudel, 1973; Burnett, 1979; Bourdieu, 1984).

In contrast to the emphasis on substance in the working class meal, the bourgeois is concerned with form and comportment. The 'order, restraint and propriety' exhibited reflects their relation to food, when primary need and pleasure are only part of the consumption process. With the emphasis on form and manners, each stage in the process from preparation to disposal is carefully monitored and regulated. This emphasis on form and symbolic meaning of food is accentuated in the petite bourgeois who always want to be regarded in a good light.

Bourdieu's work highlights the complexity of food use in French society, emphasising its symbolic role in terms of class distinction and lifestyle. Although no comparable study has been carried out in the UK, it is interesting to reflect on the work of Young and Wilmott (1973). Their idea of 'stratified diffusion' seems particularly relevant as it refers to a nation of change, processes which are compatible with what Bourdieu says about French society. They envisage an egalitarian tendency working with a time lag, gradually introducing new modes of consumption to the lower ranks (working class). This process is accelerated by mass production. The interesting question then is will the desire for form and manner in food, for light, non fattening foods spread downwards through the

classes - or has it already happened?

1.7 TECHNOLOGY AND THE DEVELOPMENT OF TASTES AND MANNERS

This diffusion of consumption behaviour through society is developed by Braudel (1973) in an investigation into the consumption of tea, coffee and sugar from 1400-1800. He illustrates the way in which consumption behaviour is interlinked with economic and political systems as well as availability. For Mintz (1985) food consumption has become much more individualised. With a move towards demand for individual choice and freedom food consumption has become 'desocialised'. However, the choice is still made within limits of what the food technologists make available and on the remnants of tradition in our society. For Mintz the increased availability of food and thus individualisation of the meal time, highlighted by increased snacking (King, 1985; Fischler, 1979), have reduced the 'calendrical' aspects of diet (e.g. 'seasonality' in food supply). Many foods are now both available and appropriate at any time. However, our choice is more restricted than food technologists would perhaps like us to think

"The strangely perceptible attrition of people's control over what they eat, with the eater becoming the consumer of a mass produced food rather than the controller and cook of it, the manifold forces that work to hold consumption in channels predictable enough to maintain food industry profits. The paradoxical narrowing of individual choice, and of opportunity to resist this trend in the guise of increasing convenience, ease, and 'freedom' - these factors suggest the extent to which we have surrendered our autonomy over our food" (Mintz, 1985, p 211)

Mintz's claims of 'desocialised' eating in modern industrial society, with its mass produced food, and the move towards 'individualised' eating suggest a move away from the 'restrictive lexicon' of the food system. He argues that we can eat without the meal structure⁵. But these changes are nevertheless a reflection of broader social changes. The consumption of sugar, for instance, has increased due to the diversification in its use and more indirect usage in processed and takeaway foods.

⁵Douglas makes the analogy between language and meal structure (see Douglas, 1975, 'Humans Speak', p173-180 in Implicit Meanings). Words cannot be used in isolation without reference to the structure of language and the rules of grammar they carry little meaning. In a similar manner she argues that food takes meaning from the way it is used in the meal system.

In turn the success of these products reflects changing work roles of both men and women in today's society.

His argument is well supported, but returning to Douglas's point, the change in usage patterns and the introduction of new foods tends to occur in the less formal, less restricted area of the diet, the tertiary food event, the snack. The very idea of individual eating reduces the social importance of meals and involves a relaxation of many rules, with for example women eating alone. To what degree does the ideal of a main meal still condition food choice and appropriateness? (that is the interesting question). For Mintz part of the symbolic meaning of sweetness is embodied in its history, but social and economic systems in which sugar was produced and consumed had much to do with its acceptance, its dissemination and the patterns of consumption which evolved. Sugar consumption is based on much more than an innate preference for sweetness. It was an integral and essential part of the diet for the survival of the working classes in the eighteenth and nineteenth century.

Mintz stresses the need to consider the historic outside influences on consumption, and the need to understand consumption before one can change it in socially effective ways.

Claude Fischler (1979, 1983a, 1983b) feels that we have moved from a situation of 'gastro-nomie' to one of 'gastro-anomie'. The consumption of processed foods represent a contradictory incitement of the traditional order in the meal system. The move is towards 'vagabond' eating, a term borrowed from the food nutritionists. It is the breakdown of these traditions in the face of social change that has permitted 'convenience' foods to become more acceptable. But isolated from the traditional rules regarding food acceptability there appears to be some confusion in the consumers mind. He/she is faced with a series of conflicting views about these new foods from manufacturers, advertisers and doctors. The movement towards 'balance' in the meals may, Fischler suggests, represent a reaction against the 'symbolic void or disorder' in the system and to produce 'a cultural construct reducing anxiety - producing symbolic disorder'. "This construct, which includes elements of scientific knowledge as well as remnants from traditional pre scientific dietetics, could in fact be nothing else but a new symbolic order in the process taking form" (Fischler, 1986, p963).

Elias (1978) considers change in consumption behaviour from a social and historical perspective. The development of manners in eating and drinking arises from a concern for self-presentation in this consumption process which is part of the emerging concern with 'civility'. The rules originate in court which is at the head of the social hierarchy. The order of access to the food, washing, serving, the right

to carve, all tell us something about the society's structure and the relationships between people. The table manners which we take for granted today regarding etiquette, usage of utensils, and the order of meals became internalised over a long period of time. Food has played a large part in this civilising process, as Elias illustrates with numerous examples from the history of table manners. Meat, for instance has come to symbolise social rank and prestige. This is in part a reflection of unequal distribution of power within Medieval society. For the upper classes meat was abundant, while ascetic abstinence prevailed in the monasteries, and the peasants found supply severely restricted. The centrality of meat in the meal and the importance of the carving ritual (see also Flandrin, 1979; Detienne, 1977) also says much about social order, rank and the consumption process. Even today the task of carving the Sunday roast falls to the head of the household. The decline in family size, and the move from the family home as a unit of production to a unit of consumption has seen the decline of rituals involving carving recognisably whole animals at table. Elias argues that this removal of 'animal' food is a removal of this carving ritual from the table, and valued association with the whole animal, is a reflection of the 'civilising' process. This process involves stronger distinctions between 'animals' (or 'nature'), and human refinements - the natural is suppressed and kept hidden, and great emphasis is placed on 'form' or ritual in behaviour within the home.

While Elias is concerned with the development of manners Mennell (1985) follows his lead and examines the way in which history has shaped English and French cuisines. His interest lies in how we have become used to what we eat, in other words how does change occur. Tracing the development of cuisine through the medium of cookery books he contrasts the English and French cuisines. Mennell argues that gastronomic theorising first appeared with the advent of secure food supplies, economic surplus and a degree of political stability around the eighteenth century.

In France the court society, being divorced of government and military responsibilities, was allowed to develop and with improved food supplies the courtly emphasis moved from "quantitative display to qualitative elaboration" (Mennell, 1985, p33) as a means of retaining its social identity. In contrast English nobility was not defunctionalised but held real social and political power and were thus less inclined towards 'ornamental' display.

One interesting point made by Mennell is the fact that heavy use of spices was not discouraged when fresh meat was available, thus casting some doubt on the claim that spices were used to disguise tainted meats. Mennell shows how the social and political influences came to bear on the cuisine of both countries and contrasts the simple English cuisine with its focus on boiling and roasting,

economy and thrift with the elaborate and expensive French cuisine.

Harris (1985) proposes that food choice and selection can be explained by practical considerations

"whether they (foods) are good or bad to think depends on whether they are good or bad to eat. Food must nourish the collective stomach before it can feed the collective mind Preferred foods (good to eat) are foods that have a more favourable balance of practical benefits over costs than foods that are avoided (bad to eat)" (Harris, 1985, p5)

These preferred foods (good to eat) are nutritionally superior. Comparatively cheaper, and more efficient with respect to the effort and labour involved in producing the food.

Harris makes a claim for the superior nutritional qualities of meat over other foods and proposes that societies 'meat hunger' is the outcome of a rational match between our physiological needs and this superior form of nutrition. He offers a series of practical reasons for the avoidance of beef by Hindus, pork by Muslims and Jews and horseflesh by most of W. Europe and the USA. Most of his arguments involve a cost/benefit analysis which focuses on the efficiency of production. This cost/benefit analysis extends beyond monetary concerns to include ecological as well as the nutritional benefits. Looking at meat consumption in the USA Harris allies the success of meat in the USA to the unsuitability of pork production (a more efficient means of production) to the plains of the USA in the nineteenth century and the metaphoric rise of the hamburger. The opening up of the plains to cattle rearing followed by intensive rearing methods provided cheap beef. This coupled with the entrance of women into the workfield and an increase in the number of families with both parents working, opened new opportunities for eating outside the home. "Fast food" outlets and the hamburger have capitalised on these social changes.

Harris does not deny the 'symbolic' but forces us to consider the 'practical' when examining food selection. However, he uses very select examples to support his argument. It is difficult to conceive a rational culture when the concept of the rational individual receives little support from most of the social sciences including economics. Harris does not really differentiate between the motives of the producer and those of the consumer, focusing on the former and playing down the latter. It is almost as if culture is derived from those environmentally determined factors with relatively little influence from social and historical influences.

Returning to the success of the hamburger and the practical argument about production and

consumption changes in the USA. Why, given the move towards increased eating outside the home and increased demand for convenience and fast foods in the UK has the fish and chip meal not met with equal success? Could it be that this 'convenience' food suffers from an image which is a function of its role in working class nutrition? Practicalities are important but they may be insufficient to explain food choice.

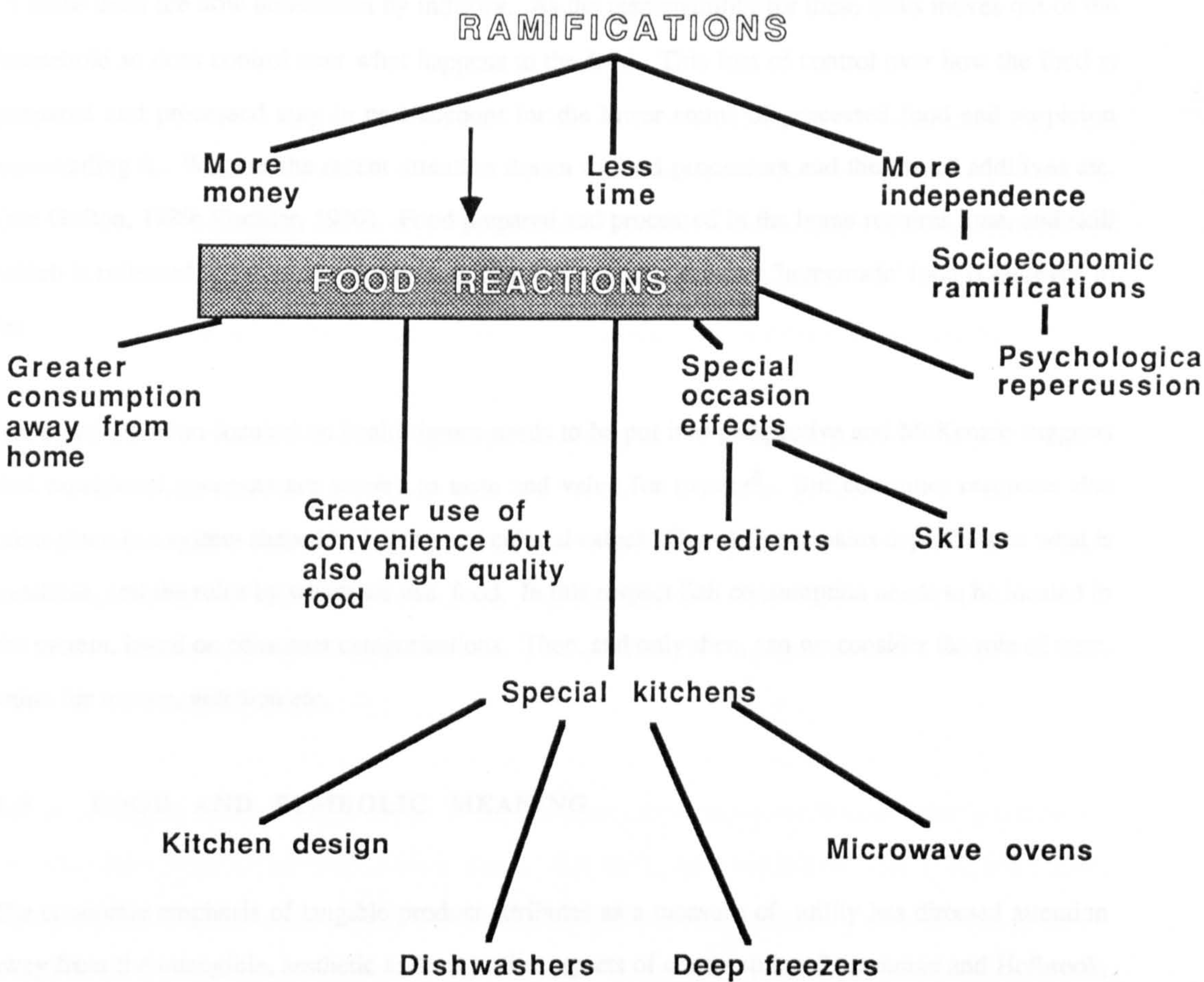
1.8 FOOD IN TODAY'S SOCIETY

The changes brought through industrialisation and the transformation of the family from producers to consumers has separated production from consumption. In turn, the family unit has become smaller and the act of eating in modern society has become more individualised. However, the underlying structures and concerns for meal provisioning still operate on an ideological level if not always in practice. Much of the consumer behaviour literature centres on the isolated individual acting in a rationalised manner, but less weight is given to the social influences in food choice. The strength of McKenzie's (1986) approach is a realisation of a need to consider the consumer's perspective.

"We must think of food categories not so much in terms of what might be a technically appropriate breakdown in the eyes of the food manufacturer or nutritionist as in terms of the public's conception of them. By this I mean once the housewife has decided on the structure of the meal in terms, for example of 'meat and vegetables', one needs to know what she regards as possible alternative foods within these categories" (McKenzie, 1986, p161)

Competition between foods involves choice based initially on accessibility but also the degree of substitutability or complementarity between foods. But the comparisons extend beyond purely price consideration. Demographic changes have played an important role in consumption. He draws specific attention to the decreased size of families and the increased average lifespan for women. His main point is the new economic independence for women who spend less time child bearing and rearing. Being free to work longer this affects their role in the home and has ramifications through all stages of the consumption process.

Figure 1.2: Ramifications of Women at Work



From McKenzie, 1986, p164.

Between 1961-1974 / 75 the amount of time devoted to paid work declined (Gershuny and Thomas, 1980). With this change there has been a redistribution of work. Men are doing a larger proportion of domestic work, women are increasing their proportion of paid work. Despite the fact that more women are working, cooking is still primarily a female activity (Gershuny, 1982) especially among older couples where traditional values hold. Industrialisation segregated the social and economic spheres of men and women with the segregation of residential areas from the work place increasing the dependency of women on men and limiting their employment prospects (Pahl et al, 1983).

The large scale entry of women into the workforce is a recent phenomenon which has affected the food consumption in the home and led to a split between formal and informal meals, nutritional, and fun foods (McKenzie, 1986). With more women in the workforce and consequently less time being

devoted to the home the role of the 'housewife' has changed. Traditionally much of the food preparation and processing would take place in the home, but with the mass production of food many of these tasks are now undertaken by industry. As the responsibility for these tasks moves out of the household so does control over what happens to the food. This loss of control over how the food is prepared and processed may in part account for the lower status of processed food and suspicion surrounding it. Witness the recent attention drawn to food processors and the use of additives etc. (see Gofton, 1989; Fischler, 1980). Food prepared and processed in the home requires time, and skill which is reflected in the status of the food, consider how much better 'homemade' food is believed to be.

Increased attention focused on health issues needs to be put into perspective and McKenzie suggests that nutritional concerns are second to taste and value for money⁶. But consumer response also takes place in a system shaped by history and cultural values. Our choice remains dependent on what is available, and the rules by which we use food. In this respect fish consumption needs to be located in the system, based on consumer categorisations. Then, and only then, can we consider the role of taste, value for money, nutrition etc.

1.9 FOOD AND SYMBOLIC MEANING

The economic emphasis of tangible product attributes as a measure of utility has directed attention away from the intangible, aesthetic and subjective aspects of consumption (Hirschman and Holbrook, 1982; Hirschman, 1980; Holbrook, 1980). In market research the concern has been with tangible rather than intangible product features, and the "emotional response" has been under researched. For Hirschman (1980) the intangible attributes exist at an idiosyncratic level but also at a cultural level, as she outlines.

"The multiple layers of measuring paradigm gives rise to the following propositions

- (1) That the "meaning" of a product stimulus is a mixture of objective properties and subjective associations

⁶Our food habits also reflect what McKenzie calls the 'compensation theory' factor, where over indulgence in eating can be neutralised by a period of abstinence. One wonders sometimes about the balance! However, it does illustrate the principle that we are perhaps not as rational in our consumption as we would like to think (see McKenzie, 1986).

- (2) That objective (i.e. tangible) properties of the product stimulus are invariant across consumers, because they arise from the stimulus, itself, and not from individual experiences with it
- (3) Some subjective (i.e. intangible) attributes will be commonly associated with a product stimulus due to the effects of socialisation. This common cultural layer of meaning will be largely invariant among consumers in a given society, but generally variant across different cultures. An alternative way of defining this form of variance would be to term it inter cultural variance, or subjective variance that exists among members of different societies.
- (4) Some subjective (i.e. intangible) attributes will be uniquely associated with a product by a consumer due to his/her idiosyncratic pattern of experiences with the product. This idiosyncratic layer of meaning is highly variant among consumers residing in different societies. An alternative way of defining this form of variance would be to term it (intra-cultural variance, or subjective variance that exists among members of a single society" (Hirschman, 1980, p 11-12)

The meanings associated with products is not static but can change over time as other products are altered or introduced (Mick, 1986; Kehret-Ward, 1982; Belk, Bahn and Mayer, 1981). In this respect perceptions of wet fish are altered by the availability of frozen convenience products. The dynamic nature of the symbolic associations and social context is highlighted by David Glen Mick (1986) in his review article.

"As Pierce emphasised, signs in the human environment - especially symbols - must be understood by the way they are situated within a wider social context, where both their arbitrariness and meaningfulness are revealed. So why semiotics and consumer research? Because consumers behave based on the meanings they ascribe to the marketplace stimuli. And yet consumer researchers, with few exceptions, have characteristically avoided detailed and systematic enquiry into meaning processes. Perhaps this reflects the short comings of current theories and methodologies in consumer research" (David Glen Mick, 1986, p201).

Certainly for Levy (1959, 1963, 1981) consumption has moved away from an economic and rational basis (the basis it was given!) to become increasingly symbolic. At the one extreme we have Veblen's idea of conspicuous consumption (Veblen, 1957; Mason, 1981), but Levy argues that everyday

consumption symbolises status, age, sex, and class distinctions. Symbolism is tied in with lifestyle, and emphasises the need to look beyond product attributes. Exploring the symbolism associated with the consumption of fish may help us to more clearly understand the consumption behaviour. To understand what fish has come to symbolise, and the meanings attached to its use demands not only a focus of attention onto the intangible aspects but on the context in which it is used. The meal structure carries with it the cultural layer of meaning which determines inclusion or exclusion of foods in particular meals. But as Glen Mick reminds us meanings are dynamic and can change over time. These changes are likely to reflect social changes and the context of use carries as much meaning as the product itself. If one considers the same product used in two different meals, for example, monk fish tails served in a restaurant, and monk fish served at home as substitute scampi to be eaten in front of the television, how does the meaning attached to those meals differ? This begs the question of how does the way in which fish is used influence our perception of it, and the meanings we attach to it. If products are capable of expressing strong social identity they may become not simply a function of behaviour but a stimuli for behaviour (Solomon, 1983).

This brief look at the range of influences illustrates the need to relate attitudes towards and usage of fish to the wider social context, rather than confining it to sensory evaluation. This necessitates integrated investigation of usage characteristics and the way in which fish consumption relates to food provisioning overall and implies an open research design, using qualitative and quantitative methods to complement each other.

CHAPTER 2

FISH IN HISTORY

'Social phenomena are by their nature historical which is to say that the relationships among events in one 'moment' can never be abstracted from their past and future setting' (Mintz, 1985 Introduction pXXX). Any attempt to understand and explain behaviour necessitates some examination of historical developments. Present behaviour does not exist independently of past events and fish consumption is interwoven with the rise and fall of empires, influence of Christianity and the development of food preservation methods to overcome the problems of seasonal availability of food. The shape and structure of our behaviour and beliefs 'have historical origins that shape, limit and help to explain such creativity' (Mintz, 1985 Introduction pXXX).

2.1 THE 'CHURCH' AND THE 'CROWN'

Christianity brought with it a low regard for fish, partly because it was formerly offered as a pagan sacrifice to Venus. However, under the influence of the Roman church in sixth century AD there came a reversal of this attitude

"if fish has formerly to be eaten on Friday (dia Veneris) by the devotees of Venus, it was now to be eaten on the same day by good christians in memory of the events of Good Friday" (Wilson, 1973, p 25).

Many Christian festivals were an adaption of pagan ceremonies under a new guise, and fish became a powerful symbol of christianity, appearing on carvings in various forms.

2.1.1 FISH DAYS

Christianity did much for the consumption of fish. Back in 4 AD Emperor Licinius introduced fish days. The central idea of fasting was to mortify the flesh. Removing the immediate pleasure of meat eating reduced the 'carnal' passions (see Twigg in Murcott (ed), 1983b). Indeed it was believed that fish

"is cold in nature and doth ingender phlegm; it does little nourish" (Wilson, 1973, p31).

In Britain from 906-1216 the Benedictine monks abstained from meat eating. Fish days were, however, probably introduced as much for economic necessity as for religious reasons. Lent fell at the end of winter when meat and food provisions were scarce. Fish days fell during Lent, on Friday, Saturday and also Wednesday until the fifteenth century. In 1548 fish days were reintroduced on Saturday for political and economic reasons. A strong navy in the face of a Spanish attack required a good supply of fishermen in peacetime, and meat was scarce. The main reason offered for this reintroduction was a belief in abstinence as a means to virtue. Fifteen years later Wednesday was reintroduced as a fish day, but by 1585 attempts to reinforce these fish days was abandoned. However, up until the sixteenth century, in England it was still theoretically possible to be hanged for eating meat on Friday. Wednesday and Saturday fish days fell into misuse but Friday and Lent were generally observed up until the seventeenth century.

"Under the Commonwealth fish days were abolished as a Popish institution. After the Restoration efforts were again made to revise them with a view to encouraging the fishing industry. But fish was too scarce and expensive, and people who had enjoyed freedom from obligatory fish meals during the previous years were most unwilling to go back to them" (Wilson, 1973, p44)

It seems as if fish days at least imbued the food with some importance, albeit enforced.

"Upon feasting days, salt, fish, and two dishes of fresh fish, if there come a principal feast it is served like unto the feast honourably" (Boorde, 1542, p38).

When fish days were discontinued, the fishing industry felt the effects. While the rich still ate the choicer species, freshwater and salted fish held no appeal for the poor. Freshwater fish also began to fall out of favour after the end of fish days, tench, pike, perch and eels prior to 1724 had been traded regularly between Whittlesey and Ramsey in the Fens and London.

2.1.2 ROYALTY

Royalty also had an influence on the consumption of fish.

"Kings and Abbots were adept at persuading their subjects, by law or soul, to provide provisions. King Ince of Wessex required one eight century English village to provide three hundred round loaves, ten sheep, ten geese, twenty chickens, ten cheeses, ten measures of honey, five salmon, and one hundred eels" (Durby, "Rural Economy in Country Life", cited in Tannahill, 1973, p112)

Eel and salmon fisheries were noted by Bede, and rents in both commodities were being paid at the time of the Norman conquest. Eel rents were common, especially in East Anglia fens where a fall in land level around fifth century AD lead to flooding resulting in more fish production. In Gloucestershire, the Tiddenham manor claimed "every alternative fish and all rare fishes". In turn many of their manors were obliged to pay rents to the church. Wilson tells us that many thousands of eels were paid each year in the form of rent by the manors to the Bishop of Ely (Wilson, 1973, p30).

Whales, porpoises and sturgeon were all royal fish. Whales were deemed the property of the Crown, but often ownership fell to the tenant who owned the land. In England whale meat was salted and used for Lent. In France it achieved a particular status. It was imported from Rouen into ninth century Britain and in 982 King Aethelred decreed tolls on the 'craspois' at London Bridge. It was almost as much a luxury as wine.

Gloucester since 1100 had been mandated to supply lampreys and lamprey pies to royalty. Its meaty texture may account in part for its use in royal households (Guardian, 1988). In England the lamprey was regarded as a royal fish and King Henry II installed his own lamprey catching weirs on the Severn. Everyone apart from the King was forbidden from buying Severn lampreys during Lent. The enthronement feast at Canterbury in 1505 required five barrels of salted sturgeon, the royal fish.

Fish days for the poor meant salted herring but royalty were not restricted to this form of abstinence,

"A classic (of part medieval) example of how cooks met the challenge of a grand banquet on a fish day, was that given to Elizabeth of Austria when she made her ceremonial entry into Paris in 1571. Set out in the hall of the diocese were four large fresh salmon, ten large turbot, eighteen brill and the same number of mullet and gurnard (sea-robins), fifty crabs, eighteen trout, nine large and eight smaller pike, nine fresh shad, three creels of large smelts, two of oysters removed from their shells, one creel of mussels, two hundred pickled and two hundred smoked herrings, twelve lobsters, twenty four cuts of salted salmon, fifty pounds

of whale (probably the salted blubber which Parisians used in quantity during Lent), two hundred cod tripes, the same number of fat young lampreys and the same number of cray fish, twelve carp a yard long and fifty which were only a third as large, eighteen full grown lampreys and a thousand frogs. The purveyor was slightly embarrassed at not being able to supply sturgeon, bream, turtle or fresh mackerel" (Solennelle d'Elizabeth d'Autriche, *Revue Archeologique* (1848-1849), cited in Tannahill, 1973, p224-226).

2.1.3 NAVAL SUPREMACY

Despite the economic and religious reasons for fish days England had a political interest in maintaining a strong fishing industry. This was evident in the reintroduction of fish days in 1548 (see above). As Harrison (1968) points out,

"From henceforth also unto our days, and even in this season where in we live, there is no restraint on any meat, either for religious sake or public order, in England, but it is lawful for every man to feed upon whatsoever he is able to purchase, except it be upon those days whereon eating flesh is especially forbidden by the laws of the realm, which order is taken only to the end our numbers of cattle may be the better increased that abundance of fish which the sea yieldeth more generally received Besides this, there is great consideration had in making of this law for the preservation of the navy and the maintenance of convenient numbers of seafaring men, both which would otherwise greatly decay if some means were not found whereby they might be increased" (Harrison, 1968, p125-126)

2.1.4 FISHPONDS AND FRESHWATER FISH

Fishponds were still popular around the sixteenth century, and 'vivaria' were maintained by most monastries. Harrison refers to the abundance of fish ponds around 1587.

"there is almost no house, even of the meanest bowers, which have not one or more ponds or holes made for reservation of water, unstored with some of them, as with trench, carp, bream, roach, dace, eels or such like as will live and breed together" (Harrison, 1968, p319).

In this period there is reference to 'books and books on fish ponds' an offshot of the 'religious' necessity of ponds, especially for those away from the coast.

Drummond and Wilbraham (1964) give the impression that fresh water fish was important in the English diet with frequent references to carp and pike. Renner (1944, p 123) supports this with reference to the large quantities of fresh water fish preserved and the importance of fishing rights in the Middle Ages. The liking for the taste of freshwater fish remains in many parts of Europe, and it was from Europe that the carp was introduced to England in the sixteenth century (Bernes, 1855, p34-35). From this period onwards, fish days became less important and in the seventeenth century ships had tanks to bring live fish back to port. By the eighteenth century "well" vessels had been invented by the Dutch which allowed sea water to circulate from wall to wall across the ship improving access to fresh supplies of fish.

2.2 FISH TRADE AND PRESERVATION

Herring dominated the salt fish trade and by the time of the Norman conquests herring fishing had become an important feature of the British economy. Yarmouth Herring Fair was held each year from the 29th September to 11th November. The merchant towns of Hanseatic League dominated much of the commercial trade in salted herring for almost two hundred years (Tannahill, 1973, p211-212). Herring were intensively fished off the East Anglian coast and an influx of fishermen from Cornwall, Sussex and Kent led to the 'Herring Wars' in the thirteenth and fourteenth century. Herring fishing took place in late summer but fishing was seasonal

"The inshore fishermen of Scarborough in the first part of the fifteenth century, for instance, fished for plaice in winter, for lobsters and cod in Lent, for skate and more lobsters in the summer. The distant water fishermen of the region, who had larger boats, pursued herrings in East coast waters in the autumn and further North in the winter, haddock and cod off Eastern Scotland in spring, while in summer some of them sailed towards Iceland for cod fishing" (Wilson, 1973, p34).

Around 1500 AD cod fishing banks were discovered off Newfoundland and the English, French, Portugese and Dutch used Newfoundland to land and dry the catch before transfer back to Europe. Braudel (1973, p148-152) comments on the importance of Newfoundland to the European fleets.

Herring goes rancid quickly due to its high fat content so the catch was salted to preserve it. In the fifteenth century, fishermen often had to salt at sea and the Norfolk doggers set sail with food provisions plus barrels of salt for preserving herring caught on board. The British fleet faced fierce

competition from the Dutch but managed to re-establish their herring trade through more efficient and better salting. Salt duties, imposed in 1643 with periodic increases until 1825 hit the herring industry hard. As a result many boats only landed herring they could take back alive.

Drying was more often used for cod, haddock, pollack and ling. In damp countries this requires fuel, and thus seems more suited to countries in the Near East. However, dried cod has a long tradition in Norway where the combination of cold winds and clean crisp air prove an effective method of drying. "Stokkfish" is cod which has been gutted and then hung on wooden racks to dry. Stokkfish was being imported from Norway since the ninth century and traded for cloth and metal (Egil, 1930, p30). Much of the cod caught off Newfoundland was dried for transport back to Europe. By the reign of Elizabeth I dried cod which had been caught off Newfoundland and Nova Scotia was being sold to Southern Europe, although there was no demand for it in Britain. Cod which had been salted in barrels became known as green cod, due to the characteristic colouring.

Fish was often baked in pies as a means of preservation. The pastry 'coffin' or shell was often regarded as simply, a vessel in which to cook the fish and was not always eaten. Lampreys were often baked in these pies and cooked in a syrup inside the pie which was later mixed with wine and spices. The city of Norwich provided the King with twenty four herring pies annually. Fish in the sixteenth century was commonly stewed and a form of pottage produced. By the seventeenth century fish pies were a common feature of Lent, but the strong 'coffin' pastry case was being replaced by a richer, shorter pastry and eventually the pasty was dropped in favour of breadcrumbs. In Gloucester there was a change over to pot baking. Gutted and seasoned lampreys were sealed in clarified butter and in this form they would keep for up to one year. Potted fish became more common around the seventeenth century and cold fish pies began to disappear. Pickling was also adopted as in the case of Newcastle Salmon. This involved stewing the salmon in water, beer and salt after which it was potted in the pickle.

2.3 FISH IN THE DIET

Lent still demanded abstinence from meat except in exceptional circumstances. An extract from the Northumberland household book described breakfast for Lent for the fifth Earl of Northumberland.

"Furst a Loaf of Bread in Tenchers; two Manchetts [fine white loafs]; a Quart of Beer; a Quart of Wine; two Pieces of Saltfish; six Pieces of Baconed Herring; three Pieces of White Herring or a Dish of Sprats" (from Coulton (Social Life), 383, in Hibbert, 1987, p7).

After Lent, the Earl substituted boiled beef and mutton for the fish, his sons chicken for the fish. Fish was provided from the manor ponds or in the form of dried cod, salted herring or smoked mackerel. The variety of fish offered depended on proximity to the coast.

In 1699 the Billingsgate Fish Market was a free and open market six days of the week and mackerel could be sold on Sunday, outside "divine hours". In the London fish markets a wide variety of fish could be purchased in New Fish Street as well as Billingsgate. Hibbert refers to Pepys observations.

"Pepys mentions anchovies, carp, cod, crab, crayfish, eels, herring, lampreys, prawns, salmon, scallops, sturgeon, teal, tench, trout and, of course, lobsters and oysters. Shellfish were cheap and plentiful, a good fat lobster costing no more than 5d or 6d in London - 8d when in short supply - and even less on the Devonshire coast and other places where they were landed in large quantities" (Hibbert, 1987, p286).

A record of the Earl of Bedfords indulgent trips to Trinity College Cambridge reveals a large pike with an assortment of fish at £2 518s 6d, the most expensive item of fish eaten in the meal.

In the eighteen sixties a change was occurring in the form of meals with a move towards service 'a la Russe' this resulted in more structure to the meal courses and fish was firmly located at the start of the meal forming the 'hors d'oeuvre' and 'entree'. MrsBeetons "Book of Household Management" was suggesting courses that 'followed the palate', with 'insipid' dishes preceeding tasty dishes. Savoury dishes were served last and fish was placed between soup and entree. Meat formed the "piece de resistance", with salmon moving to the "entree" course. (Mrs Beeton 1864).

2.4 THE INFLUENCE OF INDUSTRIALISATION

The latter part of the eighteen century brought with it more than meal changes. The Industrial Revolution transformed the state of the British economy and was responsible for a major population shift from the land to the new industrial cities. By 1850 around fifty percent of the population lived in the cities, by 1930 that figure was nearer seventy five percent (Davidson, 1983). This urban

workforce had to be fed and food supplies became an important issue. Masses of people lived in cramped conditions with inadequate space or fuel for cooking. Burnett (1979) highlights the difference between rich and poor sections of society, but warns us that there were large diversities in these broad categories. The diets of the poor left much to be desired.

"urban life necessarily meant a greater dependence on professional service of bakers, brewers and food retailers generally, partly because living conditions were overcrowded and ill-equipped for the practice of culinary arts, partly because many wives worked at factory or domestic trades and had little time or energy left for cooking. The kind of food which most commended itself was, therefore, that which needed least preparation, was tasty, and, if possible, hot, and for these reasons bought bread, potatoes boiled or roasted in their jackets, and bacon, which could be fried in a matter of minutes, became mainstays of urban diet. Tea was also essential, because it gave warmth and comfort to cold, monotonous food. But soups and broths, stews and puddings, became for many inhabitants of the new towns the Sunday feast, for only on the day of rest was long cooking possible" (Burnett, 1979, p54).

However food was not evenly distributed between family members. Women and children often existed on bread, potatoes and weak tea, meat was reserved for the husbands evening meal. His intake of protein was certainly higher than the rest of the family (Burnett, 1979). There is little reference to fish consumption in Burnetts account and for the working classes bacon was the main type of meat. On coastal towns cheap fish was available but inland even a red herring was an occasional luxury.

This dependence on bread, bacon, potatoes and tea is illustrated by several authors (Johnstone, 1977; Oddy and Miller, 1976) who highlight the poverty and poor nutritional state of sectors of the working class population at this time. The fish and chip shop was to make an important contribution to the protein consumption of the poor urban worker in the nineteenth and twentieth centuries. Studies by Booth (1889) and Rowntree (1901) into poverty in London and York revealed the extent of poverty in Industrial Britain and the fact that it was not simply going to disappear. Despite this it is fair to say that by the end of the Victorian era a large proportion of the working class were better off than before as a result of the factory system.

The rich enjoyed a wider availability and quantity of food (a range of incomes existed in this group as well) and Victorian England for them involved a conspicuous display of wealth and new values, reflected in their food consumption.

"In these years the choice of foods, their manner of preparation, order of service and even the times of eating, all became matters of high social importance and class demarcation, in particular the dinner-party became a prestige symbol which at once announced the taste discrimination and bank balance of the donor" (Burnett, 1979).

Mealtimes structured the daily activities of this class (Palmer, 1928), but it was the quantity of food which served as the main discriminator. Fish features more prominently and Burnett (citing Mrs Rundells' New System Of Domestic Trade, 1824) shows a family on £250 p.a. buying similar quantities of meat and fish. By 1880 improvements in transport meant it was possible to obtain fresh Severn salmon, John Dory and lampreys but this privilege was restricted to a select few.

2.5 ADVANCES IN PRESERVATION

The most important developments in food preservation techniques were to occur in the nineteenth century, with far reaching consequences for food availability. In 1810 Durand patented the tinned canister. Canning fish led to it being sold to those who previously had little access to fresh products. Developments in canning were over taken by the development of freezing. The first ice making machines were patented in 1830's and the manufacture of ice had much to do with restoring the fortunes of the fishing industry.

"Pickled herring has been virtually the only fish available to the poor in new towns during the first half of the century, and it was a foodstuff with limited appeal. In the 1860's and 1870's however, steam trawlers were developed which could travel fast and carried stocks of ice in the hold - the coolest place in the ship. Fish packed in ice at the moment of catch could be kept chilled throughout the swift return journey by steam and rail to the city fish seller. One of the coincidental effects of the new availability of fresh cod and other fish was the growth of the British national institution the fish and chip shop" (Tannahill, 1973, p359).

By the end of the nineteenth century deep sea trawlers were landing large quantities of Icelandic cod into British ports (Johnstone, 1977, p8). As a result sea fish became more readily available, and the taste for demersal species was established.

2.6 WAR YEARS

During the Second World War fish was not rationed but it was subject to fixed prices. The problem with rationing fish related to high product perishability. Maximum fish prices were set high and after a large catch actual prices often fell below the fixed price (Beveridge 1928). Importation of canned salmon from Canada was left to private traders and cargos systematically requisitioned on arrival. While wholesale and retail prices of fresh fish, canned salmon and brisling were controlled, shellfish prices were excluded.

2.7 ADVANCES IN CATCHING TECHNOLOGY

Expansion of the British deep sea fishing fleet around the 1960's had a profound effect on the supply of fish available to the UK market. Traditionally a trawler fishing in Icelandic waters might spend three weeks at sea, these far water vessels spent three months at sea. The boats were much larger (around 20,000t, 120 ft long) and the catching gear more advanced. Using radar equipment they could track shoals of fish and literally 'hoover' the sea bed fishing from the stern and dragging nets. The most important feature of these vessels was the ability to process the catch on board within hours of it being caught. As a result a supply of good quality frozen fish appeared on the market appealing to retailer and manufacturer alike. The fish was 'shatter' packed (packing fish in ice between sheets of plastic) which made it convenient for repacking on land, or alternatively it could be block frozen. It removed the need for the manufacturer to gut and fillet the fish. The fish meal and fish oil by products found markets in the rapidly expanding broiler industry. These changes saw good quality frozen fish available to the market adding to total supplies, shifting the onus from fresh to frozen, and accelerating the move from freshwater to saltwater fish.

The fleet faced severe economic and political difficulties in the early seventies. The oil crisis lead to higher oil prices and increased operating costs, with no Government subsidies to compensate for the increases. Iceland's imposition of a 200 mile fishing limit lead to the 'cod war' and prevented the deep sea vessels fishing traditional grounds.

2.8 SUMMARY

Throughout history fish has featured quite prominently in our food habits. More recently we have seen a switch in demand for saltwater fish over freshwater fish. This is in part a function of

improvements in presentation and availability of saltwater fish but after the nineteenth century the freshwater supply would have been insufficient to meet the demands from a growing market. Fish days in the past were associated with abstinence from meat eating and religious ceremony. The idea of fish on Fridays is still evident today but it is possible that many of the attitudes towards fish are a product of earlier consumption dominated by salted herring and fried cod. Improvements in preservation techniques and trade has resulted in a wider choice of fish available to the consumer, in a fresher state. We have seen a reversal in importance of the herring industry dominant in the early twelfth through to sixteenth century (and now a main export market in the UK). This turn around reflects the move away from salting towards other forms of preservation. One can begin to understand where the preferences for fresh fish have arisen from given the problems of perishability, the difficulties of transporting fish inland and the strong flavours of salted products.

CHAPTER 3

FISH CONSUMPTION IN THE UK: THE MARKET AND THE CONSUMER

There is a wealth of empirical data on the landings, sale and consumption of fish and fish products in the UK, and this chapter will be concerned with reviewing recent data. This will provide a basis on which to proceed to investigate behavioural aspects of fish use in the qualitative section, but will also, of course, provide evidence for some of the most fundamental features of consumer behaviour with regard to fish. This chapter, therefore, reviews existing studies to determine:¹

- (i) market trends and possible explanations for these trends in relation to behaviour (retail market)
- (ii) demand characteristics
- (iii) characteristics of the population under study
- (iv) attitudes and beliefs towards fish and fish products

3.1 THE RETAIL MARKET FOR FISH

The retail market for fish and fish products is estimated to be worth £981 million in 1986, with a 3.4% increase in volume to 322,942 tonnes (Leatherhead R.A., 1987). If retail fish friers are included this figure increases to around £1.13 billion (Keynote, 1988). The retail market tends to be categorised into product sectors fresh (i.e. wet fish), frozen and chilled, canned.

3.1.1 FRESH FISH

The market for fresh fish is currently valued at £295 million, which includes fresh processed fish and shellfish. It represents 25% of the market value, and a volume of 91,411 tonnes (Leatherhead, R.A.,

¹Any previous research will have been designed with specific objectives in mind, and the language and terminology used will be specific to those objectives. In one respect the desk research acts like 'hard core' foundations of the research, it is there to be built upon, but exists in its own right.

1987). Following a static period (1977-1984) consumption has grown since 1985, reflecting the increased availability of fresh fish. The long term decline in the number of fresh fish outlets was reversed for the first time in 1986.

3.1.1.1 Seafish

Consumer preferences for sea fish are strongly orientated towards particular demersal species, cod, haddock and plaice together account for 49% of seafish sales (Leatherhead, R.A., 1987). Figures for 1984 showed these three species constituted 73.3% of market share (SFIA, 1984). Sales of the traditional species of cod, haddock (including smoked) and sole are in decline. Sales of cheaper fish varieties such as mackerel and herring have shown good growth but their share of sales remains low (at 2.2% and 4% respectively). 'Other' fish varieties² have doubled their volume share from 8% in 1984 to 16% in 1986. The market is dominated by 'fillets' which in 1986 represented 65% (down 5% on 1984). Sales of steaks and whole fish have grown by 12% and 20% respectively to represent 9% and 23% of the market (respectively).

3.1.1.2 Freshwater fish

Freshwater fish represents 15% of the fresh fish market by value, and is worth £42 million, dominated by salmon and trout. A relatively new development, the UK production of trout is estimated to have reached 14,000 tonnes in 1987. The retail market for trout is growing at 5% per annum, and projected demand is strong. The Highlands and Western Isles of Scotland project output of salmon to reach 45,000 tonnes by 1991, up 28,000 tonnes on 1987 figures, with supermarkets expressing an interest in selling Scottish salmon (Retail Business, 1988). The total smoked salmon market is estimated to be worth £50 million, 6,250 tonnes of whole fish. The market is likely to remain dominated by fresh whole salmon, although frozen salmon for smoking represents a considerable market opportunity (O'Conneide, 1987).

3.1.1.3 Fresh fish retailing

General standards in fishmongers shops have now come under the scrutiny of the SFIA Seafoods Quality Assurance Scheme (Seafish Standard, 1988a, 1988b, Seafish Standard 1986a, 1986b, 1986c), and

²Other fish varieties excludes cod, haddock, smoked fish, plaice, coley, herring, kippers, whiting, skate, lemon sole, and includes species of fish the consumption of which is less than 100 tonnes/per annum.

to date 250 outlets have obtained the award³. Like the meat retail trade (Marshall and Warren 1987) fish retailing is characterised by a large number of independent retail outlets (Table 3.1). MacFisheries, originally part of the Unilever group, was converted into a supermarket chain and became part of the Dee Corporation in the early eighties.

Table 3.1: Household Consumption of Fresh Fish by Type of Outlet

	1985	1986	% change
Fishmongers	52.1	51.0	-2.1
Market stalls	17.3	16.8	-2.9
Multiples	13.4	14.4	+7.5
Mobile vans/shops	6.8	7.6	+11.8
Grocers	2.4	1.7	-29.2
Other outlets	8.0	8.5	+6.3
	100	100	

Source: Keynote; SFIA.

A decline in the number of fishmongers from 3,372 in 1977 to around 2,500 (if stalls and mobile vans are included) in 1988 has affected the availability of fish (estimated from National Federation of Fishmongers). This level of contraction is more severe than with most other specialty food shops (Retail Business, 1985a). Supply problems and high prices, slowed demand in 1987 and poor sales in the early part of 1988 may be a knock on effect from the price increases of the previous year. Fish sales are slow, despite an advertising campaign launched by SFIA (Seafish Standard, 1988b). Interest in farmed salmon and trout, has kept many fishmongers out of insolvency.

There is also an increased demand from restaurants, looking to the fishmonger to provide traditional skills and quality products for a market where good fish can demand premium prices. The possibility of a fish outlet franchise has received recent attention (Marketing, 1988; The Grocer, 1988d). It remains to be seen if this project is a viable means of increasing the number of outlets.

Two recent developments in fresh fish retailing have contributed to the increase in consumption (1) introduction of in-store fresh fish counters by multiple grocers (2) increasing use of Controlled Atmosphere Packs (CAP).

In 1986 there were around 400 in-store fresh fish counters. The two largest fresh fish retailers are Presto (with 129 counters) and the Dee Corporation (with 134 counters). The increase in the number

³However financial support is not available in the form of grants for improvement of premises.

of in-store fresh fish counters has expanded the market overall by increasing exposure to fish in all forms (Leatherhead R.A., 1987; Daily Telegraph, 1987; Supermarketing, 1986; The Grocer, 1986). A survey by the Institute of Grocery Distribution (IGD) in 1986 reported fresh fish counters in 10% of supermarkets and the number of in-store fresh fish counters is expected to increase (Retail Business, 1988).

CAP⁴ has been adopted by many large retailers, notably Marks and Spencers. It increases shelf life to 3-4 days for wet fish, and the product is presented in a clear pack in which air has been flushed and replaced with nitrogen or a gas mixture based on carbon dioxide, usually combined with nitrogen and oxygen to reduce deterioration. Standards of presentation are generally high and the product is stored in chilled food cabinets, adding to the quality image. Marks and Spencers provide a range of quality fish products in this form, and Safeway have built a substantial business in CAP fish. Altogether the multiples are offering a greater choice of fresh fish to the customer.

3.1.1.4 Catering

Around 50% of fish consumption is accounted for by the catering trade. Some 9,000 fried fish outlets sell 25% of all white fish consumed in the UK, and about 30% of all fish for catering goes to fish friers.

The friers have faced considerable competition from other fast food outlets like McDonalds, Wimpy, Kentucky Fried Chicken and Pizza outlets. The sale of fish through catering establishments other than fish and chip shops remains low (Table 3.2) (SFIA 1986) and the image of the fish and chip shop is 'young working class' (SFIA 1983b).

Table 3.2: Catering Consumption by Outlet (%) 1986

Fish friers	30
Canteens	19
Cafes and restaurants	15
Educational establishments	13
Pubs and clubs	7
Hotels	7
Health establishments	7
Others	2
Total	100

Source: SFIA

⁴Controlled Atmosphere Packaging more strictly termed Modified Atmosphere Packaging (MAP).

The fast food industry is predicted to be one of the largest growth sectors in the catering industry with sales expected to reach £2630 million by 1990. But this growth is expected to come from the American style fast food outlets while the traditional outlets are expected to decline (Kerr, 1985).

3.1.2 FROZEN FISH

This sector has until 1986 shown positive demand aided by competitive prices. However, a shortage in fish supplies in the latter part of 1986 and the resulting price rise has led to a slight decline in the frozen fish sectors (Birds Eye, 1986, 1987). It is currently valued at £420 million (including fish fingers, coated fish, natural fillets/steaks, fish in sauce, fish recipe dishes and specialty seafoods) and represents 155,000 tonnes in 1986⁵ (Leatherhead R.A., 1987). It can broadly be divided into two, the coated fish and non-coated fish sectors. The coated sector represents 54% of value sales in 1986, and of this fish fingers alone represent some 40% of the sales. One of the main growth areas in this sector is breaded products, which increased 32% in value terms, mainly through product innovations in coatings (The Grocer, 1988a, 1988b; Food Processing 1986). In the non-coated sector, fish recipe dishes and specialty meals represent the main growth areas.

3.1.2.1 Fish fingers

The traditional fish finger has showed little growth in recent years suffering from higher cod prices. The market now splits into 'premium' and 'budget' products. Birds Eye hold 50% of the market, Ross 13% and Findus retain 20% of the premium sector.

3.1.2.2 Other coated fish products

As with fish fingers growth in the value of this market has been largely accounted for by increased prices. Main changes have resulted in a diversification of product coatings and cooking methods, capitalising on increased demand for 'healthy' products. These products still consist primarily of battered and breaded fillets, burgers and fish steaks, and although cod is still dominant its inflated price has resulted in a switch by manufacturers to cheaper haddock and plaice as a basis for the products.

⁵Valued at £272 million in 1981 and 117,000 tonnes volume, Market Research Great Britain, 1986.

3.1.2.3 Natural fillets/steaks

This sector, worth £44 million in 1986, competes directly with fresh fish (in marketing terms). The sector has however been contracting, with the exception of smoked fish fillets which have experienced some growth. This has been attributed to the use of better quality packaging and improved marketing.

3.1.2.4 Fish in sauce

These products hold a similar share of the market as natural fillets (about 10%). They are mainly 'boil-in-the-bag' products which offer ease of storage and preparation.

3.1.2.5 Fish recipe dishes

Worth £50m in 1986, they represent 12% by value of the frozen fish market and 18% of the frozen ready meals market. The success of this sector has been attributed to the increased sales of microwaves, increase in the number of working women, smaller household sizes and decreased frequency of formal family meals.

3.1.2.6 Specialty seafoods

This includes prawns, scampi, and frozen trout and salmon and is currently the largest growth sector, worth £61 million in 1986 on a turnover of 9,800 tonnes of product. Most of the demand for prawn is seasonal, with peaks at christmas and easter. The UK is currently the world's third largest importer of prawns. Scampi, like prawns, tend to be used on special occasions, although it is believed to be broadening its general appeal. Many of the new product ranges are based on prawns and shellfish.

One new product which is creating much interest is based on simulated shellfish produced by Japanese kamaboko technology (O'Connell, 1987). These 'crab sticks' in 1985 had a total market value of around £7 million (retail and catering) (Market Research G.B., 1988).

3.1.2.7 Frozen fish retailing

Frozen fish retailing is mainly centered on the five major multiples Sainsbury, Tesco, Asda, Dee and Argyll Group (Presto and Safeway).

The growing multiples and freezer centres account for nearly 80% of the retail sales of frozen fish (Table 3.3). Buying power is concentrated in a small sector of the market, with aggressive price competitiveness and heavy marketing of own brand labels. The multiples' share of this market has crept up since 1982 (Market Assessment, 1986).

Table 3.3: Frozen Fish Purchase by Outlet (%) 1986

Five major multiples	39.5
Freezer centres	26.2
Other multiples	12.9
Co-ops	6.6
Grocers	4.0
Other outlets	10.7
Total	100

Source: SFIA

3.1.3 CANNED FISH

This sector, like the frozen fish market has shown steady growth since 1977 (despite a highly publicised outbreak of botulism in 1982). Total canned sales were valued at £195 million in 1984 (Retail Business, 1985b) and recent estimates value the market at £210 million. This represents 18% sales value of the retail market, and 70,000 tonnes of canned fish (Leatherhead R.A., 1987). Since 1977 the value of the market has increased by over 200%. The market is dominated by salmon, tuna, sardines and pilchards.

3.1.3.1 Canned salmon

This market was worth £117 million in 1986 and accounts for over half the total value of canned fish sales and around thirty five percent of volume sales. The trend has been towards red salmon and away from the more expensive pink species. Salmon sales are more seasonal and a large quantity of canned salmon is imported (27,700t in 1986) over fifty percent coming from the USA.

3.1.3.2 Canned tuna

Tuna sales in 1986 were worth £65 million, up 38% on 1984 estimates (Retail Business, 1985b). Tuna sales of 21,667 tonnes in 1986 (Leatherhead R.A., 1987) were up 25% in volume terms, to account for 31% of total market volume. Increased attention has been directed towards tuna in brine, and new launches of tuna in sauce products. Imports have increased substantially in 1986 3,843,000 cartons of tuna were imported, mainly from a new source in Thailand. Imports of tuna are up fifty percent since 1984.

Approximately 95% of all canned fish is imported (Mintel, 1984; Retail Business, 1985b). Around 81,800 tonnes of salmon, tuna, sardines and pilchards were imported in 1986, 60% up on 1982 figures. Sixty percent of these imports are accounted for by salmon and tuna and it is estimated that 75% of imported canned fish ends up in the retail sector.

3.1.3.3 Canned fish retailing

Major multiples account for 70% of retail canned fish distribution by value, the independents and co-ops took 13% and 12% respectively in 1986. John West holds around 33%, Princes (Buitoni) 25% of market by value in 1986. Beresford is the third largest company with 13% market share by value.

This sector has gained from the healthy image of fish and shows resilience to the increased competition from fresh and frozen sales. The market is viewed as being very traditional and until recently there has been little product innovation. One report (Market Assessment, 1986) suggests that competition in this sector comes from other canned foods such as canned meats rather than other fish, and projects growth at 5% per annum.

3.1.4 RETAIL SUMMARY

- (i) Recent growth in fresh fish market due, in part, to a wider availability of fresh fish
- (ii) Diversification of frozen products and interest in the specialty seafood and ready meals sector based mainly on 'white' species

- (iii) Steady growth in the canned sector based on salmon and tuna with some product diversification, but still very traditional market

This information related to broad market changes based on sales volume and value. It tells us little about the characteristics of the individual buying fish or trends in household consumption. For this information it is necessary to turn to the National Food Survey.

3.2 DEMAND FOR FISH

3.2.1 PRICE CHANGES 1977-1986

The price of fish has continued to increase since 1977 in all sectors. Prices are subject to fluctuation due to supply problems characteristic of the fishing industry.

In terms of yearly price changes, Table 3.4 shows the average yearly price of fish has almost doubled since 1977. The greatest increase in absolute prices has occurred in the fresh and processed sectors. The decline in 1986 yearly average price in the processed sector is accounted for mainly by a large fall in the average yearly price of fat processed unfileted herring. In the prepared sector the average retail price of canned salmon fell sharply. In 1986 prices continue to increase in the frozen sector a reflection of increased cost of cod.

Table 3.4: Yearly Price Indices for Fish (1977-1986)

	1977*	1978	1979	1980	1981	1982	1983	1984	1985	1986
Fresh	100	115	122	136	142	145	157	171	190	205
Processed	100	114	135	147	153	166	183	190	209	206
Prepared	100	105	114	123	129	139	148	162	183	181
Frozen	100	110	122	129	128	135	145	150	159	172
All Fish	100	111	123	133	139	148	160	170	189	193

* base year = 1977

Source: NFS data

The real price of fish has fallen by 7.5% since 1977, this would suggest an increase in demand⁶. Since 1982 real prices have been on the increase (Appendix B:Table B.1) and consumption seems to suggest, if anything, a lag effect responding to the previous years price. Between 1985 and 1986 the real price of fish fell slightly and consumption increased, but real price increases between 1984 and 1985 were also accompanied by an increase in consumption.

Overall consumption has not been adversely effected and the recent increase in consumption is encouraging (see Section 3.4.1.1). The prepared sector has seen steadily increasing real prices since 1977, but demand in this market has grown. In the frozen sector real prices have fallen fairly steadily since 1977, with resulting increases in consumption, although 1985 saw price increases for frozen fish which led to a decline in consumption.

3.2.2 INCOME ELASTICITIES

Engels law relates expenditure on food to levels of income. People need food for survival and the poor spend proportionately more of their income on food. But, the human appetite is not insatiable and there are physical limits to ingestion. As a result, there is a decreased willingness to spend additional money on food as incomes rise. This has important implications for the market for food in a growing economy.

The income elasticity of demand is defined as:

$$\frac{\% \text{ change in quantity purchased of a product}}{\% \text{ change in consumer income}}$$

The income elasticity co-efficient is positive for most food products and lies between 0 and 1, since percentage change in quantity purchased is less than percentage change in consumer income. With 'inferior goods' however, the quantity demanded actually decreases as income increases, and the income elasticity co-efficient will be negative. If the elasticity co-efficient is greater than 1 there is a greater proportionate increase in quantity purchased in response to income change (However, this is rare for a

⁶The Meat and Livestock Commission cite this fall in the real price of fish as the main reason for the buoyancy in expenditure on fish (MLC, 1983), due to the apparent lack of positive reasons given for buying fish in consumer studies. There does seem some justification in the argument that the increasing manufacturing prices of beef, in relation to a supply of low price imported fish, has favoured the latter but the idea that this impact is limited by a restricted product range of fish products is less convincing. One study (Spence, 1984) identified over 774 different fish products available in London and Glasgow supermarkets.

food product). In the case of fish the income elasticity is +0.05, so a 10% increase in income would result in a 0.5% increase in the quantity of fish purchased.

With static or declining markets, like the fish market of late, the question is 'can the consumer be persuaded to pay more for the same quantity of food'. This is measured by the 'income elasticity of expenditure' defined as:

$$\frac{\% \text{ change in expenditure on a product}}{\% \text{ change in consumer income}}$$

"Expenditure elasticities are defined for constant prices of individual food products but allow for consumers "trading up" within a broad product group as they become more wealthy. For example the income elasticity of quantity demanded for a particular group of vegetables might be zero, but if, with rising incomes consumers switch from the more basic to the more exotic vegetables (without buying any more in total) and if they buy more pre-packed and processed vegetables then they will increase their total expenditure on the vegetable group and the income elasticity of expenditure will be positive.

The greater the gap between the quantity and the expenditure elasticities, then the more scope there is within the broad food group for profitable marketing by exploiting consumer willingness to buy higher value-added products as their incomes rise." (Ritson, C., 1985, p10).

Table 3.5 lists income elasticities of both quantity demanded and expenditure for various categories of fish. Two aspects are notable. First the income elasticity of 0.05 for all fish masks a wide range across the product categories. At one extreme consumption of white fish and herring will fall in response to an increase in income. (In the case of white filleted fresh fish a 10% increase in income would lead to a 20% decrease in quantity demanded, an 11% decrease in expenditure). At the other extreme shellfish respond positively to an increase in income. Second in all cases, there is a significant gap between the quantity and expenditure co-efficients, implying considerable scope for the introduction of higher quality products.

Table 3.5: Income Elasticities (1986)

	Quantity demanded	Expenditure
White, filleted, fresh	-0.23	-0.11
White, uncooked, frozen	-0.10	0.01
Herring, filleted, fresh	-0.04	0.29
Shellfish	1.14	1.52
Other canned and bottled fish	0.27	0.35
All fish	0.05	0.19

Source: NFS data [Income Elasticities of Demand for Individual Foods, 1986a]

3.2.3 PRICE ELASTICITIES

With most foods price is inversely related to quantity purchased. The strength of this relationship can again be measured by elasticities. The price elasticity of demand is defined as:

$$\frac{\% \text{ change in quantity purchased}}{\% \text{ change in price}}$$

If the price elasticity co-efficient lies between 0 and -1 then demand is inelastic - that is, the percentage change in quantity purchased will be less than the percentage change in price. Due to the inverse relationship in the case of food the sign will be negative. If the co-efficient is greater than -1⁷, then demand is elastic the percentage change in quantity demanded is greater than the percentage change in price. Substitution of goods is less likely across broad food categories e.g. meat and fish, with rising or falling prices and in this case the response to price change is more inelastic. However within product groups substitution is more likely, and the response to 'price' changes elastic, depending on the degree of substitutability.

Price elasticity of fish is -0.02, implying that consumption is not sensitive to price changes and unlikely to have been influenced by the fall in its average real price (Table 3.6). It suggests that fish as a whole is not very substitutable with other foods in response to price changes. However there appears to be considerable substitution within the product group.

⁷In some approaches a -ve sign precedes the definition to make the elasticity of demand a positive number as a matter of convenience (Lipsey, 1983, p101).

Table 3.6: Estimated Price Elasticities of Demand for Certain Types of Fish 1981-1986

Fresh white fish, filleted	-1.24
Frozen white fish	-1.68
Shellfish	-0.76
All canned or bottled fish	-0.32
Frozen convenience fish and frozen convenience fish products	-0.90
All fish	-0.02

Source: NFS data.

Fresh and frozen white fish are highly elastic in their response to price change. This suggests a high degree of substitutability probably between the categories and perhaps due to the range of fish species available. With more processed products demand is inelastic and less sensitive to price changes. A 10% increase in the price of frozen white fish will result in a 17% decrease in demand against a 3% decrease in demand for canned fish.

Young (1977) found that

"the varieties of fish which have experienced the severest decline in per capita consumption have been seen to be the most price elastic. Thus the substantial increases in fish prices being only partially offset by increases in income, would appear to be the major cause of falling purchases. It has also been found that the fat fish categories (i.e. mackerel, herrings etc.) although price inelastic exhibit negative income elasticities and so may be expected to become less popular as real disposable consumed income arises over time." (Young, T., 1977, p3.)

This partly explains the relation between price changes and behaviour, but that relationship may not be so simple. In summary, it appears that the demand for fish is little affected by rising incomes, and is not very sensitive to price changes. However, any change in demand with rising incomes is more likely to result in the increase consumption of convenience products and shellfish, and price changes are less likely to effect demand for frozen convenience and canned fish. Certainly the economic relationship between price, income and demand is not clear cut and straightforward as it was in the past due to the increased complexity in food consumption.

3.2.4 CROSS PRICE ELASTICITIES

These cross price elasticities measure the response in demand of one product against price changes in another products. Thus goods can be defined as complementary or substitutable⁸ but the price relationship alone, fails to account for other factors such as the usage occasion.

3.3 FISH SUPPLIES IN THE UK

Total UK landings in 1987 at 786,000 tonnes of fish were up on 1986 landings.. Demersal species currently account for 48% of UK landings, pelagic species for 38%. (Total supplies include imports and fish from agriculture, minus exports). While overall landings of demersal fish were down in 1987 accounted for mainly by poor supplies, cod landings were up⁹. The increased catch of pelagic fish was due to increased mackerel landings. Shellfish landings also improved in 1987, reflecting increased demand (Table 3.7).

Table 3.7: UK Fish Supplies 1987

FISH SPECIES		1987 (Landed weight in tonnes)	(1986)
DEMERSAL	Cod	91,339	(*76489)
	Haddock	102,183	(131005)
	Whiting	51,749	(40783)
	TOTAL	375,251	(378520)
PELAGIC	Mackerel	188,936	(132054)
	Herring	100,170	(106118)
	TOTAL	300,099	(250111)
SHELLFISH		110,584	(87603)
TOTAL UK LANDINGS		785,934	(716234)
AQUACULTURE**	Trout	14,000	-
	Salmon	13,000	-
	Shellfish	4,000	-
	TOTAL	31,000	-
IMPORTS***		381,000	(371962)
EXPORTS***		334,491	(330118)
TOTAL UK SUPPLY		863,443	-

* (1986) landings

** Personal Communication with K. Whittle, Torry Research Station, Aberdeen

*** Product weight

⁸The economic concept of substitution refers to whether or not a product is purchased, while the price of these 'substitutes' may be related in the economic sense, they may not be true substitutes in the context of usage, e.g. a boiled egg and sardines on toast may be substitutable in the case of a snack, but the comparisons may be deemed inappropriate for a main meal.

⁹Landings of cod were exceptionally low in 1986.

3.3.1 IMPORTS

Imports are dominated by demersal species, in 1986 cod accounted for 46% of all fresh imports and 64% of all frozen imports. Total imports since 1977 are up by some 500% to 381,000 tonnes in 1987 valued at £624m.

Iceland, Norway and Denmark are the main sources of fresh and frozen wet fish accounting for around seventy percent of imports. Shellfish imports rose substantially in 1986, India and Bangladesh were major suppliers for prawns and shrimps. Thailand, Chili and Denmark were the major suppliers of preserved and prepared fish products in 1986, while Canada and USA supply most of our salmon. The largest volume canned imports are accounted for by tuna, the most important by value are accounted for by canned salmon.

3.3.2 EXPORTS

Exports of demersal, pelagic and shellfish in 1987 stand at 334,500 tonnes with a value of approximately £353.7m (SFIA, 1988) . The bulk of this trade by volume is comprised of herring and mackerel, exported at little added value. Exports from the UK tend to be composed mainly of these underutilised species, and fail to balance imports in terms of volume.

Most exports are destined for the USSR and communist bloc countries. Eire accounts for nearly half of the UK exports of canned fish (mainly salmon, sardines, tuna and mackerel), with crustacea and mollusc exports to the USA, France and New Zealand. The main fish exported in volume terms remains fresh mackerel and herring. The most valuable export remains shellfish with increasing contributions from salmon.

3.4 THE FISH CONSUMER

This section examines household demand characteristics and reviews previous research into fish consumption.

3.4.1 HOUSEHOLD FISH CONSUMPTION AND EXPENDITURE

Household consumption and expenditure is based on information provided by the National Food Survey¹⁰. This gives some indication of the demand characteristics of consumption in relation to measurable population parameters.¹¹

This section considers consumption trends since 1977, examining differences by region, income, household composition and age of housewife.

Consumption of fish has been on the decline since after the Second World War falling to an all time low of 4.13 oz/person/week in 1977. Since 1977 it appears that this decline in household consumption has been arrested and total consumption is up 25% to 5.16 oz/person/week in 1986 (Table 3.8).

Table 3.8: Average Consumption of Fish and Fish Products (1977-1986) (oz/person/week)

FISH	YEAR									
	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Fresh	1.36	1.36	1.36	1.37	1.38	1.28	1.30	1.27	1.24	1.29
Processed	0.44	0.43	0.48	0.53	0.50	0.51	0.52	0.52	0.54	0.58
Prepared	1.17	1.29	1.29	1.52	1.62	1.59	1.76	1.55	1.46	1.63
Frozen	1.20	1.18	1.26	1.48	1.42	1.65	1.55	1.56	1.67	1.64
TOTAL	4.13	4.25	4.51	4.80	4.92	5.04	5.14	4.89	4.90	5.16

Source :NFS data.

The NFS categorises fish into fresh, frozen, prepared and processed (Appendix A). Frozen products still account for the largest consumption at 1.64 oz/person/week, mostly frozen convenience products (1.03 oz/per person/per week). It is breaded fillets, fingers and steaks, cod in sauce etc. which have kept the market buoyant. This increased consumption in the frozen sector contrasts with the static growth, until recently, in the fresh sector (Fishing News, 1986). Consumption at 1.29 oz/person/week is still below 1977 levels. The market is recovering slowly, despite a fall in the real price of fresh fish (Appendix B:Table B.1). Most of this demand appears to be for white filleted fish.

¹⁰The National Food Survey which uses a weekly food diary, placed in a sample of randomly selected households has been criticised for its method of data collection (see Lesser et al, 1986, Frank et al, 1984) but the main appeal of this data lies in its longevity.

¹¹Figures from the Sea Fish Industry Authority based on Attwood Statistics, a market research organisation, agree with general consumption trends although NFS estimates are 30% higher. Attwoods data based on a structured panel reporting throughout the year shows less seasonal variation in consumption. To achieve household consumption levels of fish recorded by the NFS seventy five percent of total UK supplies would have to be consumed in the home. (The corresponding Attwoods figure is much lower at 54%).

price of fresh fish (Appendix B:Table B.1). Most of this demand appears to be for white filleted fish. Demand for pelagic species remains low although herring and mackerel are showing improvement according to 1986 trade figures (Keynote, 1988).

Average consumption for prepared products is 1.63 oz/per person/week just behind frozen products. This includes products like ready meals, fried and canned fish and this sector has shown good growth in line with that experienced in the frozen market. Consumption of prepared products has remained above that of frozen for much of the period under consideration, the largest consumption in this sector is accounted for by canned fish (includes canned salmon). Cooked and ready meals sectors are currently doing well.

Processed fish consumption remains low, and growth in this area is mainly attributed to shellfish consumption which has grown 142% since 1977 to 0.17 oz/per person/week in 1986 (30% of processed fish consumption). The figures reflect the buoyancy in particular sectors (Appendix B; Table B.2).

Overall expenditure on fish has increased from 18.24 pence/per person/week (£9.48/per person/year) in 1976 to 40.77 pence/per person/week (£21.20/per person/year) in 1986¹². This in real terms represents a decline in overall expenditure on fish and fish products. Yearly average expenditure on fish, as a percentage of total expenditure on food, has increased since 1977 to 5.1% (Appendix B: Table B.3). (Expenditure on meat, as a proportion of total food expenditure, has declined to 28.8%).

3.4.1.1 Underlying Trends in Demand

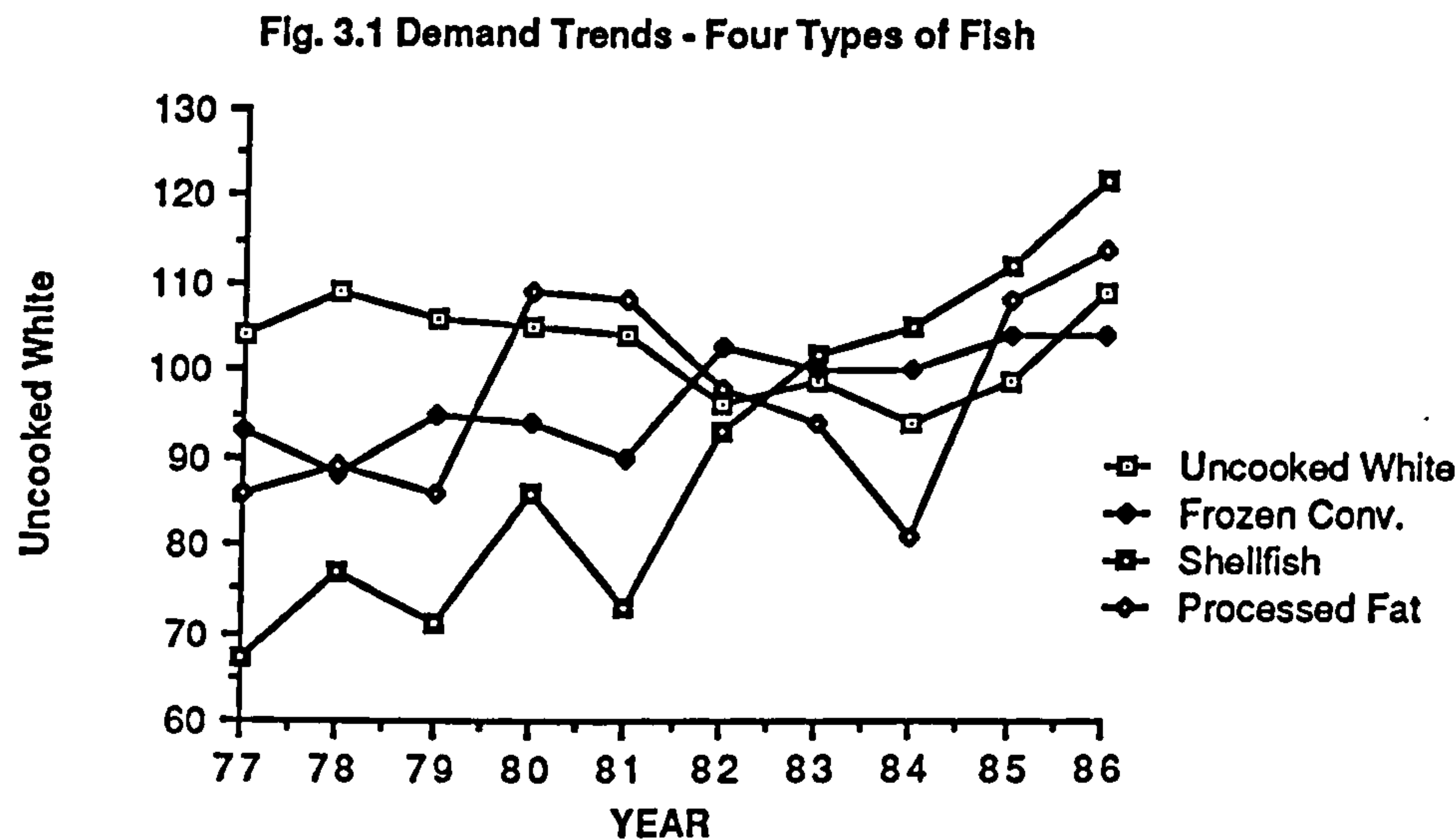
The underlying trend in demand looks at what might be expected to happen to demand had prices and incomes remained stable in real terms. In other words, it is the 'residual' change in demand after accounting for price and income changes, and thus may be attributed to 'other' factors. Unfortunately data for the underlying trend in demand is not available for 'all fish', or by the specific product groups outlined above. It is however possible to look at specific sub-categories.

¹²If one considers the purchasing power of sterling in 1976 compared to 1986 (Retail Price Index base year = 1974)

$$100 * \frac{1976 \text{ RPI}}{1986 \text{ PRI}} = 100 * \frac{157.1}{385.9} = 40.71p$$

£21.20 in 1986 was equivalent to an expenditure in 1976 of £8.63 (£21.20 * .4071), which represents a decline in household expenditure.

Figure 3.1 looks at the underlying trend in demand for uncooked white fish (including smoked and frozen) , frozen convenience fish products, shellfish, and processed filleted fat fish (see Appendix A).

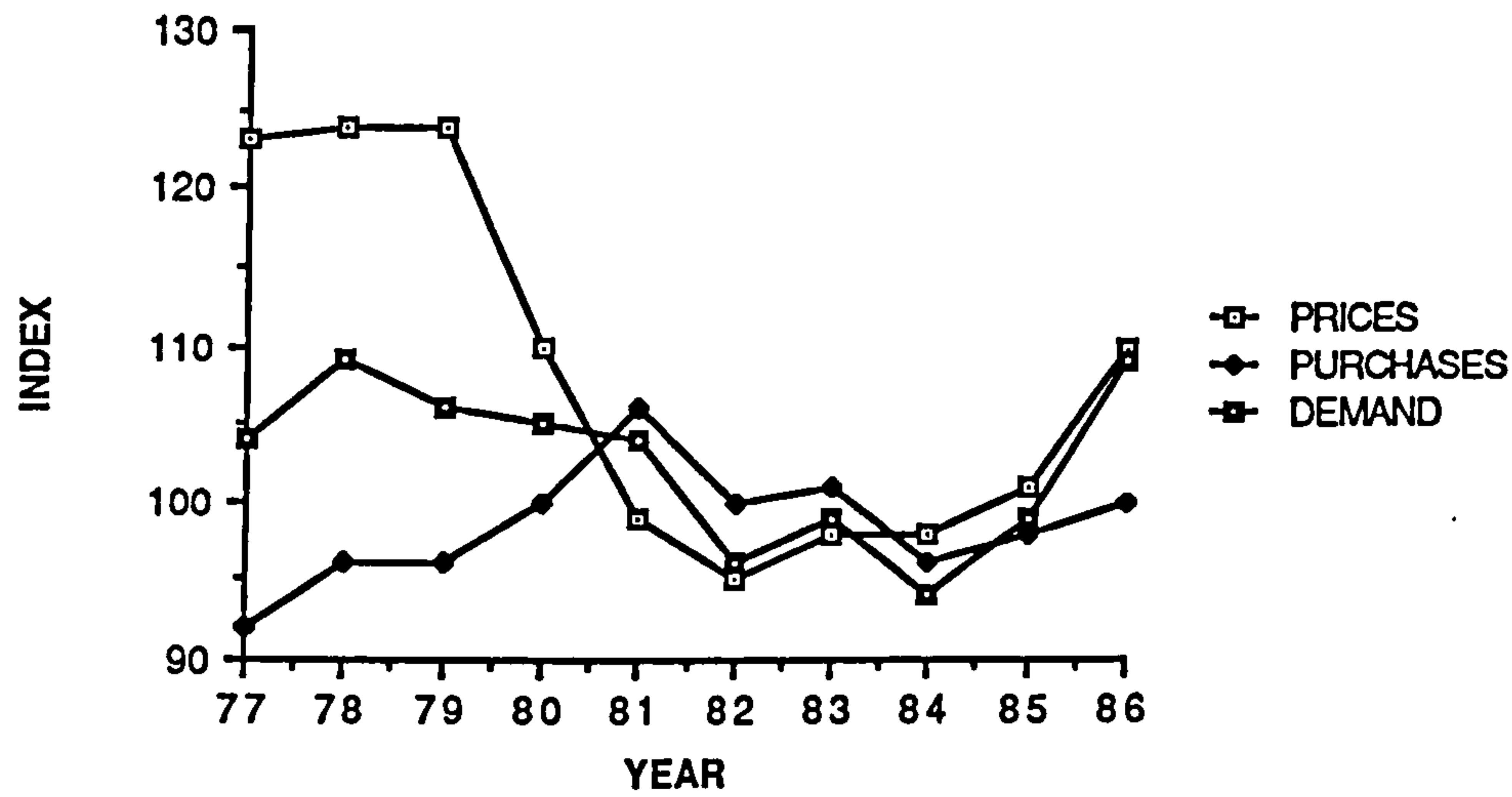


(Base = average for period 1981-1986)

In the case of uncooked white fish, the underlying trend in demand has been positive since 1984, perhaps a reflection of the increased health concern and some improvements in availability. Demand for frozen convenience products seems to be constant. Shellfish have shown the most positive trend in demand while that for processed filleted fat fish has fluctuated quite markedly over the period 1977-1986.

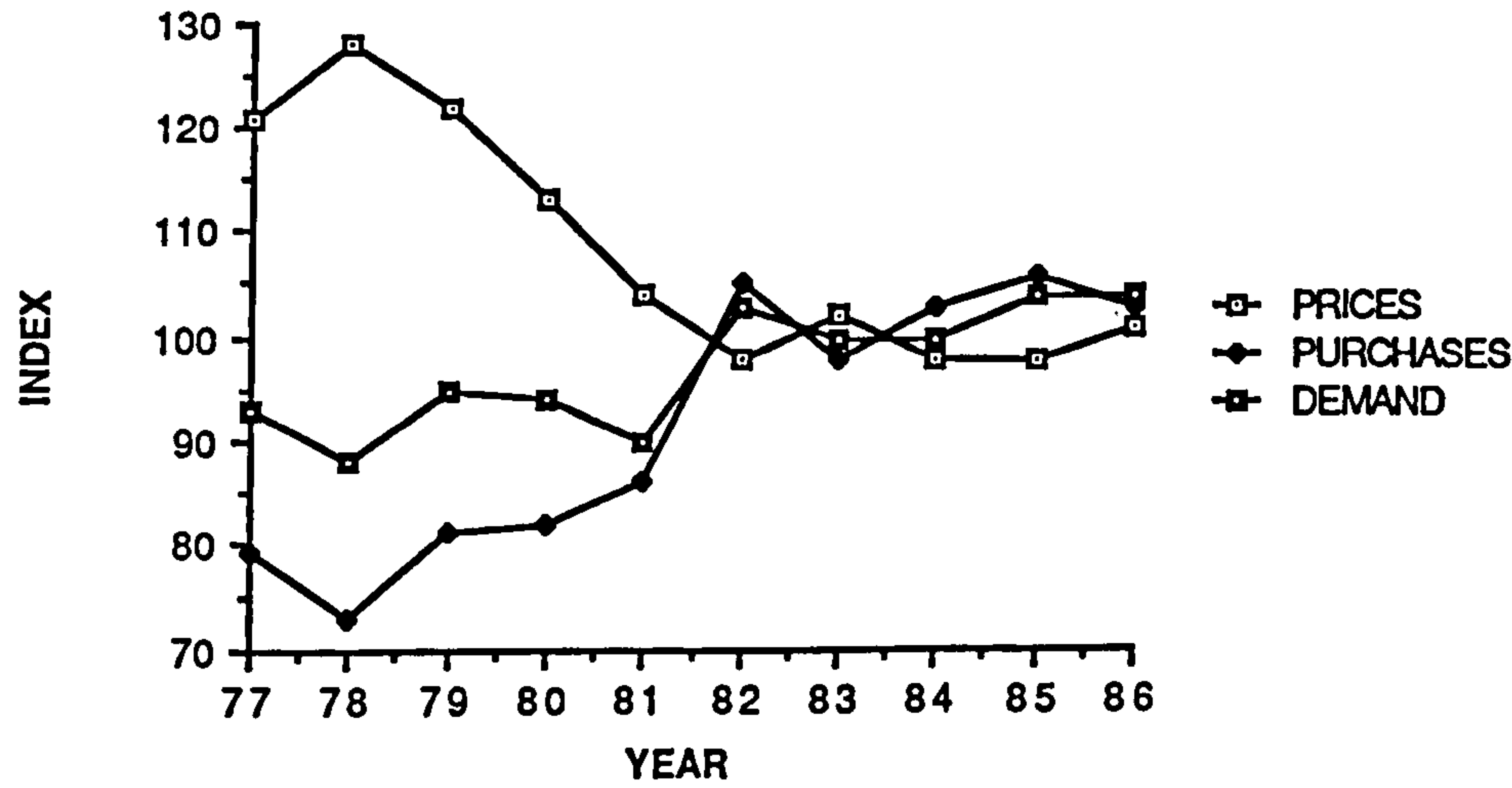
Examining these demand trends in more detail along with prices and purchase information, it is apparent that the fall in real prices of uncooked white fish up to 1982 led to increased purchases. After this period the index of purchases has remained above demand (Figure 3.2). Prices have risen, discouraging consumption, but demand is more positive.

Fig 3.2 Demand Trends-Uncooked White Fish

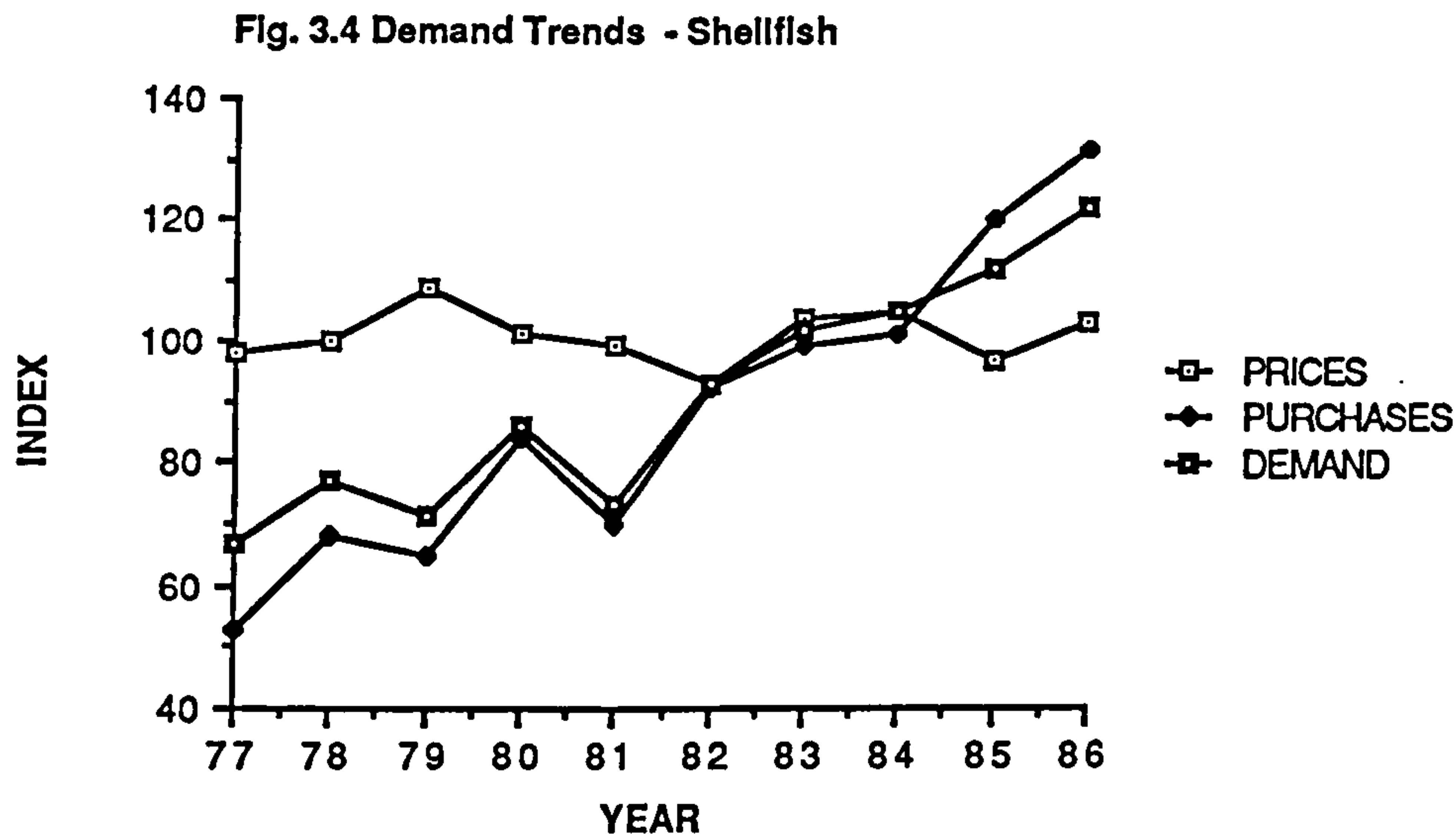


Frozen convenience products have also shown increased purchases and demand appears to have plateaued along with prices (Figure 3.3).

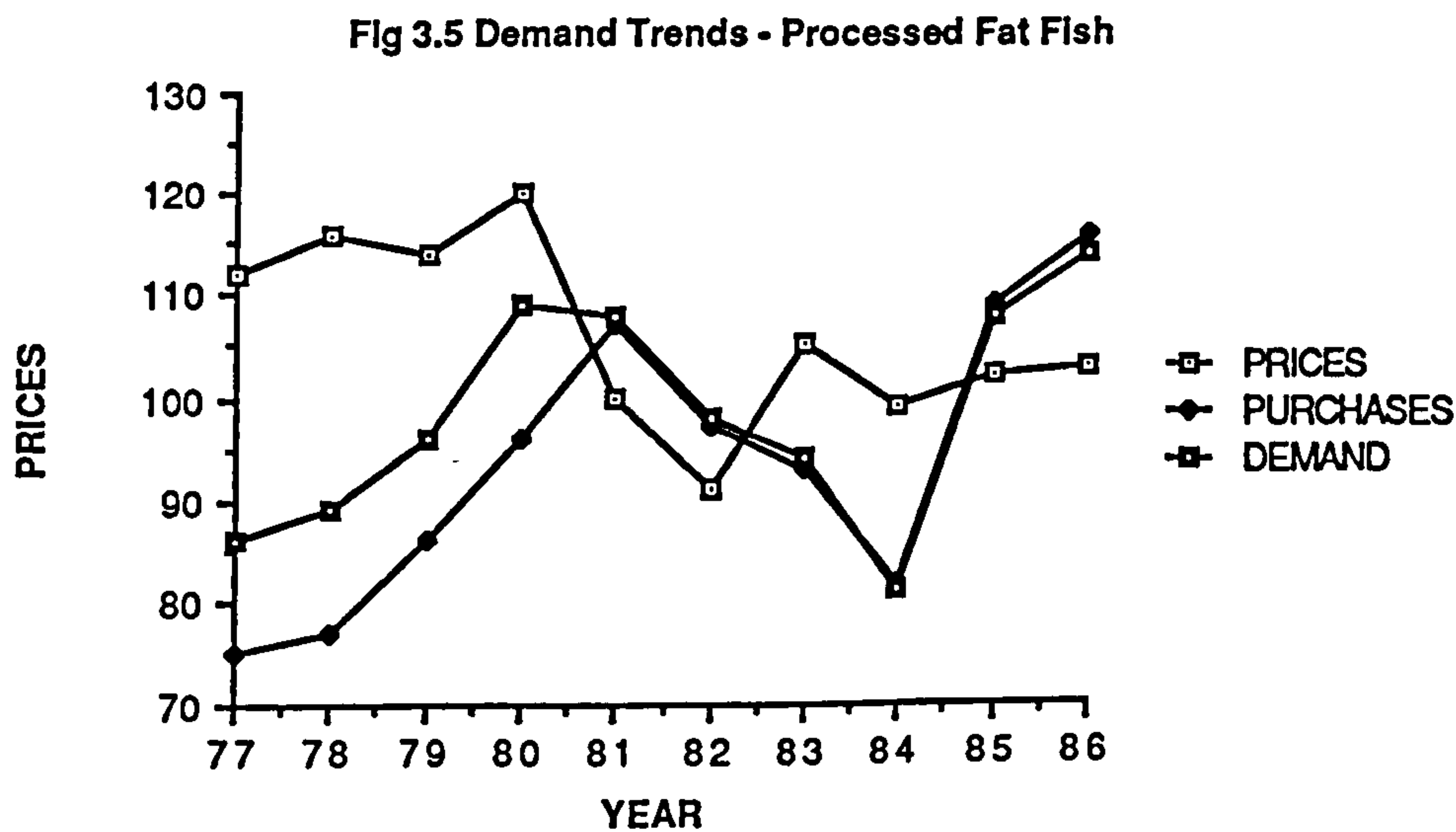
Fig. 3.3 Demand Trends - Frozen Convenience



Shellfish prices have remained constant yet demand and purchases continue to rise suggesting 'other' reasons for this positive trend in purchases (Figure 3.4).



Processed filleted fat fish prices have been fairly constant since 1982, perhaps a reflection of improved supply with the lifting of the E.E.C. ban on herring fishing in 1982 (Figure 3.5). Both purchases and demand trends have been positive since 1984, perhaps in response to new products which have appeared on the market such as smoked mackerel. It will be interesting to see what will happen to this demand trend in the future.



Overall the picture is much more encouraging, for fish consumption than the consumption figures would tend to suggest (certainly for these four products), but particular sectors eg. uncooked white fish remains price sensitive (Section 3.2.3).

The NFS figures relate to foods consumed in the home and an increasing number of meals are being eaten outside the home¹³. This needs to be taken into account when interpreting the figures, although the research is more specifically related to household consumption in the UK. It is also possible to examine household consumption by several demographic indicators.

3.4.1.2 Fish Consumption by Region

In 1986 the highest consumption and expenditure on fish was in the North of England (Table 3.9). The next highest region for consumption is Yorkshire and Humberside, but the South East and East Anglia exhibit higher levels of expenditure. Lowest levels of consumption are in the Midlands and South West. While the lowest level of expenditure is in the South West

Table 3.9: Household Consumption and Expenditure on Fish by Region (1986)

REGION	CONSUMPTION (oz/person/week)	EXPENDITURE (pence/person/week)
NORTH	5.79	54.77
YORKSHIRE & HUMBERSIDE	5.45	49.11
NORTH WEST	5.02	50.87
EAST MIDLANDS	4.93	49.91
WEST MIDLANDS	4.93	46.64
SOUTH WEST	4.91	45.64
SOUTH EAST / EAST ANGLIA	5.16	53.46
WALES	5.36	45.99
SCOTLAND	5.00	45.99

Source: NFS data.

A closer examination of regional consumption reveal highest consumption of fresh fish in Scotland, Wales and the North West. Consumption of prepared fish is highest in the Northern region, Yorkshire and North Humberside, but relatively low in Scotland. Frozen fish consumption is fairly consistent across regions (perhaps a reflection of availability) and highest consumption occurs in Wales (Appendix B:Table B.4). Higher fresh fish consumption in Scotland may reflect a traditional usage of fish, and closer proximity to landing ports (see Rosson, 1975). These regional trends have

¹³It is now estimated that catering now accounts for 52% of the fish market in volume terms (personal communication SFIA).

been fairly consistent since 1977, in Scotland consumption of frozen products have increased at the expense of fresh fish.

3.4.13 Fish Consumption by Income

The highest consumers of fish are E1 households¹⁴ and the OAP'S. These groups are on average consuming almost twice as much fish as the other households (Table 3.10). These two groups, along with the A households are spending most on fish. It is possible that the A households are buying more expensive fish, while the households without any earner and the OAP's are buying cheaper and less processed fish.

Table 3.10: Household Consumption and Expenditure on Fish by Income Group (1986)

Gross Weekly Income of Head of Household

		Households with one or more earners				Households with- out an earner		OAP
	ALL	A	B	C	D	E1	E2	
CONSUMPTION oz/person/wk	5.16	4.73	4.59	4.95	4.39	9.07	5.47	7.88
EXPENDITURE p/person/wk	50.41	55.94	45.36	47.52	39.00	94.99	49.39	74.72
AV. COST*	9.78	11.8	9.9	9.6	8.9	10.5	9.0	9.5

* Average cost is 'consumption' divided by 'expenditure'.
Source: NFS data

Closer examination of the consumption features show OAP's to be higher than average consumers of all types of fish. The A's consumption is accounted for by processed and shellfish, and fresh fish. E1's exhibit very high consumption of fresh and frozen fish but below average consumption of prepared fish (Appendix B:Table B.5).

This pattern of consumption and expenditure across income groups is consistent with earlier NFS data from 1977 onwards. It is the OAP's and E1's who are consistently consuming higher amounts of fish on average.

¹⁴Income per week for A households is over £335/week, for E1 households over £90/week.

This high consumption among OAP's may be the result of a 'vintage' or historic effect (Lesser et al, 1982) rather than income differences with consumption habits being formed in periods when historically there was higher fish usage. High fish consumption post World War Two when fish was largely unrationed may also account for the formation of these consumption habits which have been carried through life as people get older. If so, the question is what will happen to consumption as these people die?

3.4.1.4 Fish Consumption by Household Composition

Single person households currently account for around 23% of the population, with 32.5% of households consisting of two people.

Single person households exhibit the highest consumption of fish (Table 3.11). The general trend is for fish consumption to fall as the number of children in the household increase. This is consistent across the four broad categories of fish (Appendix B:Table B.6) suggesting that children do not like fish¹⁵.

Table 3.11: Consumption of Fish by Household Composition (1986)(oz/person/week)

HOUSEHOLD SIZE						
Households with						
Adults	1		2			
Children	0	0	1	2	3	4+
All fish	8.03	7.25	4.27	3.79	3.54	3.09

Source: NFS data

These figures are consistent with those for other foods - the larger household 'consumes' less per person. However, the dramatic drop in consumption of fish in two adult households, occurs in the case of fresh fish where consumption fell from 2.83oz/person/week to 0.85oz/person/week with the arrival of one child and then fell by a further 20% when two children are present (Appendix B:Table B.6). Consumption of processed and shellfish drops by some 50% per person with one child in the

¹⁵Several questions need to be raised with this assumption, firstly do the buying patterns of single person households differ from those catering for a family? Do households with children use fish in similar ways? Sovang (1982) in a Norwegian study also found consumption to be lower in households with children. But there has been no scientific evidence to support the claim that children do not like fish (Jellestad, Nivison, Ursin, 1985, Jellestad and Solbue, 1987).

households. Frozen and prepared fish consumption does not appear to be so badly affected. Frozen fish consumption actually increases with 3 or 4 children in the household, but still remains lower than households without children. It may not be that children do not like fish but rather the form in which it is available, or a reflection of adult attitudes towards serving fish to children.

3.4.1.5 Fish Consumption by Age of Housewife

Fish consumption appears to be related to the age of the housewife. In 1986 young housewives (<25) spent less than average on all fish and fish products except for frozen fish. It is older housewives (>65) who spend most on fish, (twice as much on fresh fish than other housewives), 55-64 year old housewives spend most on processed and prepared fish, although differences in average expenditure between housewives is not so marked in the case of prepared fish (Appendix B:Table B.7). These patterns are fairly consistent since 1977, although older housewives seem to have increased their expenditure on fish, as have the under 25's.

This characteristics may be attributable to a 'vintage' effect referred to earlier (Lesser et al, 1982). Older consumers are more familiar with fish due to historic differences and the degree to which they used it as part of their meal system also, as housewives get older and more experienced in cooking they may use more fish. If the latter is the case then there is less cause for concern. However if the vintage effect does exist then the generation of fish users is literally dying out. An examination of age cohorts over an eight year period reveals some trends in expenditure by different age groups.

Table 3.12 suggests that average expenditure on fish has increased in all but the cohort which was under 25 in 1978. This is almost certainly strongly influenced by the shift towards higher priced frozen and prepared products..

Table 3.12: Expenditure on Fish by Different Age Cohorts

AGE (In 1978)	<25	25-34	35-44	45-54	55-64	65-74
Expenditure on fish (1978) (as a % of all h/holds)	72%	79%	86%	115%	136%	138%
Expenditure on fish (1986)	69%	88%	110%	141%	153%	145%

* This Table compared expenditure by age conHORTs across an eight year period based on age in 1978
Source: NFS data

Overall it appears that consumption of fish is increasing, accounted for mainly by growth in the frozen and prepared sectors. Fish consumption (and expenditure) is higher.

- (i) in the North
- (ii) amongst the OAP's
- (iii) in households without children
- (iv) amongst younger housewives

3.4.2 ADDITIONAL INFORMATION

Previous studies on fish consumption have focused attention on product attributes and consumer attitudes towards the product, highlighting its limited use, and stressing the preference of the UK consumer for a limited range of traditional species (see McSween, 1973; Keay and Hardy, 1978; RSGB, 1980; Ross Report, 1981; Leatherhead Food RA, 1987). This limited use of fish has been attributed to negative product features such as fish bones, unpleasant cooking smells and storage problems (McSween, 1973) along with problems of family acceptability (Halls, 1983).

Fresh fish is regarded as the 'ideal' form (Q-Search, 1982) frozen is more widely available (Cartwright, 1982) and appears more generally acceptable to "a generation that has grown up who have never experienced fresh fish, do not know how to buy it and who indeed probably believe that fish have fingers instead of fins" (Wight et al, 1981, p5.).

For some frozen fish, and new convenience products hold the most promise (Young, 1987, 1982; SFIA, 1983a). Problems with acceptability with frozen fish seems related to poor quality, packaging and presentation (Goulding, 1985; Quick Frozen Foods 1981; Wattenmaker, 1984). Few of the studies address the influence of social and cultural factors in the decision to use fish the exceptions being Q Search (1982) and Miklos (1981) in the USA.

3.5 MARKET IMPLICATIONS

Consumer preference is currently for demersal fish in a limited range of forms. The market for fish in the UK has over the past ten years, witnessed an ever increasing demand for frozen and prepared products at the expense of fresh and processed products. This increasing demand for demersal species, fuelled by the proliferation of frozen products based on demersal fish, has led to greater dependence on imports in the face of declining UK suppliers.

Ready meals and convenience products offer most promise, their high added value making them commercially attractive. This is a major growth sector and one area for further new product development. Such products seem to appeal to the younger, consumers rather than their families.

Recent interest in fresh fish, an offshoot of the healthy living issue, is being aided by improved availability via supermarket chains, and packaging developments. Demand remains highest amongst the older consumers and those families without children. Primary demand is for cod and haddock, although farmed fish and a few species e.g. monkfish are experiencing improved demand. There is some evidence of a demand for a broader range of species.

Prepared fish, essentially canned, is experiencing steady growth although the sector appears to lack product innovation. This is a traditional outlet for fatty species.

The processed sector offers promise only with respect to shellfish (sales included in NFS data) where growth has been prolific. Indeed the interest is developing with respect to an improved supply.

It is possible to characterise different types of user, and identify those segments which currently do not use particular forms of species. It may be possible to encourage non-users to consume fish, or segments of the market to try other products e.g. young housewives trying fresh fish., but this requires the investigation to move beyond the descriptive phase.

Any introduction of new products requires knowledge, not only of those markets which offer most promise, but knowledge of the consumers and how they behave. By more clearly understanding the consumer usage behaviour and attitudes towards fish one can more effectively design and market new products.

An examination of the elasticities of demand has shown that fish consumption is unlikely to increase with any rise in income, the exception being shellfish . Indeed the degree of substitutability between particular fish products is quite high. It is difficult to explain recent consumption changes in terms of price alone which argues strongly for social and behavioural expectations of food use.

A broader research approach which encompasses these behavioural aspects is necessary to determine the status of fish within consumption behaviour, reasons why, for example, particular types of fish are unpopular with men and children. The way in which current beliefs and attitudes, affect decision making, and food selection. The data at present does not tell us how fish is actually perceived and used, when and how it is cooked and served and to whom. It is essential to understand the relative importance of various influences which come to bear on the decision to use fish (bones, smell, health, convenience, type of meal). The research attempts to address this issue, in order to more effectively provide for those market needs, and determine why fish consumption remains so low.

CHAPTER 4

RESEARCH METHODOLOGY

This investigation involved a range of research methodologies. It was hoped that these would contribute to a 'clearer' understanding of the complexities of food choice, by examining behaviour from a range of perspectives.

"Desk" or "secondary" research (a review of existing research findings: Chapter 3) was followed by "primary" research which specifically addressed the reason for low fish consumption in the UK. This involved:

- 1) group discussions conducted in various parts of the UK
- 2) a food diary study of 102 households in Tyneside over a two week period
- 3) a national UK survey of consumer attitudes
- 4) testing experimental products in focus group interviews.

The qualitative stages of the research (group discussions) were concerned with exploring the dimensions of food choice and attempting to understand this behaviour from the consumers perspective. The quantitative stages (food diary and national survey) were designed to empirically test some of the findings generated from the qualitative stage. The different methodologies are reviewed below.

4.1 QUALITATIVE RESEARCH

We have already seen that food choice is under a range of influences including physiological, social, cultural and economic (Chapter 1). The objective of the primary research was to more fully understand food consumption behaviour and the factors which influence food choice, with specific reference to fish products.

Desk research revealed an overall decline in consumption of fish, alongside a growth of the frozen and

•
'convenience' sectors, and identified characteristics of the fish consumer (older housewives without children etc.) But desk research offered little insight into why this decline in consumption had occurred.

It would be dangerous to assume that we could simply determine, in advance, the important influences on behaviour (based on our own experience), without reference to the subjects under study. Qualitative research is therefore essential to the investigation as it attempts to disentangle this network of influences on food choice.,

4.2 QUALITATIVE RESEARCH METHODS

Qualitative research methods include participant observation, individual interviews and group discussions (see Gordon and Langmaid, 1988; Tull and Hawkins, 1987; Churchill, 1987; Chisnall, 1973 for a general discussion of these techniques). Such techniques are currently employed in marketing research to:

- a) generate hypothesis for testing at a quantification stage;
- b) as exploratory investigations to gain
 - i) insight
 - ii) understand consumer profiles for the purpose of explanation;
- c) to obtain reaction evaluation to services, advertising etc.;
- d) to investigate meaning;
- e) to obtain some idea of product or brand imagery.

(from Baker et al, 1984)

Qualitative techniques are considered appropriate where explanation and understanding of behaviour are required, as was the case in this research (Goodyear, 1977).

Qualitative market research applications stress the advantages of research flexibility and the ability to access understanding not permitted with more rigid research methodologies.

However, with a commercial focus on specific products, brands and advertising campaigns the research is often confined to a narrow research brief focusing on specific products or a single aspect of behaviour (Goodyear, 1977; Dickens, 1977; Wasson, 1978). Given these restrictions the research often fails to locate the behaviour in this wider social and cultural context. To understand meaning we also need to understand the context from which meanings arise (Calder, 1977).

Qualitative research permits investigative manoeuvrability. It is necessary to explore the dimensions of food choice as outlined and attempt to examine the meaning attached to that behaviour. In order to access meaning and assist in understanding behaviour one needs to examine behaviour from the participants viewpoint (see Glaser and Strauss, 1967; Calder, 1977; Durgee, 1986). The meanings arise for a person out of the way in which others respond towards the person or object e.g. food (fish perhaps!). Meanings are shared and they make sense through the process of social interaction (Blummer, 1969; Schwartz and Jacobs, 1979) which highlights the need to consider these 'shared' meanings.

4.2.1 GROUP DISCUSSIONS

Group discussions are useful and effective at this early stage of the investigation and permit one to move beyond the descriptive stage. Group discussions commonly involve, under the direction of a group moderator, eight to twelve individuals who are invited to discuss a particular issue.

The moderator controls the flow and direction of the discussion. As rapport is established the moderator becomes 'sensitised' to what constitutes relevant and meaningful issues to the respondents. Given this flexibility the moderator needs to listen carefully and can direct the discussion towards specific areas of interest encouraging discussion and elaboration on particular points or aspects of behaviour. This approach allows the opportunity to 'probe' for clearer descriptions in an attempt to understand aspects of behaviour and their related meaning.

4.2.1.1 Advantages of group discussions

Group discussions offer research flexibility and a degree of sensitivity to the research issue. The main benefits of the group are the 'synergy' which this method permits, the spontaneity of response and the fact that method is response rather than question orientated (see Dickens, 1987; Fahad, 1986; Drayton and Tynan, 1986; Wells, 1974). They also introduce serendipity.

and Tynan, 1986; Wells, 1974). They also introduce serendipity.

Free discussion is encouraged and rapport is built up among the participants in an atmosphere where respondents are relaxed. The dynamics of the group need to be carefully monitored to ensure individuals do not feel isolated, intimidated or inhibited (Rowan, 1977).

4.2.1.2 Disadvantages of group discussions

Group discussions may be less appropriate where a variety of tastes exist and the group is highly heterogeneous, complex, or where sensitive psychological or sociological issues are involved (e.g. sexual behaviour, women's work roles, personal hygiene etc.).

There is always the danger that the moderator and the group may lose a sense of perspective (more of a problem in commercial market research than its present application). Minority viewpoints may be lost, or a strong personality may monopolise the discussion (Drayton and Tynan, 1986). One must remember that agreements may actually represent a compromise and mask actual diversity of opinion. In turn one may interpret responses incorrectly. This cannot be eliminated but a clearer understanding of the 'ethnographic' context or any 'colloquialisms' should reduce the likelihood of such an error. In addition groups may not represent the target market due to problems in recruitment (see Crimp, 1985).

4.2.2 ENABLING TECHNIQUES USED IN THE GROUP DISCUSSIONS

Despite the flexibility this approach offers it is not always possible to elicit responses to direct questions. Barriers in this communication process may arise due to an inability or unwillingness to verbalise or communicate feeling on an issue, due to a lack of awareness, a desire to please or appear polite or alternatively a wish not to appear irrational (see Oppenheim, 1966, pp161-162). These barriers can create problems in obtaining information and gaining a full understanding of the issues under investigation.

The focus of attention on the symbolic meaning of consumption has seen a range of enabling techniques, developed in the market research field, to explore subconscious emotional feelings and motives (see Sampson, 1985, 1986; Lannon, 1985, 1987).

Enabling techniques elicit responses which may be difficult to achieve through normal question and

answer techniques. They include projective techniques, free association, picture association and story completion (see Gordon 1986; Schlackman, 1986). These techniques use stimulus material which acts as a vehicle for respondents to express unconscious feelings indirectly. However one needs to be aware of their limitations, for instance description may not amount to proof (Tuck, 1976).

In this study enabling techniques were used to complement direct questions and make it easier for respondents to discuss the everyday task of food provisioning. Much of this behaviour is taken for granted and its order is unreflexively accepted.

4.2.2.1 Story completion (the meal test)

Food provisioning is not regarded as an 'object of scrutiny', rather something which simply needs to be done each day. For routine tasks such as food provisioning respondents rarely stand back and actually assess their behaviour.

The meal test was designed to find out how fish and fish products fitted into a pattern of food provisioning. It aimed to open up connections between choices in foods, preferred tastes and practical aspects of usage such as preparation and serving, as well as addressing issues such as food appearance and acceptability for different types of meal occasion.

In order to understand the importance and relevance of the food provisioning task and the range of influences which come to bear on this daily routine it was necessary to devise a way of systematically taking individuals through their daily routine. One such approach would have been to directly ask respondents about their meals of the previous day, but it was felt that this would not provide comparability, or generate discussion between respondents on what rules or norms they were following. One also comes up against the problem of selectivity in memory recall.

The 'meal test' asked individuals to think about what they would do in an imaginary situation, and attempt to explain their behaviour at each stage. It got people to spell out their reasons, feelings and motives for using particular foods. It also helped the group to relax and 'form' stimulating better discussion. It was presented as a game so respondents would feel under less pressure to give 'correct' answers.

THE MEAL TEST

Imagine that you are shopping for food for a typical midweek day: you have to buy food for everyone in the house, and prepare the usual main meal or meals;

How do you start?

What is the first thing you think of?

The first thing you do?

You have to go out to shop;

Where would you go?

How would you get there?

What would you take?

You get to the first shop;

What is it like?

Where do you go first in the shop?

What do you want to buy?

You find that they have sold out of this product, and it is just on closing time: the only thing they have is fish and fish products, although there is a good selection;

How do you react?

What would you do now?

OK there is no alternative but to buy some fish;

What kind would you buy?

Why?

Would you buy anything else?

Why?

You leave the shop and travel home: the meal has to be prepared, so you begin the preparation

How do you start?

What sorts of things do you have to do?

How do you feel about it? (prompt - are you looking forward to the meal, is it less than ideal, are 'they' going to complain about it, what problems do you anticipate) etc.

The meal is being served;

How do you go about it? (special preparation, where will it be served, will you eat together with others or separately - kids in front of the TV) etc.

Household members are eating the meal;

What are they saying and doing?

What are they thinking?

The meal is over;

What happens now?

Who does the cleaning up?

Are there any other problems? (leftovers, smell) etc.

What do the other members of the family do?

Respondents were asked to imagine a situation in which they had to prepare an evening meal for their family or themselves depending on individual circumstances. They were told that they had no food in the house and had to go shopping for the food, then prepare, cook and serve a meal for whoever was going to be present. As respondents were asked a series of questions and particular conditions were read out, they had to write or note their responses, thoughts, feelings to each of the questions, but

refrain from discussion until the test was completed. In this way each individual's response was not conditioned by other participants.

The meal test elicited views on all aspects of food provisioning and established reactions to particular enforced situations e.g. respondents, after deciding what to buy, were told that they were restricted to only buying fish or fish products.

Its main strengths lie in the fact that the meal test served as a good way to relax the group, respondents felt comfortable with the technique. The recorded responses, which served as a basis for discussion, reminded participants of how they had initially responded at each of the stages in the meal test. It was essential to examine the participants' responses at each of the stages and probe their attitudes and reported behaviour.

One major weakness in this respect was the direct admission that the research was interested in fish and fish products. However, discussion of the initial food choices and reasoning behind these permitted an investigation of the place in the diet of fish relative to other foods. The meal test was not used for meat or poultry products and there was no indication, in the test itself, if participants react differently when the choice is restricted to these products, although the group discussions did compare fish with other foods. The design of the test may also have placed undue emphasis on particular stages in this food provisioning process.

4.2.2.2 Personification

Personification requires participants to imagine different types of fish product as "real people". The images often betray feelings about the status of the products. It allows one to explore the images which different products evoke for the participants. Projecting these images onto imaginary people helps to overcome the problem of participants simply regurgitating product features. The development of the personification techniques allowed a different perspective on reaction to specific types of fish products.

The prompts used in the personification exercise covered personality features, work, leisure activities, geographical location and lifestyle characteristics. The personality features were useful in exploring the image of the products - were the imagined people interesting?, boring?, the sorts of people the participants would want to know?, and so on. The personification exercise was used as a focus for

discussion as descriptions were probed and participants questioned about reasons for their associations.

4.22 3 Picture association

This technique involved showing participants three pictures of fish and fish products - smoked haddock on a plate surrounded by salad; breaded scampi by itself, and various types of filleted raw fish included white fish and salmon (Appendix E). This exercise attempted to relate the evaluation of fish as a food to practical and functional aspects of meal appropriateness.

Individuals were asked where they would expect to eat each of the different types of fish shown, at what time, with whom, and what sort of occasion it would be. They were asked if it was the sort of fish which they would serve to their family and who would be likely to eat it.

One advantage with this technique is the ability to get participants reaction to very specific types of fish and, on past experience, determine their perceived appropriateness of these fish for specific occasions. It also helped to substantiate the discussion on meals. As with the personification exercise the picture association was used as a focus for discussion to probe the reasons behind the participants responses.

4.22.4 Sentence completion (pen and pencil test)

This short sentence completion test was administered at the end of the discussion and asked six very simple questions (Appendix F).

1. My favourite type of fish is.....?
2. I would BUY MORE fish if.....?
3. The BEST thing about fish is.....?
4. The WORST thing about fish is.....?
5. The meal that fish is MOST SUITABLE for is.....?
6. Fish is NOT SUITABLE for.....?

4.2.2 GROUP DISCUSSION AIMS

The qualitative research aimed to investigate:

- 1) forms, constituents and typical structures of different types of meals, and the place of fish and fish products in this system.**
- 2) consumer perceptions of fish in general, different species and types of product.**
- 3) aspects of consumption behaviour (including shopping, food preparation, cooking, serving, eating, and disposal) which are relevant to the acceptance of, or resistance to, fish as a meal item, and the comparison of fish with other foods (meat and poultry)..**
- 4) the nature of food occasions in which fish would be used.**
- 5) food beliefs in relation to fish usage.**
- 6) and to produce a typology of fish users.**

More specifically why does fish consumption remain low despite its perceived healthy nutritious image? Why had demand shifted from fresh to frozen 'convenience' products and canned products? Although real expenditure on meat is falling, and the real price of fish has declined why has this not resulted in significant substitution of fish and fish products? How can we explain the differences in consumption across regions, income groups, and different types of household?

4.2.3 THE GROUP DISCUSSION SAMPLE

Ten discussion groups were professionally recruited and located strategically throughout the UK to give a good national representation (Appendix C). Each group was professionally recruited to a specific quota control and introductory letters provided (Appendix D). The profiles of the different groups covered frequent and infrequent users, and a cross-section of age groups and social classes in order to give a diverse range of experiences, attitudes and opinions. Each of the groups consisted of six respondents and two moderators. All the discussions were tape recorded and the material represents

over twenty hours of discussion. The presence of the tape recorder presented no major problems and allowed the moderators to concentrate on the discussion development and other non-verbal clues which aid interpretation of meaning. The groups were held in recruiters homes although as Payne (1976) claims they could be held almost anywhere, although a normal and familiar setting, or at least one where they feel at ease is, however, advisable (MacFarlane-Smith, 1972).

4.3 QUANTITATIVE RESEARCH

In the British cuisine fish appears to be restricted to specific types of meal, and its use comparatively limited by the time and skill required to prepare and cook it. Meals, because they occur every day are often taken for granted and as a result this obscures the complexities involved in planning meals, buying food etc. (as well as making it more difficult for respondents to discuss the issue and collect additional information on meal formats and food provisioning). An objective measurement was required to test some of the findings from the qualitative research.

4.3.1 RECORDING FOOD USAGE: SURVEY OR DIARY?

The evidence on survey versus diary methodologies suggests that the greater the time lapse between the occurrence of the behaviour and its recall, the greater the likelihood of recall decay and inaccurate reporting (Grootaert, 1986; Sudman and Ferber, 1974; Neter, 1970; Pearl, 1968; Parfitt, 1967; Neter and Waksberg, 1965; Mertz, 1956). The major problem with asking people what they ate yesterday or last week, is that they tend to forget. While the diary method often involves an element of recall several authors researching methods for recording expenditure data regard the use of recall methods (i.e. survey) as generally inadequate (Sudman and Feber, 1974, 1971; Fleuk et al, 1971; Pearl, 1968; Sudman, 1964).

At an aggregate level survey methods appear to be as accurate as diary methods, but less accurate at the level of individual behaviour (Wind and Lerner, 1979; Parfitt, 1967; Quackenbush and Schaffer, 1960; see also Stanton and Tucci, 1982).

One of the major problems with the survey methods is the extent of over or under reporting. This appears to be related to the type of products and the level of respondents product involvement. Alcohol consumption, for example is often underestimated and consumption of low involvement products is often under-reported (see Hu and Brunning, 1988; Kemsley, 1961; Goldberg, 1957;

Mahalanobis and Sen, 1953). In the case of food the amount of time spent acquiring, cooking and presenting food suggests high involvement, yet the everyday nature of food provisioning suggests low involvement. More specifically it requires high time involvement.

4.3.2 DIARIES

Quite simply, diaries are a great way to record behaviour.

On the above evidence, they appear to provide a more accurate means of recording behaviour due to the problems of recall which are likely to be manifest in the case of food usage as a consequence of:

- a) the frequency with which this behaviour occurs;
- b) the large number and variety of food items which are consumed each day;
- c) the 'taken for granted' nature of food provisioning
- d) the low cost of individual items

Diaries were relevant to this research as a means of testing the restricted place of fish in the British cuisine and how fish fitted into food provisioning patterns. In order to identify this pattern it was necessary to record consumption over time. Diaries permit one to do this unlike surveys which provide a 'snapshot' of behaviour. The diary also allows the participant to record information as close to the event as possible, thus reducing the problem with recall.

Diaries are used in both ad hoc and continuous market research and the design of the diary depends on the nature of the information required. Diaries are prolific in their data output and can provide a wide range of information - price, income and cross-price elasticities, physical substitution of products, acceptance of new products, retail product movement, advertising and promotion effects, merchandising effects, demand shifts, retail price levels, demographic profiles of users and a host of other data (Quackenbush and Schaffer, 1960).

Most diaries used in consumer panels which are ultimately concerned with performance and distribution of products and brands e.g. in the UK Audits of Great Britain operate several consumer panels - Television Consumer Audit (TCA), Attwoods Panel Toiletries and Cosmetics Purchasing Index (TCPI) and Personal Purchasing Index. Panels are also operated by British Market Research Bureau (BMRB) which established the British Analysis of Record Sales (BARS).

Others include Taylor Nelson: Family Food Panel and Forecast Market Research Ltd: Motorists Diary Panel. In the USA the national consumer panel is operated by Sam Barston on behalf of the Market Research Corporation of America (MRCA). Most of these panels use a 'ledger' diary to track brand performance.

Diaries are also used extensively in sociology often to support observation and participation research, or where these techniques may not be possible for moral or ethical reasons in various activities e.g. burglary. In turn much of the investigation may involve private rather than public activities thus imposing constraints on the investigator. Diaries include personal diaries (Plummer, 1983; Plummer and Faraday, 1979; Allport, 1942; Palmer, 1928). The main type of diary are 'request diaries' (Mass and Kuypers, 1974), 'log-time diaries' (Barker and Wright, 1951; Sorokin and Berger, 1939; Gershuny and Thomas, 1983, 1982) and the 'diary interview' method (Zimmerman and Weider, 1977).

4.3.3 FOOD DIARY AIMS

The food diary aimed to provide information about the way in which fish and fish products fit into household food consumption patterns and empirically test the restricted use of fish in the British cuisine. It aimed to measure food usage as a household rather than an individual activity and by doing so to uncover the unspoken rules of food inclusion or exclusion. Examining the types of meal which fish is served at and the sorts of food which it is served with should help to more accurately 'locate' fish in the meal system.

The qualitative research had suggested that fish was more likely to be restricted to less formal, lighter meals and cooking and preparation regimes would be limited. It seemed important to make the distinction between light and main meals and identify where fish was being used in these meals.

It was anticipated that 'light meals' would pick up on those food events which involved more than simply 'a cup of tea and a biscuit'. Snacks were not included in the food diary due to the relatively unstructured nature of these food events and the additional demands which this would have placed on the sample.

The food diary was confined to the home again due to the additional demands on participant households and the concern with the declining demand in this sector of the market.

The aims of the diary were to empirically identify:

- 1) the frequency of fish use;
- 2) characteristics of meals containing fish;
- 3) the type of fish and fish products used;
- 4) the way in which fish was bought, cooked and prepared ;
- 5) the combination of fish with other foods;
- 6) the usage of fish relative to meat;
- 7) determine user characteristics by relating fish usage to demographics.

4.3.4 FOOD DIARY DESIGN AND FORMAT

The food diary utilised flexibility in its design by permitting respondents to record daily meals and food used in chronological order. Respondents were requested to record all the foods served at each meal, especially in those cases where household members ate different foods.

This open design is crucial in order to disguise the fact that the main concern is with fish consumption, it ensures that behaviour is recorded in context, without directing undue attention towards fish consumption. This also permits some insight into meal structuring, the characteristics of individual meals, and household definitions of light and main meals.

However it does create the problem of selectivity, in that diary keepers are responsible for the amount of detail they record for each meal. The problems with presenting an open format are apparent at the coding stage, however the development of a completely closed diary listing all goods and reproducing this for every possible meal occasion would have resulted in a rather cumbersome research tool.

Information was required on the types of food use in main and light meals over a two week period (NB. snacks and cups of tea/coffee were excluded). It was important to obtain further information about the foods used. More specific information was required on:

- 1) Meal name and starting time
- 2) Type of food bought (i.e. fresh, frozen , etc.)
- 3) How the food was prepared

- 4) Time required to cook and prepare the individual foods
- 5) Meal duration
- 6) Food served hot or cold
- 7) Who ate the food
- 8) Who prepared the meal
- 9) Number of courses involved
- 10) Whether it was a light or a main meal
- 11) Day of the week

This information was required to test some of the qualitative findings. The meal name and the starting times of the meal was required to give some indication of the types of meal and time of the day when fish was used to specifically locate it in the food provisioning pattern. This information was supplemented by the day of the week on which the meal took place and whether it was considered to be a main or light meal. This was particularly relevant given the strong association of fish with light as opposed to main meals.

The type of food bought was recorded to assess the relative popularity of different types of fish products vis a vis other foods, the qualitative groups had suggested that fresh fish was preferred but relatively inconvenient. It also provided information on food combinations and which foods were complimentary.

The food preparation methods were expected to be related to the type of product bought but the popularity and range of methods used were of particular importance given the restricted range of methods which the discussion groups reported on. The time involved in cooking and preparing the food served as an indication of the extent to which fish would be perceived as 'convenient' although cooking times were reportedly short preparation times were considered a negative feature in the discussion groups, particularly with fresh fish. The information on preparation, cooking and meal duration times were estimated. (Participants were not required to 'time' these activities.)

Meal duration was included as a measure of importance attached to a meal occasion, it was assumed that more important meal events would last longer. Food served hot as opposed to cold was recorded to examine the incidence of cold as opposed to hot meals and if there were any particular characteristics specific to fish. Main meals were also assumed to be more likely to involve hot foods.

Who ate the food was recorded in order to determine if there were any identifiable trends across the sample with respect to particular likes or dislikes. In addition it was important to see if the presence of guests, or the head of the household had any influence on the types of food served. The preparation of the meal was also recorded to determine the extent to which food preparation was a shared activity within the household.

The number of courses involved was recorded to get some idea of the number of courses involved in fish meals as this was felt to be related to the importance attached to the meal. The diary keeper was requested to draw a line separating the meals into courses, where more than one course was served.

To ensure this information was obtained a 'ledger' diary style was adopted (Appendix G). Categories were devised for the type of food bought, how it was prepared and who ate the food. Participants were required to indicate which of the categories were relevant to the individual foods by placing a tick [✓] in the appropriate box. The flexibility of the design is removed in this section but it guarantees that further usage information is collected in a systematic fashion with common preparation and purchase descriptions. This design eases coding and also facilitates speed and ease of diary completion. Any improvements in the task of diary completion is to be welcomed, especially in the case of heavy users.

In addition the diaries provided information on the household. most of this information related to the household characteristics and the person responsible for completing the diary (later referred to as the Key Kitchen Person (KKP) a term borrowed from American studies of food consumption (see Douglas, 1984)). This information included:

the age of the Key Kitchen Person

the educational level of the Key Kitchen Person

the size of the household and details on household members

social grading of the household (based on the highest social grade of a household member)

gross household income

expenditure on food for the household in the previous weeks

ownership of kitchen utensils

usage of cookbooks, TV food programmes, and attendance at cookery classes

This information was recorded in order to assess if there was any relationship between fish usage and demographic features of the household.

4.3.4.1 Advantages of the food diary

In addition to the general advantages of the diary method in recording usage information the food diary permitted the collection of a vast amount of data on food usage and meal formats. It also allowed information to be recorded in the home under the control of the person mainly responsible for food provisioning in the household.

The food diary made it possible to test some of the findings from the qualitative research which related specifically to usage behaviour. It was possible to identify the types of meal which different types of fish and fish products were used in along with the preparation and cooking regimes used and essentially to satisfy the aims of the food diary (see 4.3.3).

4.3.4.2 Disadvantages of the food diary

The first study indicated some categorical problems with respect to cooking and preparation regimes as well as highlighting certain ambiguities in recording more specific information about the foods used. Some respondents failed to use the daily sections of the diary but as information regarding the day of the week was recorded against each meal, this did not present a major problem.

Thorough briefing of the interviewers ensured that the occurrence of missing data was minimised although there was evidence of some incomplete information e.g. foods were recorded but data was missing or how they were cooked etc. The diary exercise was also expensive to operate as participants received gift vouchers in return for participating and interviewers paid for their services.

The diary only permitted insight into the ways in which food was used and the pattern of food taking in the home. It was not possible to examine consumer attitudes or probe the reasons for this behaviour.

4.3.5 THE FOOD DIARY SAMPLE

The diaries were piloted and refined and the full study carried out in the spring of 1987 on a sample of 102 Tyneside households. The standard error on a sample of this size is too large to draw any conclusions about the UK population. However, the study attempts to develop a methodology, and in this respect can be regarded as a large pilot.

The need to examine the meal structures and the usage of fish demands a range of households be examined, rather than a representative national sample (where the objective is to discuss conclusions about the population in general). The sample region represents a good cross-section of the population and is frequently used as a test market for this reason. In this respect it increases the confidence in utilising Tyneside as a testing ground for the methodology.

Ten professional interviewers were used in the study to select and recruit the sample, selected using quota controls. The interviewers were briefed on the project design and they were responsible for explaining the diary procedure to the participants and collecting the diaries at the end of the study period.

Table 4.1: Food Diary Quota Controls

HOUSEHOLD SIZE	%	SOCIAL CLASS	%
1 person	20	AB	20
2-3 people	40	C1C2	40
4 or more people	30	DE	20
Any	10	Any	20
TOTAL	100	TOTAL	100

Households were defined as identifiable units consisting of one, two or more people living together in the same dwelling. Multiple person households e.g. student flats where individuals buy and cook food independently of one another were treated as single person households. Ten areas were used for sampling and the quota specified household size and social grade.

Each of the respondents received gift vouchers as a token of thanks for their co-operation. This acted as a form of incentive, but recruitment was based on willingness to participate in the study. The study was carried out in the spring of 1987, and ran for the full two weeks.

4.3.6 MEASURING ATTITUDES TOWARDS FISH AND MEAT

Given the importance of attitudes with respect to food consumption behaviour (see Sheperd, 1988) it was necessary to identify and measure the relative strength of those attitudes towards fish expressed in the group discussions. A survey was carried out in order to test some of the attitudinal findings which had emerged from the qualitative research and could not be tested in the food diary.

Attitudes may be regarded as a means of determining the likelihood of behaviour reoccurring at a given time and in a given direction. In this case they are seen as a property of behaviour and under the influence of situational variables. Alternatively attitudes are seen to precede behaviour acting as mediating latent variables which direct behaviour (De Fleur and Westie, 1958). This latter approach regards behaviour as a function of attitude, and behavioural change is related to attitudinal change (Foxall, 1980,1983 also see Foxall 1981 for a further discussion).

If the link between attitudes and behaviour can be established the measurement of attitudes should permit behaviour prediction. A review of empirical studies proposed that it was more likely for attitudes to be only slightly related to overt behaviour (Wicker, 1969). More recent attitudinal models refute the direct link between attitude and behaviour concentrating on the attitude towards the act of buying rather than focusing on the object (Fishbein, 1967; Fishbein-Ajzen, 1975). The possession of a particular attitude does not mean that particular behaviour will occur, but the likelihood of such action is increased.

Having identified relevant attitudes in the qualitative research, the next stage is to measure those attitudes. The main problem with attitudes is that they are not observable and measurement requires the developments of measurement scales.

Underlying this description of scaling is the assumption that the assignment of numbers, points of scores on this scale will reflect empirical phenomenon. If this relationship holds then the mathematical scale measurement serves as a model for describing the empirical system (Green et al, 1988). On the basis of this measurement theory scales can be employed to measure attitudes.

The measurement scales used were seven point Likert agree/disagree scales (Appendix I). The decision to use the seven point scale represented a compromise between scale linearity afforded by a five point scale and discriminatory ability of a nine point scale (see Jones et al, 1955). Likert scales are

relatively easy for respondents to understand and interviewers to administer.

The survey method permitted the collection of a large amount of attitudinal data across a large sample of respondents. This allowed the quantitative measurement of consumer reaction to those statements generated from the qualitative research and the opportunity to look for any attitudinal differences between respondents, as well as testing specific 'theorems' on meat and fish.

4.3.7 SURVEY AIMS

The survey focused on consumer attitudes towards food choice and the way in which those attitudes shape consumer reaction towards fish and meat.

Having identified relevant attitudes in the qualitative research, the survey questionnaire attempted to:

- 1) measure attitudes towards food choice and determine which are the most salient attitudes;
- 2) examine the differences in attitudes towards meat and fish;
- 3) examine those attitudes most strongly associated with fish and meat;
- 4) examine any differences in attitude between identifiable groups of consumer.

Given the data collection requirements the survey offered the most effective method and cost was minimised by enlisting the help of several UK colleges to assist in data collection.

Survey methodology and questionnaire design is well documented (Moser and Kalton, 1971; Tull and Hawkins, 1987; Churchill, 1987; Crimp, 1985; Green, Tull and Albaum, 1988).

4.3.8 FOOD QUESTIONNAIRE DESIGN

The food questionnaire was piloted in March 1987 on a sample of fifty respondents by second year students in the Department of Agricultural and Food Marketing, Newcastle University. All statements used in the survey were generated from the qualitative stage and identified as relevant to

food choice. The pilot was used to refine the questionnaire and reduce the number of attitude statements to a manageable number.

The original questionnaire was refined in the following way. Sections on food preference and usage were deleted due to their limited use and the need to reduce completion time on the questionnaire (no payment was made to respondents).

The pilot contained seventy eight attitude statements which were examined using Multidimensional Scaling for statements with low discriminatory ability and also for statements that were eliciting a similar answering pattern to each other as both these traits indicate a level of redundancy in the questioning.

This objective reduction of the statements to a manageable number helped to overcome the problem of deciding which statements to retain, the initial problem was that they all seemed relevant but the pilot questionnaire was practically inappropriate it took over one hour to complete and respondents became bored.

The final questionnaire consisted of two sections (Appendix H). Section one recorded demographic data.

Section two measured consumer reaction to the twenty seven statements using the seven point Likert agree/disagree scale across the four meat types (Appendix I).

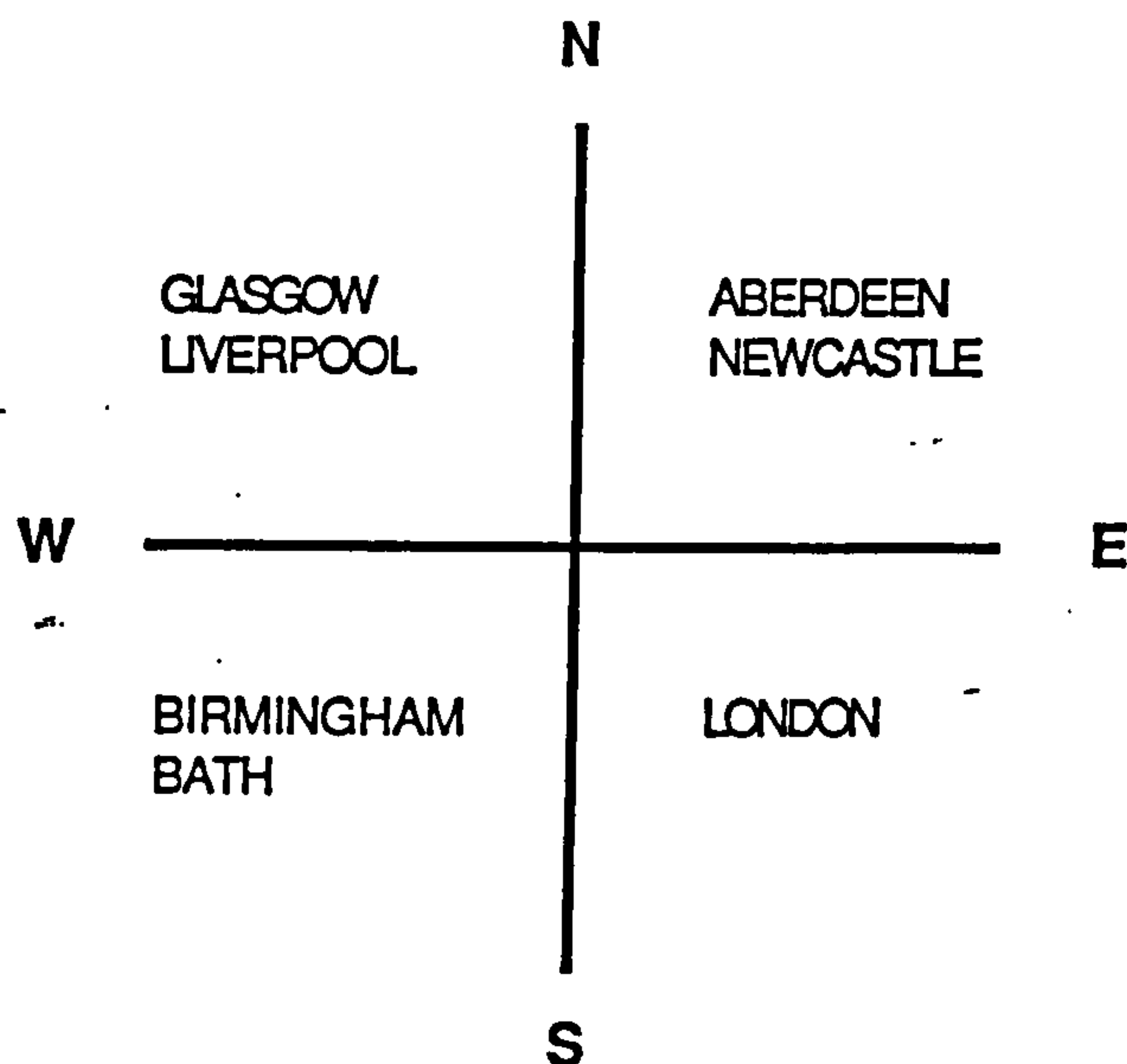
The questionnaire was designed to be administered quickly and efficiently, by inexperienced interviewers. Given the need to measure attitudes and encourage respondents to complete the questionnaire the layout was designed to minimise effort for both the interviewer and interviewee. Respondents used a show card with the scale and called out the number which corresponded with their level of agreement with each statement for each of the four products. The scores for each statement were recorded in a box corresponding to the type of meat or fish.

4.3.9 THE SURVEY SAMPLE

The main survey was carried out with the co-operation of seven colleges of higher education and polytechnics. The seven areas chosen to administer the survey (Table 4.2) were determined by the

location of the colleges who agreed to participate in the project (Appendix J). (Broadly a north/south, east/west split, including several coastal regions.)

Table 4.2: Food Survey Sampling Areas



4.3.10 SURVEY QUOTA CONTROLS

The decision to use quota controls as opposed to randomly selecting the sample was taken early on in the design stage. Establishing sampling frames for each of the seven areas, randomly selecting the sample and then attempting call-back interviews would have been impossible because of resource constraints. Independent quota controls were used to establish criteria for sample selection by interviewers and ensure representativeness of particular groups (see Chisnall, 1973, p90). Quotas were controlled for age and sex proportionate to national figures. In such situations the quota ensured for example, that in an individual interviewers sample of ten respondents at least two respondents were aged 15-25, and at least four respondents were male etc. (Table 4.3).

Table 4.3: Attitude Survey Independent Quota Controls for Interviewers

QUOTA CONTROLS			
AGE		SEX	
15-25	II	MALE	IIII
26-55	IIII	FEMALE	IIII
>55	II		
ANY	II	ANY	II
TOTAL	10	TOTAL	10

Total interviews = 10

The use of quota controls is not ideal as it distorts the sample to accommodate particular groups. This is further complicated by the fact that the interviewers were students and likely to recruit the sample from amongst their peers and family (analysis of the sample reveals an over representation of young and middle class respondents).

It was anticipated that potentially 30 students from each of the colleges would be willing to participate in the survey. On that basis a target response of 250/300 questionnaires from each of the colleges was expected. The number of questionnaires which each student was expected to complete was set at a maximum quota of 10 (this quota varied according to the number of volunteers). On this basis the survey was expected to generate around 2000 questionnaires in total. The actual number of usable questionnaires received was 900. This was due to lower than anticipated volunteer response from the students (which varied across colleges) and in certain cases unfilled quota.

4.3.11 INTERVIEWER BRIEFING

Each of the seven colleges were visited in November 1987. Following a summary of the previous work and contribution of the survey to the overall project, details were given on the layout and design of the questionnaire. This gave the students an opportunity to go through the questionnaire stage by stage and to ask any questions on the survey design, interviewing or sampling method. The use of the quota controls and the process for filling quota was explained to the students. The flexibility to interview family, friends, and neighbours in line with quota was granted and provision made for street interviewing. The latter option was encouraged.

The Market Research Society 'Code of Conduct' (1986) was explained and the students agreement in writing to abide by the rules and comply with the code was obtained. Each college was given a copy of the 'Code of Conduct' and provided with a standard covering letter to validate the purpose of the research (Appendix K).

The range of methodologies employed ensure the opportunity to investigate influences on food choice from several different perspectives. Each methodology contributed to the research design and was influenced by the aims of the research at each stage. The initial methods required flexibility in their design given the needs to identify the salient and determinant behavioural factors. The food diary study was more specifically concerned with examining reported behaviour soon after it occurred and assessing the relationship between reported behaviour in the focus groups and the way in which fish was actually used in the household. The attitudinal survey measured the extent to which respondents agreed or disagreed with a carefully selected representative sample of the statements which reflected the more salient aspects of food choice as identified in the focus groups.⁸¹

4.4 RESEARCH LIMITATIONS

The approach advocated in this research is not without its limitations. Although the meal test may have directed the flow of the discussion to specific areas early in the research imposed bias seems unlikely. The strength of this approach lies in its ability to access consumer meaning and the flexibility which it offers in this task.

While the diary sample is too small to extrapolate the results to the UK population, it does cover a wide range of household units. The study was confined to one region and carried out in the spring. No attempt has been made to account for any seasonal differences in food consumption. Spring is associated with 'light' foods and salad meals, so the picture may not adequately represent consumption patterns for the whole year. Fish use may be higher during this period. As with all studies which require the respondent to record information, one must depend on the respondent to be honest and adhere to the brief. Deviation from 'normal' behaviour is not uncommon. Other than interviewer checks for inconsistent or missing entries in the diary data there was no way of checking the accuracy of this information.

The food diary was very much a new venture, and the decision to exclude information on food quantities aimed to make completion easier. Details on food quantities may have added to the serving

information. The main problem with the food diaries related to analysis of the data. It was not possible to analyse individual meal structures and food combinations in as much detail as one would have liked. However, the treatment of individual foods as data records, rather than part of a meal, was necessary in order to retain information about the specific food items. Special attention was directed towards fish meals and any anomalies checked against the original diary data. The diary can be regarded as a pilot exercise and much data remains to be analysed.

The main limitation of the attitude survey was the over-representation of young and middle class respondents, making it difficult to distinguish between age and class differences.

The research findings are reported in chapters, five, six and seven.

CHAPTER 5

QUALITATIVE FINDINGS

The group discussions were transcribed in full and obviously an enormous range of comment was generated in over twenty hours of discussion. This chapter presents the main findings, by reporting on what were taken to be generally held views and beliefs. It ignores idiosyncrasies and the diversity of opinion, but to present them would be tedious and impractical. The groups seek to uncover the collective views of the participants with regard to food provisioning, and fish products themselves, as well as examining differences between consumers.

5.1 GENERAL FINDINGS

Most of the discussion of fish related to 'fresh' or 'wet' fish rather than frozen, processed or prepared products. The whole subject of fish consumption proved a highly motive area for many of the participants. Even with committed fish users the range of species used was limited. The main species, mentioned were cod and haddock with references to sole, plaice, turbot, eels, herring and mackerel restricted to the older consumers, or frequent users. Despite regional representation there appeared to be little regional variation in terms of attitudes. The North and Scotland reported higher usage of 'fresh' fish and were slightly less receptive to frozen or convenience fish products. Some regional specialties like jellied eels did get a mention, but the Southern and Midlands groups seemed more willing to use frozen or prepared products. Surprisingly little was said about canned fish, a function of its limited range of uses as a sandwich filler, and salad accompaniment. Tuna use was more common amongst the younger participants, tinned salmon amongst the older age groups.

Shellfish received little mention in meals prepared at home, despite the growth of this market. For many they were confined to starter courses in restaurant meals. Crab and lobster again received little mention and for many was thought too 'troublesome' to be frequently used food.

The findings cover the main areas of interest (as outlined in Section 4.2.3 on aims and objectives).

5.2 THE PLACE OF FISH IN DIFFERENT TYPES OF MEAL

Group participants initially found it difficult to classify meals into different types, the categories were taken for granted. The meal test attempted to overcome some of these barriers by taking participants through the decision process leading up to the meal itself and providing a means of identifying differences between meals consumed in the home. Meals can be defined as occasions where food is consumed (in this case in the home) by an individual or a number of individuals eating together as a group. Meals are 'properly' eaten at the table with the main focus on eating. The type of food served is influenced by budget constraints, the time of the day, who is likely to be present at the meal and the intimacy between the participants i.e. immediate family or guests. The main meal classification which emerged from the groups included snacks, childrens meals, secondary meals, main meals and special occasion meals. As one progresses through this classification the meals become more formalised, more conspicuous and are likely to involve more than one participant.

Douglas reminds us that "meals are for family, close friends and honoured guests,. The grand operator of the system is the line between intimacy and distance' (Douglas, 1966, p256). Participants reported that where food was used for entertaining and guests were present the choice of foods took an even greater significance. This depended on the intimacy between the host and the guest. While guests are not permitted at all meals they are very often honoured with meals. Strangers may well be excluded from some meals but snacks may be shared with strangers. The presence of guests at both snacks and special occasion meals influences the type of fish served.

5.2.1 SPECIAL OCCASION MEAL

These meals are used to celebrate special occasions, and food is being used as a means of expression for entertaining. It says something about the host and their relationship to guests/participants so more time and effort is devoted to the task. There is an increased sensitivity about the types of food provided and participants are quick to point out that particular foods such as fish are not generally acceptable and therefore present a greater risk on such occasions for the majority of people. Where guests are present the importance of creating a good impression must be weighed up against the danger of being over adventurous, at the cost of embarrassing the guests. Such occasions carry with them a much greater risk and the types of food served will reflect the intimacy of the relationship, between those present. Special occasion meals occur much less frequently than main meals.

Fish is often permitted into these special meal occasions as the starter or hors d'oeuvre but seldom used as the meal centre piece. Participants reported serving prawn cocktail, shell fish or smoked salmon at the start of these meals but few mentioned serving fish as the main course. Where guests are present it was too risky as not everyone likes fish. In this respect it is not universally acceptable.

Those who do serve fish in such a meal would only conceive of using fresh fish in instances where they know their guests intimately. To serve fish on such occasions was regarded as very adventurous on the part of the host.

Many participants are prepared to try fish when 'eating out' to celebrate a special occasion. Eating fish signified that the event itself was in some way different, the major difference is that the responsibility for special preparation and cooking skills lies with the chef and any problems which arise can be attributed to the restaurant rather than the individuals involved in the meal. Eating out is in one respect 'safer'.

5.2.2 MAIN MEAL

Main meals are the most important meal of the day, in some instances the main meal may be the only meal of the day. Most of the discussion in the groups revolved around the main meal, it is important because it represents the main 'refueling stop' in the day and often signified the end of the working day. In the majority of cases the household unit are together and under normal circumstances all the family or household members were expected to be present.

This meal is likely to be cooked, served hot and eaten at the table. The emphasis in this meal is on the provision of a 'filling and substantial' food. The main meal appears to be based on the platter format with a stressed main course or centre piece [A] (usually meat)¹ and two accompaniments [2B] (usually vegetables and potatoes or rice to accompany the meat). This structure is typified by participants' reference to a 'proper meal' composed of 'meat and two veg' (see Nicods' 1979 study into the structure of working class diets). Although this basic structure of A + 2B is replicated in other meal forms it is most apparent in the main meal. One main meal per day was expected in most households and where children are present this was regarded as an important daily event where children learn good table manners and how to eat 'properly'.

¹'Meat' refers to a range of different meat products although people did talk of it generically.

Chicken is acceptable as a centrepiece [A] but fish has a limited role as a main meal ingredient. Fish is not thought to go with the usual vegetables and sauces and for this reasons is relegated to secondary meals (outlined below). The reported use of fish in these meals is limited, according to participants the problems relate to the need for a 'filling and substantial' food which is readily acceptable to all household members. Participants felt fish may be more appropriate for main meals where individuals are concerned with diet, or their weight, are health conscious or vegetarian. Some of the housewives participating in the discussions reported that their husbands or particular individuals in their family did not like fish and they consequently did not serve it as a main meal when catering for the whole family.

"Well as main part of a meal I would have to have it whole, I think if you are going to present a main part of any meal you want it to have to feature. Like any presentation at all it has to be the main feature of that particular plate, therefore, it has to be eye catching with the rest of your surroundings around about it so it has to be whole otherwise all you are going to have in your middle is a whole lot of chopped up little bits and it cannot be a main feature once you have chopped it up"

(Group 3, Newcastle, 15.10.86)

The standard system is focused on meat and poultry and this is reflected in the methods of preparation and cooking involved. Meat is thought much 'easier' to prepare; even the fresh product presents very little trouble. Participants feel they know how to prepare and cook meat - 'everyone does'.

Meat also offers versatility. It can be roasted, grilled, fried, baked, boiled in a variety of forms and is resilient to a range of cooking methods and times. It is generally accepted by all. Fish, in contrast, requires different cooking and preparation skills and as a result is more 'risky' and 'specialised'. Whilst a wide range of species are available, only a few are used and for many consumers fresh fish is inappropriate to the main meal because it is unfamiliar to them. Frozen and canned fish offer a more convenient and readily available form of fish, but these products involve an even more limited range of dishes or methods of preparation. Fish is seen as a change in itself, a break from meat, but offers little variation in terms of usage.

5.2.3 SECONDARY MEALS

Secondary meals represent much less formal meals where the rules may be relaxed. These meals may be eaten away from the table and the focus directed towards other activities besides eating. In certain cases the meal may be consumed while reading or watching television. One participant described these meals as 'lap meals' because she ate the meal balanced on her lap as she watched television. The food may be uncooked, or served cold in certain cases e.g.salads, and it usually involves much less time and effort for preparation. Convenience foods are much more likely to be served at such meals. Substantiality is not deemed so important in these meals and 'lighter' foods often suffice. Indeed, in secondary meals 'lightness' is often a desired quality. It is less likely that all of the household members will be present at these meals, which are more likely to be private, or individual events.

Certain types of fish are regarded as more appropriate for these secondary meals due to their inherent 'lightness' or in the case of frozen, convenience or canned fish products due to the ease of preparation. Fish products generally appear to be associated with these types of meal as opposed to main meals.

"In our house we tend to use fish as a supplementary or secondary meal"

"Yes, I have that for lunch (tuna), I take that as a salad to work."

(Group 4, Newcastle 16.10.86)

AND IT IS FILLING

"I enjoy that as my lunch but not as a main meal, not as an evening meal."

"She is talking about her lunch as a girl, which obviously she does not want a big filling meal."

"I enjoy it as a lunchtime meal but I would never serve it as an evening meal."

(Group 3, Newcastle 15.10.86)

SO THEY WOULD NOT BE PART OF A MAIN MEAL

"No."

"Unless it was a summer meal."

HOW WOULD YOU USE THEM

"Salads or pizzas."

"Sandwiches."

"Sandwiches."

"Or in fish cakes."

SO IT IS A LIGHT MEAL

"Yes, either in the summer or an evening meal."

(Group 4, Newcastle 9.10.86)

In general fish seems to be located in secondary meals, reported usage as snacks, for late suppers or lunches. Its use in main meals appears limited.

DO YOU THINK FISH TYPE MEALS ARE SOMEHOW LESS FORMAL THAN MEAT

"I think so, yes."

"We always sit down."

"Yes, but I always think like when you have got fish, like a lap meal you can use it as a lap meal, fish."

"Perhaps if you have fish and chips from the fish shop we would."

"A midweek meal."

"Always try to do it once a week."

"I class it as variety, change."

"Because we are told we should eat it."

(Group 7, Birmingham, 6.11.86)

5.2.4 CHILDREN'S MEALS

Children's meals stand as a category in their own right and refer to meals served to young children as

opposed to teenagers. They lack formality in consumption and commonly include food that is quick, cheap, easy to buy, store, prepare and consume. Children's meals may be consumed at the same time as their parents or eaten at different times.

Many participants felt that children should be encouraged to eat the same foods as their parents, as part of their 'social training', but this is not always the case. Children are encouraged to eat at the table but the rules may be relaxed, proper table training is regarded as essential in the child's learning process (see Charles and Kerr 1985) but children's meals tend to include foods which involve less work for the children and are easier to handle on the plate. This is reflected in the types of food served to children, participants referred to sausages, baked beans, chips, beefburgers and fish fingers as 'children's food'. Foods if classified as children's are then not consequently as appropriate for 'adult' meals.

"My little ones love beans and spaghetti."

"Yes, beans and hamburgers and beans and sausages."

"Nothing finer than beans on toast."

"They reckon beans are full of protein anyway."

"Beans and toast together seemingly, beans are good and toast is good but the beans on toast especially."

"That is right you get the fibre and the protein."

"I think when they are small they cannot be bothered to chew meat and I think probably sausages, fish fingers and that sort of thing is much easier for them."

"Cut it up on the plate and they just need a fork."

"A lot less messing around to prepare so easier from the Mothers point of view as well, so you tend to do what suits you and what is cleanest."

"I do not think they like a piece of fish."

"I think it is the bones."

"And the smell, skin."

"Skin is not very nice to look at."

"If a child has a bad experience with a piece of fish it really can put you off for ages where it might not be true with another type of food, it is so obvious there are bones in a fish, unless you are eating something like a fish finger."

"Do you not think you would give your kids more fresh fish if there were more fish shops at your convenience, I have to walk miles to go a fish shop and there are two or three butchers on my trip before I get there and vegetable shops, I mean if there were more fish shops you might be more likely to go into them more often but to make a trip."

(Group 11, Edinburgh, 24.11.86)

5.2.5 SNACKS

Snacks are the least formal food event. Participants did mention snacks but they were regarded as relatively insignificant food events. Unlike the other meals they are not fixed to any particular place or time, and involve minimum preparation or cooking. They are permitted anytime during the day to relieve hunger, as a break or a convenient tasty treat. Snacks may or may not require the individuals to stop what they are doing in order to have a snack. These are the least conspicuous meals and due to their lack of form many group participants did not classify them as meals. Snacks often involve no more than a cup of tea, or coffee food may or may not be included in a snack.

These meals involve low status foods and convenient foods. More substantial snacks involve things like beans on toast, a boiled egg or sardines on toast. Canned fish products were popular with participants as snack foods often involving tuna and canned salmon sandwiches.

Interestingly, while snacks may be served to guests, etiquette would frown upon the offering of informal foods, which can include leftovers and low status foods to either guests or strangers.

5.3 CONSUMER PERCEPTIONS OF FISH IN GENERAL, TYPES OF PRODUCT AND DIFFERENT SPECIES

"Fresh" or "Wet" fish is perceived as the conventional form and much of the imagery and general beliefs surrounding fish is related to 'fresh' demersal product. It represents fish which has been unprocessed beyond chilling on ice, gutting and filleting. Group participants continual reference to freshness is indicative of the importance of this feature, 'fresh' is seen as synonymous with 'wet'. The idea of freshness is developed later, but it serves as an important evaluator in the decision to use fish.

Fish in all forms is regarded as a 'healthy' food and this is one rationale behind its consumption. Part of this image is related to its inherent 'light' properties in the food, and part to its use in slimming diets and associations with salads, which are perceived to be healthy.

It is seen to be nutritious, although interpretation here proves more difficult. There was 'lay' agreement among the participants that nutritious meant 'good for you'. Both frequent and infrequent users recognise the healthy, nutritious properties of fish but whilst the former may use it as a rationale for eating fish the latter did not feel compelled to eat fish just because it was 'good for you'.

For them there were other ways to eat healthily which did not include fish.

However fish does not score so well when evaluated as a filling and substantial food, where it is thought very inferior to red meat. In this respect it is deemed less appropriate for particular types of meals.

Figure 5.1 illustrates the positive and negative features of fish and fish products.

5.3.1 FRESH FISH

Participants agreed that fresh fish tasted best and any other form of fish was a compromise on taste. While fresh or wet fish is perceived to be the ideal form, it is regarded as inappropriate to many because of its drawbacks (Figure 5.1) But it is of course not rejected by everyone. Specific product characteristics such as bones, smell, skin and the use of whole fish present particular problems for the incorporation of fish into the meal system.

These problems extend beyond purely practical constraints into cultural beliefs and disgust associations of animalness in foods (as discussed in Chapter 1). This range of negative features permeated all levels of the meal system beyond consumption and product evaluation². The majority of people in the groups do not like to see a whole fish displayed it evokes feelings of disgust especially amongst the younger age groups. With fish there is a heightened awareness of the need for freshness. Fish needs to come 'straight from the sea'. This image of the whole fish is associated with freshness, but the presence of a wet, cold, slimy fish for those not used to it is a daunting experience. This wholeness is alien to many and the prospect of gutting and cleaning again evokes disgust. Younger participants readily admitted they had no idea of how to gut and clean a whole fish nor any desire to learn. The problem is resolved to some degree by the fishmonger who will gut and fillet the fish.

²Negative features of fish are used to illustrate various stages in the meal system and are expanded upon in section 5.4...

Figure 5.1: Positive and Negative Features of Fish and Fish Products

FRESH FISH	REFRIGERATED FISH	PREPARED FISH	CANNED FISH
<div> <div>POSITIVE FEATURES</div> <div> Healthy Light Quick to Cook A Change Nutritious Non-Fattening No Waste Variety of Species </div> </div>	<div> <div>POSITIVE FEATURES</div> <div> Convenient to Acquire Store Prepare Easy to Eat Informal Good Value Nutritious No Waste Consistent </div> </div>	<div> <div>POSITIVE FEATURES</div> <div> Convenient to Acquire Store Prepare Tasty High Status Good Quality Exciting / Novel No Waste Well Packaged 'Safe' Attractive </div> </div>	<div> <div>POSITIVE FEATURES</div> <div> Convenient to Acquire Store Prepare Tasty Easy to Eat No Waste Consistent Good for Sandwiches Salads </div> </div>
<div> <div>NEGATIVE FEATURES</div> <div> Bones, Smell Skin Limited Availability Unattractive Appearance Freshness Evaluation Inconvenient to Prepare Restricted Range of Suitable Cook Methods Fiddly to Eat Insubstantial Lack of General Family Appeal Limited Combinations Unpleasant Leftovers </div> </div>	<div> <div>NEGATIVE FEATURES</div> <div> Poor Taste / Bland Less Nutritious Not Adult Not Main Meal Quality Uncertain Frying - Unhealthy Additives Not Versatile Limited Combinations Boring </div> </div>	<div> <div>NEGATIVE FEATURES</div> <div> Expensive Insubstantial Unfamiliarity Requires Add Ingredients Small Portions </div> </div>	<div> <div>NEGATIVE FEATURES</div> <div> Limited Usage Old Fashioned Unfamiliarity Oily / Dark Fish </div> </div>

"I could not gut a fish."

"I have tried gutting it."

"I can remember when I was very young and there used to be a woman came to Shiremoor with a basket and the fish were whole and she used to whip them out and chop the head off and my stomach used to heave watching the blood."

"You know when the meat is being delivered to the butchers and you can see the shape of the beast hanging up, I hate it, I wish I was a vegetarian but I like meat."

"That does not bother me, I think the thing is all the animals, I was brought up thinking of them all as friends where as fish are cold, in the sea, so if I went to an abbatoir and saw them I would be ill."

(Group 2, Newcastle, 9.10.86)

The positive features of "wet" fish relate to general food beliefs, it is seen to be healthy, nutritious and non-fattening. This healthiness comes from the fact that these are natural products, assumed to be served fresh and containing no additives, 'fish fresh from the sea'.

The inherent lightness in fish makes it attractive for snacks or lighter meals and those concerned with weight loss can incorporate it into their slimming diets. This idea of lightness is something of a double-edged sword, on the one hand it works favourably to contribute towards the healthy image of fish, on the other hand it leads to fish being thought an insubstantial food.

For frequent fish users it offers variety within the meal due to the wide range of species available. However, many seem to stick to one or two principal species (notably cod and haddock) and display high levels of conservation in their choice and use of fish species. Fish is seen as a change in itself.

As a food it is convenient in the sense that it is quick to cook, although convenience also embodies preparation, availability and storage properties.

"I buy fish because I think it is easy to cook, I like to have fish at least once a week."

(Group 5, Newcastle, 21.10.86)

"No it is not filling I don't think."

"I do, I think it is."

"Mind you that is good really because some nights you sit down and eat your tea and you feel that bloated, it is wrong really."

"You do not feel uncomfortable when you have eaten fish."

"You can eat it and not feel you know."

"It is a light meal."

"Which is a good thing."

(Group 6, Birmingham, 6.11.86)

"Well really I just buy fish for a change, I cannot say anything best about it."

"They would not want it more than once a week."

(Group 1, Newcastle, 8.10.86)

Fish is also considered easy to digest, but some consumers associated fish with 'invalid food' and hospital meals.

White boiled fish was reportedly the easiest to digest and the most appropriate means of serving fish in such situations. The association of 'boiled' fish with this particular use gave 'boiling' a much lower status compared to the other methods of cooking. Once more the use of fish is restricted by negative associations, in this case a food for the sick and invalid.. Although these views were more strongly held among older consumers who could recollect being served boiled fish during stays in hospital, it was also mentioned by the younger consumers.

5.3.2 FROZEN FISH

Frozen fish by their very nature are never perceived to be as 'fresh' as fresh/wet fish, (despite the fact that they may have been frozen in a fresher state). The "importance" attached to the idea of freshness is translated into taste evaluation. Frozen fish is perceived to be more bland tasting; because of the freezing process it is thought less nutritious than fresh, although the overall impression of fish as a nutritious foodstuff extends to all the products. It is also considered to be full of "additives" such as artificial colouring; there was a feeling that freezing removes some of the goodness, although frozen fish was thought less risky than fresh. There was less chance of frozen fish "being off"; and bad experiences were with the fresh products, "you do not get 'bad' frozen fish". Many of the frozen fish products are suspected of being composed of 'rubbish' or inferior pieces of fish, due in part to bad press for fish fingers several years ago.

"I think when it is frozen it is more watery."

"It takes the taste away and it burns the fish sometimes the freezing."

(Group 2, Newcastle, 8.10.86)

"I would rather have the fish that is not frozen because it makes it harder to cut it up."

"I think things are very fresh if they are frozen because usually they freeze them straight away and it seals the freshness in."

(Group 3, Newcastle, 21.10.86)

Processing whilst removing much of the preparation work involved with fresh fish, actually reduces the versatility which frozen fish offers in terms of both cooking and presentation. The frozen products are much more limited in their combination with other meal ingredients. They are reported to be more popular with children and are seen as 'easy to eat' but this is both a positive and a negative feature. It contributes to the informality of the food event but they are, concomitantly taken less seriously as an adult food, and only eaten by adults on rare occasions according to participants.

While frying is the standard method of cooking and this is perceived as unhealthy, and many of the younger housewives are grilling fish instead. Particular products, such as fish fingers, appear to lend themselves better to grilling however as with fresh fish there are problems with the products breaking up in cooking, resulting in a rather unattractive presentation.

Despite the negatives there are many positive features associated with frozen fish. They appear to have a clear place in the meal system distinct from that of "fresh" fish and participants seem more confident about how and when they are used.

Their main advantage lies in their convenience in many aspects of usage. Frozen fish products are easy to acquire and store. They are more readily available than "fresh"; (supported by the fact that multiples carry 50% of frozen fish lines, Market Assessment, 1986). They can be stored for later use and do not have to be consumed immediately after purchase; they keep well and are regarded as safe. With the negative features of bones and smell in storage removed much of the hard work is taken out of the preparation stage.

Even with the frozen products some caution is still exercised because of the possibility of the 'odd bone'; especially where children are involved. Participants said that children like the taste of frozen products, they are easy to eat (and for the preparer, much easier to cook). This seems in part to be due to the form of presentation. For the less knowledgeable cooking times and directions are provided on the package adding convenience and removing an element of uncertainty.

A distinction needs to be made within the frozen products category; the main categories were frozen fillets with relatively little processing, breaded fillets and added value products (covered separately).

5.3.2.1 Frozen fillets

These are still regarded as deficient in taste but generally used in the same way as "fresh" fish in cases when the fresh product is not available. The ability to store fish in this form was advantageous, and use of microwaves overcomes problems of defrosting the fish. Only very fresh fish is regarded as suitable for home freezing. Its source and time of landing are crucial. Certainly only frequent fresh fish users contemplate buying fresh fish to freeze.

Frozen fillets generally take the form of freezer packs and often end up in fish pies or similar dishes. They also appear to be used by consumers who are prepared to 'batter' their own fish. These products offer the convenience which fresh fish cannot.

5.3.2.2 Breaded and battered products

These products are generally regarded as being of lower status than fresh fish which has been battered at home. Battered fish was associated with takeaway fish and chip meals and less serious meals, possibly as a consequence of these associations accompaniments for breaded and battered products seem confined to chips and peas. Although used in a platter format they offer a substantial 'secondary meal'.

The main advantage of these products for participants is that they are widely available, are generally seen to be consistent and reliable and offer ease of preparation. As these products can be stored they permit some flexibility in meal planning which the fresh products do not.

Frying, either deep or shallow, is seen as most appropriate for this product; again handling and presentation problems arose with the fish breaking up. Given the expectation of a fairly uniform shape this created certain problems when serving these products. Grilling is used by health conscious participants, and if the fish remains intact through the cooking process this method presents no major difficulties.

5.3.2.3 Fish fingers

The fish finger is very much the quintessential children's fish product, a dependable product composed of a relatively healthy protein which children find appealing and easy to eat with no need for great manual dexterity. Mothers did express some concern about the processing involved and presence of colouring and additives in the products. Older participants have little regard for fish fingers but recognise the value in their appeal to children.

"I have eaten them years ago but once the article was in the paper saying about it was the left over off fish and it was the scraps put in, that finished me."

(Group 4, Newcastle, 16.10.86)

"I think it is easy eating for children you know, if you serve them a piece of fish I think they tend to play around with it whereas with a fish finger or whatever it is easy."

(Group 1, Newcastle, 8.10.86)

5.3.3 PREPARED FISH

Prepared fish dishes which consist of complete meals and dishes like 'cod mornay' etc. represent high added value products (Marks and Spencer products are considered the best). They are criticised as insubstantial, offering small portions, and poor value for money. "Two person meals are more suitable for one person", was a typical comment and by the time extra ingredients are added the fish becomes inordinately expensive. For households with children they are thought far too expensive, despite their convenience.

These dishes are thought to be aimed at single people or couples on good incomes where time is at a premium and members of the household can afford to pay for the quality and convenience. Their main advantage is convenience; they save time. As they require no cooking or preparation skills they signify

a lack of concern about food provisioning for many people and are not considered suitable for entertaining guests.

These products are regarded as high quality and good tasting, although the packaging is considered misleadingly attractive in some cases. The novelty of these products creates an element of curiosity and a willingness to at least try the dishes. For the lower income housewives, while the product is simply too expensive, these dishes serve as a source of inspiration and new meal ideas. For the majority, however they do not feature as a regular purchase item.

"But it is not a meal."

"It is only just like the portion."

"Well you see then it would cost because if it is was one pound forty five, I don't know what size it is inside the packet, but then you are buying vegetables on top and what have you so if you are buying for say three as I do it is going to cost four pounds for the fish alone before you start, I can get a nice piece of beef for four pounds."

WHO DO YOU THINK BUYS THE PREPARED CONVENIENCE MEALS

"Young married couples, it is just something quick for them."

"If you are going out for a meal you just have something light before you go out about two hours before you go, they are all right for something like that but not, when you open them portions and put them on the plate, you cannot see them."

"If you are both at work and coming home and say she is going out with the girls and you are going out with the lads and she just wants to do something quick, it is just in the freezer or the fridge and just put it on, eat it and get ready and out."

(Group 3, Newcastle, 15.10.86)

"That frozen fish, the little square cod pieces and haddock and things like that, whatever you do to it it is a solid rubber consistency, it is never the same as a piece of fresh fish, even if you buy fresh and freeze it yourself it does not have that same, I mean the edges even curl up a bit and when you are eating it you can tell exactly the bit you have got to because the edges are so sort of dry and rubbery no matter what you do to it even in a casserole."

"On the other hand if you are going to buy all of the ingredients to make the same things you would spend a fortune whereas two portions of those specially prepared things would probably work out the same as if you hunted around and bought all of the ingredients and took the time to cook the thing, but I think the portions is my main objection."

(Group 9, London, 13.11.86)

"Even in the hypermarket you see young ones and it tends to be the convenience foods that they buy, certainly no fresh veg or fresh meat or fish or anything in their baskets it is all tinned or packet stuff. I mean if I am going to make rice with prawns, I make it myself and you see loads of people buy the packets, it is much cheaper to make your own."

"I think a lot of them are the ones who are newly married in their early twenties who are working all of the time, both of them, no children to consider, they have a hectic social life and they have sufficient funds to spend on them."

"You don't know how to cook when you are first married."

(Group 2, Newcastle, 9.10.86)

5.3.4 CANNED FISH

Commercial sources regard fish as a growth area but the qualitative research reveals a rather old fashioned product with a limited range of uses. Canned fish received relatively little mention compared to fresh or frozen fish and participants had to be prompted to talk about these fish.

These products were confined to light meals and snacks, more popular with women than men. Many participants did not regard these products as 'fish' but saw them as sandwich fillers, toast toppers or salad ingredients. Canned salmon was most popular with older housewives some of whom felt that canned salmon tasted better than the more expensive fresh version. This was the only case where canned was reported to offer a superior taste to fresh. However many of the older housewives had not tried fresh salmon, which was perceived to be very expensive.

The association of canned products with darker flesh fish species and oiliness suggested a less healthy product to some participants. Younger participants who talked more about tuna expressed preference for tuna served in brine as opposed to oil.

The major advantage of canned products lies in their convenience. Like frozen fish products that are easy to acquire, store and prepare. Canned fish is 'something to fall back on' if guests arrive unexpectedly.

The canned products are perceived to be more meaty in character, which to some represents an advantage. They are potentially more substantial due to their 'meaty' character but this advantage was neutralised due to the rich flavours of the products and the way in which canned products are used confined to light meals and snacks.

Despite a relatively recent occurrence of salmonella in tinned salmon canned products are regarded as safe products and despite the oiliness are regarded as relatively healthy. Another main advantage with

these fish products is the lack of waste.

"I think canned fish is quite tasty, it is quite useful to have in the cupboard in case someone calls and you can always make a meal with it, it is handy to have."

"I do not like it, if I had the choice to buy I would not buy with the oil"

(Group 1, Newcastle, 8.10.86)

"I could not eat it out of a tin, it is not the same"

"I think there is a lot of things added to the tin, preservatives."

(Group 11, Edinburgh, 24.11.86)

"Well, I buy sardines, mackerel and tuna."

"I do not think of them as fish."

"I do not associate them somehow."

"Sardines, the children like them, they are extremely good value."

"Yes, and they are very high in protein."

(Group 8, London, 13.11.86)

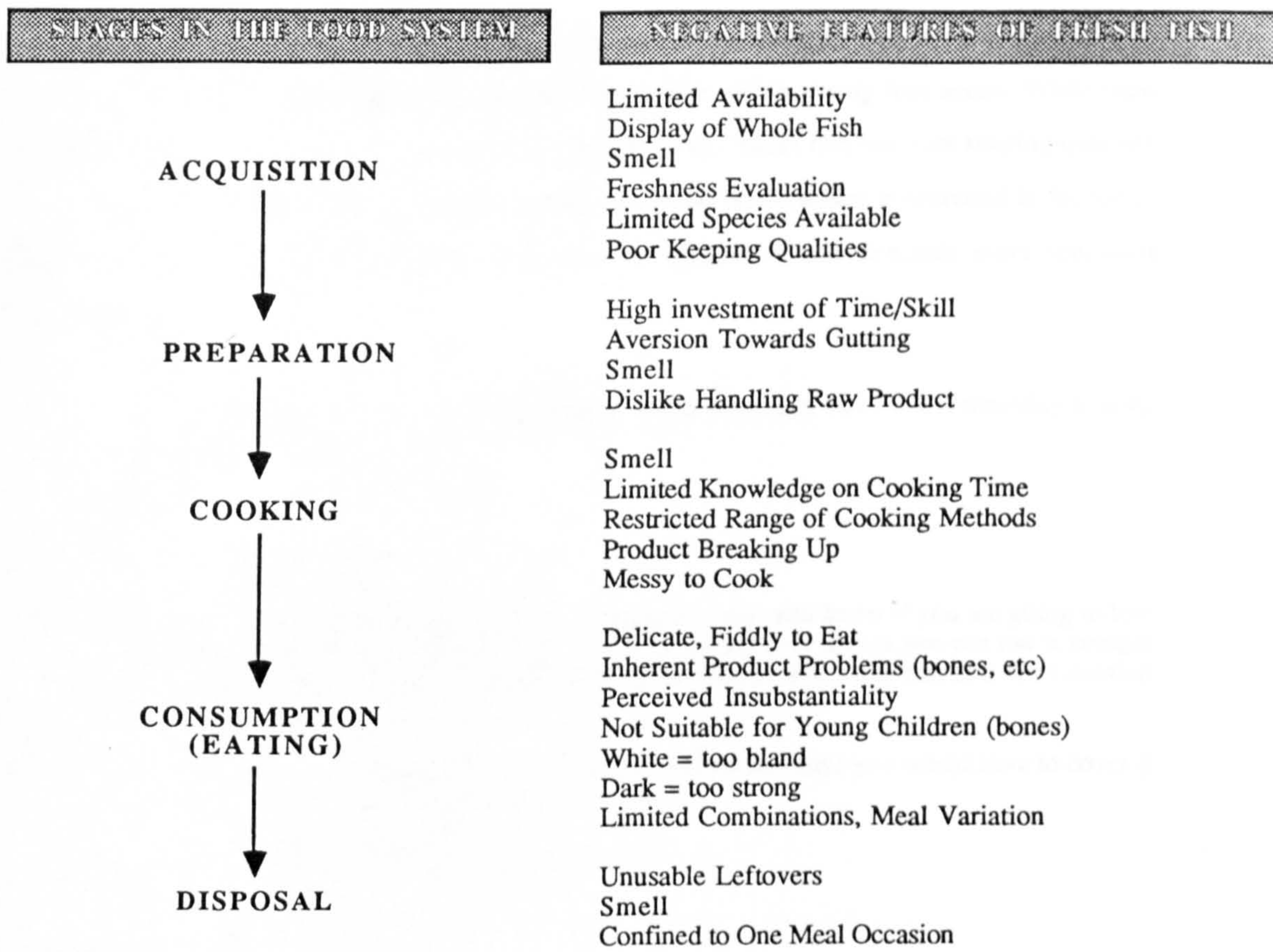
5.4 ASPECTS OF CONSUMPTION BEHAVIOUR

Economic, sensory, cultural and historic influences all play their part in shaping the general rules which permit foods to be included or excluded in the meal system. Whether food fits into this system is influenced by a number of things, there is no simple 'yes' or 'no' decision. But the choice process needs to take account of the fact that food provisioning involves a series of distinct stages, and the decision to use fish involves decisions at all stages from acquisition through to disposal (Figure 5.2). The negative features of fresh fish will be used to illustrate the importance of recognising that these stages exist and the different concerns of the participants at each of these stages.,

Whilst the stages are fairly distinctive the decisions are by no means mutually exclusive. Financial and time constraints are the primary considerations. However the nature of the meal occasion, i.e. the type of meal (special, main, secondary, snack, childrens) has an impact on this decision process. particular products are considered appropriate for particular meal occasions, for example, few group

participants felt fish fingers were appropriate for main meals unless of course they were being served to children. The nature of the meal occasion and those present have implications for the acquisition stage.

Figure 5.2



5.4.1 ACQUISITION

For many participants, shopping patterns have moved to 'one-stop' shopping where the basics are stocked up and food is purchased for the meal one week or a fortnight in advance. Obviously not all the food will be bought but the tendency to 'run down to the local shops each day' is less common. The advent of frozen foods and the supermarket store has done much to accelerate this situation. Any decision therefore to buy fish, unless it occurs on the main shopping day or in a store which has a fresh fish counter, will involve an active search for the fish shop at this first stage.

Availability is a key factor at this stage. The number of fishmongers has declined (Chapter 3) and this is reflected in the problems of finding a good fish shop reported by participants. Most have easy access to a butchers shop or meat counter but fish presents problem. Given its limited availability impulse purchase is less likely, and even those who purchase fresh fish regularly have to go out of their way to acquire it. This often involves a special trip to the fishmongers.

The concerns with freshness mean that fish has to be used on the same day and any decision to buy it involves a commitment to preparing and cooking fish at least within twenty four hours. While meat has to be hung to tenderise it, fish must be used straight away. Fresh fish has poor keeping qualities and is regarded as more perishable than most foods; as a result extra caution is exercised in the use of fresh fish. Participants felt that fresh fish involves more risk and demands more specialist knowledge

"I must admit if I buy fish I use it that day, I would never buy fish on a Wednesday to keep until Saturday."

"No."

"If I buy it I eat it that day."

"Well you only buy sufficient for the meal, you can't buy, you know if you are going to buy some there is no use buying some that is going to be left over unless you can use it straight away in fish cakes or fish pie the next day, if your family will stand fish two days running then that is fair enough."

"If you put fish in the fridge and wanted to keep it for a few days you would have to cover it with cling film because it would go hard."

"You can't really keep it more than 24 hours."

(Group 2, Newcastle, 9.10.86)

When it comes to the presentation of the fresh product in store, fish differs from many other foods in the sense that whole fish are often on show. Many people did not like to see fish with the heads still on and the eyes staring at them (animal carcasses may still be found in butchers shops but today they are often kept out of sight). The appearance of a whole fish on a slab in the fishmongers seems to evoke almost universal distaste; even filleted products are regarded as somewhat unappetising. Although traditionally the fishmonger displayed whole fish, to younger consumers, familiar with shopping in Sainsburys, Tesco's, the Co-op etc., this is an unfamiliar sight.

Whole fish evokes images of the sea, of fish which has come straight from the boats and by implication must therefore be fresh. For the older person the freshness evaluators are clearly defined - eyes, skin, smell and colour (see section 5.6.1). But the younger housewife is at a loss in this situation and she is unsure as to how to evaluate freshness. Younger housewives agree that fresher fish tastes nicer, yet they do not like the idea of buying whole fish which is regarded as the freshest form of fish. They are more receptive to packaged, cleaned and filleted wet fish where they can use "sell-by" dates as a guide to freshness.

For the older Northern customers the choice is felt to be limited compared to the past with more landings and greater availability of species, and cuts of fish.

5.4.2 PREPARATION

This stage in food provisioning is particularly relevant in the case of fish. Special preparation skills are required with whole wet fish. Gutting and filleting fish is thought disgusting by the majority of consumers and none but the most committed fish users would contemplate buying fish which was not already filleted or at least gutted. Raw fish is thought unpleasant to handle and few are prepared to tolerate the idea of having to cut the fish up.

Everyone felt it essential to wash fresh fish before preparation and the combined feel of this cold, wet, slimy flesh and the fishy smell makes it an unpleasant task. Smell created a problem at all stages with fish and is one of the most frequently cited negative features of the product. The smell is said to linger during preparation and in cooking. Why the smell is regarded as any less pleasant than the smell of other foods is uncertain. It also seems to be associated with freshness.

"I think a really fresh fish has got no smell or hardly any smell even when it is raw."

"If I picked up a mackerel I would have a good look all over it, the firmness of it, the freshness as if it has not been frozen before you know that sort of feel and I would look at the eyes."

"There are those you can buy in the bag and just pop in water."

(Group 7, Birmingham, 8.11.86)

"That is the main thing you cannot cube it (fish) like meat it has to be large portions to start off with."

(Group 9, London, 13.11.86)

Participants readily admitted they were uncertain about preparing fresh fish for the table or how to dress it. Older people were less wary of preparing fresh fish as many had done it in the past, although not everyone had enjoyed the experience.

5.4.3 COOKING

The reported range of cooking methods for fish is very limited and seems confined to frying and grilling. Participants regarded frying as an unhealthy way to cook fish. It was also considered messy due to the way in which fish 'splutters' when shallow fried in oil. The strong association with frying may be linked back to the fried fish and chip shop, for many this was the most appropriate way to cook fish fresh or frozen.

Grilling was considered to be healthier than frying, but the problem arose with the product breaking up during cooking. This was in part due to the 'flakey' texture of the product. When battered and fried this seems to present less of a problem and the fish retains its shape.

The group participants mentioned other means of cooking fish such as boiling, steaming and baking, but these were not widely used. Boiled fish was associated with invalid foods especially amongst the older participants (section 5.3.1), or boil in the bag fish portions both of which carried fairly negative connotations for the group. Steaming received very little mention and many saw steaming and boiling as synonymous. Baking was mentioned in relation to fish pies and whole fish but as with the other methods evoked relatively little discussion. Baking fish in oil or open baking was the closest equivalent to roasting meat, and this cooking method was really only regarded as suited to larger whole fish.

Fish require much shorter cooking times in comparison to meat but people tended to base cooking times for fish on their experience with meat. Unlike fish it tends to be baked, or roasted and requires long cooking times. While meat may range from being 'tender' to 'well done' fish must be cooked for the correct amount of time, otherwise it is raw or overcooked, and therefore unpalatable.

During cooking fish is seen to give off water, as opposed to gravy. This in itself suggests insubstantiality for some of the group participants. Another negative feature of both frozen and fresh fish alike was the presence of strong smells during and after cooking.

While raw fish is not considered attractive many of the canned fish products are eaten uncooked e.g, tuna and salmon in sandwiches.

"I think of fish it does not really matter if it is not properly cooked but meat I am always worried about it not being cooked."

"Fish breaks down too much for a casserole, I would bake it in foil."

(Group 5, Newcastle, 21.10.86)

"Fish you can re-heat can't you."

"It gets more mushy though."

"No I think fish is either cooked or it is not cooked."

"It has got to be well cooked, I could not eat slightly cooked fish."

"If you over-cook fish it crumbles, there is no way of over-cooking fish, you can ruin it by burning it, if you under-cook fish it is raw whereas meat is completely different, you can have it rare, medium rare, well done and personally speaking I like my meat rare, I think anybody who has it well done is wasting their meat."

"That is where your meat is going into your gravy, you get nothing in your meat you are losing all of your flavour."

"The fish juices are mostly water."

"No spin off really."

(Group 3, Newcastle, 15.10.86)

The idea that fish gives off water as opposed to gravy adds to its insubstantial image.

5.4.4 CONSUMPTION (EATING)

'Bones' are one of the major reasons for the rejection of fresh fish at this stage in food provisioning. Whole wet fish, most notably herrings, present problems with bones. Most of the negative associations seem to relate to memories, or secondary accounts, of individuals 'choking' on fish bones. This is of particular concern for people serving fresh fish to young children, even filleted or frozen products are not believed to be entirely free from bones. The presence of bones in fish demands extra caution on the part of the eater and requires some manual dexterity to delicately remove or peel the flesh from the bones. This prevents fish being carved and eaten in mouthfuls like meat.

Participants felt that fish required more effort than meat to make it look and consequently taste more attractive. It was considered important to retain the fish shape, and fish breaking up during cooking causes endless frustration and presentation problems. In order to look appealing it is important for the fish to stay in one piece, few liked the idea of a 'mush' of fish served on the plate.

One way to make fish look more attractive was the correct use of sauces and vegetables to add flavour and visual appeal. But, fish was limited in its range of combinations. This seemed in part a reflection of the narrow range of presentation forms used for fish, it was mainly confined to the platter arrangement and participants did not feel that fish was suitable for hot-pot or casserole dishes because of the problems with fish breaking up during cooking. This combination with chips and peas conferred less status on the product itself, less imaginative and a bit working class. Many vegetables such as brussel sprouts are felt inappropriate due to their strong flavours which some felt would mask the delicate fish flavour.

Sauces were considered appropriate with fish to highlight or enrich the delicate flavour, but unlike gravy, they were considered less appropriate for vegetables. The combinations which most of the participants seem to follow mean that many ingredients which would make a meat meal substantial are ruled out for those with fish as the central element, and therefore the meal is perceived as less substantial.

Taste is considered to be important at the consumption (eating) stage but it is a complex phenomenon including flavour and mouthfeel or texture. White fish tastes bland and 'light' according to the participants, yet dark fish flavours are considered too strong for all but the regular fish user. The taste was described by some as watery, but there was some variation across species.

Fish does not possess the texture and mouthfeel of meat, participants felt that fish does not offer the same resistance in the mouth which meat does due to its light flakey texture and does not yield up its flavour when chewed. It 'melts' in the mouth and is therefore less satisfying as a consequence. These comments even applied to the more 'meaty' fish products like herring and mackerel.

"Perhaps it is the blandness of the taste but I do just not care for cod at all really if I am having fish I will have haddock or sole"

(Group 4, Newcastle, 16.10.86)

"I do find that the idea of fish is not appetising, it is what you do with it, I mean I actually, when I think of fish, I think of what it will turn out like it I was to do this and that with it, but the actual idea of a piece of fish which is white, funny consistency with very little natural flavour of its own, I do not think it is something you would fancy in the same way as you would a chicken?"

"I think a mash of fish on the plate would put me right off, I have got to have the shape, and also if you have got the shape you can work out where the bones are."

(Group 9, London, 13.1.86)

"The likes of cod or haddock you would not eat in a sandwich because it would be cold therefore, fish is inclined especially cod to go rubbery when cold."

(Group 3, Newcastle, 15.10.86)

"Well to me plaice has no taste, plaice is very watery as far as I am concerned, sole has a distinctive taste of its own."

"You see trout as well you can do in different ways, I like trout with almonds, and as I say it is moist, juicy, succulent, to me as if I was having a succulent piece of meat."

"Well I find trout is dry"

"Perhaps it is the way I cook it"

(Group 1, Newcastle, 8.20.86)

"Mackerel seems to be stronger than cod."

"Herring has a rich oily taste to it."

"Too strong a flavour for me."

(Group 2, Newcastle, 9.10.86)

"Do you not think you have to brighten fish up, if you were really cooking a meal with fish to impress somebody you would have to brighten fish up, like orange carrot, green peas, something that would bring the plate up, a bit of lemon."

(Group 11, Edinburgh, 24.11.86)

"You probably would because I never mess about with fish I just cook it as it is."

"Keeps a whole fish in one piece."

"It looks much nicer than if it is all broken up."

"Fish fingers I actually get the ones with no artificial colourings or preservatives."

(Group 9, London, 13.11.86)

"Well, it has more colour and you can probably do more dishes with meat than you can with fish, I think for presentation if you are having guests for instance I think it looks better."

"Well personally I think so unless it is all done up with lots of colour like your peppers and your broccoli and salads and peas you know to really, you see meat on its own has colour, fish does not really, even fried fish is just a bit of brown batter."

(Group 1, Newcastle, 8.10.86)

"I feel that if you just get a fillet and put that on a plate I always think to myself well it does not look as much as perhaps a decent chop and yet it is probably just as nutritional but it does not look, what you pay for it."

The white colour expected of 'fish' is related to this inherent lightness in the product. Fish is regarded as a delicate food which needs to be treated with care and caution. This all adds up to an image of insubstantiality and juxtaposes fish with red meat. It is interesting to contrast the descriptive attributes of meat and fish, the former is seen as juicy, chewy, full of flavour, carvable, interesting, substantial and filling - a mans' meal, fish is regarded as watery, crumbly, boring, insubstantial, and light - a womans' meal.

5.4.5 DISPOSAL

In terms of leftovers fish offers nothing. One of the advantages is that there is little waste with fish but leftovers are unusable. Meat can be reheated or eaten cold the next day, but this is unheard of for fish. Leftovers are disposed of and not retained, the fish is confined and restricted to one meal period. This behaviour feeds directly back into the acquisition stage. If a decision is taken to use fresh fish the purchaser needs to be aware of who is going to be present at the meal and estimate the quantity required, it involves forward planning. Over-estimates are uneconomical and only the regular users will consider freezing fresh fish. Smell again features as a problem of this stage any leftovers result in a persisting fish smell.

"I would not do anything with left overs."

"I mean once fish is cold and cooked no way I would think of heating it up or putting it in the fridge."

"I would not do anything with it."

"It would be straight into the bin."

"The only thing you could do would be a fish cake, if you had cooked an extra piece and nobody wanted it, you could maybe do a couple of fish cakes or whatever."

(Group 3, Newcastle, 15.10.86)

For participants fresh foods are more desirable than frozen, and also perceived to be more 'natural' Although less convenient they need to be accessible in this form. Highly perishable foods involve more effort and our preparation and cooking methods have come to expect limited skill and time input, as convenience becomes a key feature. This is especially true for younger housewives and single households where time is more important. As a nation we overcook our vegetables and it would appear our fish. We expect cooking to be a slow process and if it is to be 'done properly' involve long cooking times. Substantiality is demanded of our meals which necessitates cooking foods which are filling, not light. Versatility and variety are important features of the system and foods which cannot be reheated or are limited to one meal represent less attractive economic alternatives necessitating more careful planning and preparation.

The positive and negative features of all other forms of fish can be traced through all these stages of the meal system. Ultimately the usage of fish is conditioned by these food beliefs which exist within our culture.

5.5 THE NATURE OF FOOD OCCASIONS

The choice of particular foods relates, as we have seen, to a series of stages in the process from acquisition through to disposal. The appropriateness of a food for a particular meal involves a consideration of the positive and negative aspects of the food itself at each stage. But exerting further pressure in this choice mechanism are a series of externalities which relate to historic and social factors. These influence more general food choice decisions and determine the nature of the food event itself. It is within these constraints that food choices are made.

5.5.1 TIME AVAILABILITY

Group participants felt that fish, especially fresh fish, demands special knowledge and skills. Younger women are quite open about their lack of knowledge and skills when it comes to fish but it is not as if they have taken a conscious decision not to learn these skills and, unlike their elders, do not feel that this is a matter for shame.

Women are no longer tied to the home, their roles have changed as have their lifestyles and the time they have to devote to food provisioning. Women in full or part-time employment have less time to devote to shopping, preparing and cooking food. With more financial independence many of the younger women participants are involved in activities outside the home and their time is divided between home and leisure commitments.

Food is seen as a means of expressing care and love for the family, but younger participants prefer to spend their precious time with their children rather than in the kitchen. Convenience foods are more attractive for these people with less time available and another wage coming into the household.

Production, distribution and retailing changes have brought with them a move towards one-stop shopping and until recently few supermarkets retailed fresh fish, opting instead for frozen and canned products. These products are generally seen as being of lower status, but broadly acceptable as such.

Fresh fish is perceived to involve more effort on the part of the provider, signifying culinary competence and adventurousness. This makes it more suitable for 'special meals'. The task of educating the consumer to the benefits of fish also should take account of the needs of the new women. Many of the participants felt that they did not have the time to acquire the necessary skills.

While younger participants see fish as suitable for a special meal, older participants use fish on a more regular basis, many possess both the skills and time. This clearly relates to their respective perceptions of provisioning and their different role in this process.

"I used to buy ready made dishes and honestly the taste was just non-existent, I bought them primarily for quickness when I first started working full time and I found I was wasting my money there was no taste, nothing, I just did not like them at all."

WHAT SORT OF PEOPLE DO YOU THINK ACTUALLY DO BUY ALL OF THESE CONVENIENCE FOODS

"People who cannot cook."

"They don't need to."

(Group 2, Newcastle, 9.10.86)

"I like things to be ready, packaged and frozen or whatever, so I feel guilty and think there is bound to be more nourishment in fish, there is no fat, high protein and they say it is good for the brain cells as well."

"You do not want to use convenience and yet if you spend hours making the meal you feel guilty because you have not spent time with them."

(Group 10, Edinburgh, 13.11.86)

5.5.2 PRESENCE OF GUESTS

Food not only nourishes it carries social meaning, especially when used for entertaining. The presence of guests, and the importance of the guest(s) influences the type of food served. Most of the participants were wary of serving fish to guests. Wrong decisions can be potentially embarrassing -

"I prepared a fish meal once for some visitors I was having and really I should have checked first, but the husband could not even bear the smell of fish and I felt so embarrassed and he just had to have the vegetables"

(Group 9, London, 13.11.86)

The type of fish served depends on the importance of the guest as well as the type of meal. Most people felt that fresh fish was more appropriate when entertaining. However fresh fish offers a potential problem due to its negative features (skin, bones, etc.) which present a risk and potential embarrassment to the guests and host alike.

The appearance of the fish on the plate is also considered important when entertaining. The problem of fish breaking up during cooking causes problems in this respect. Comments describing fish as 'a pile of mush' reveals expectations about these sculptural qualities and the need to retain a specific fish shape.

Fish fingers may be served to young guests but smoked salmon is considered less appropriate. One also needs to take account of where the fish is served in the meal. More convenient forms of fish are acceptable as starters.

All agreed that those meals which are most socially sensitive require greater time investment and a calculated risk in providing an adventurous but an acceptable fish.

"Fish is much more sort of dubious to serve if you do not know peoples tastes."

"Only as a starter or to people I know very well."

"Not better, it is more a case of, everybody has got their own, fish you either love it or hate it there is no sort of halfway."

(Group 9, London, 3.11.86)

"You think about the people you are having, what do they like first of all, that is your first consideration does anybody not like certain things."

"If I was having friends I would know what they liked and would obviously get say the meat or whatever, the vegetables that they would like."

"It would depend on the visitor really, you would know the person."

"Obviously if there are guests that you already knew well then you would know but if I have a dinner I always find out what kind of food they like because when you invite someone it is because you want to be special at that time so obviously it is important that you get what you think they like."

(Group 5, London, 13.11.86)

5.5.3 TIME OF DAY

Seasonality traditionally played an important role in determining which fish was appropriate at which time of the year. Due to improved technology and transportation that is no longer the case. However, some of the Northern groups remarked on the tradition of herring as a summer fish, and would not buy cod when the herring season was at its height. This coupled with the British tradition of 'hot, filling' meals in winter may in part account for the associations of the herring and mackerel as summer salad accompaniments.

Few reported eating fish for breakfast, kippers at breakfast appear to be a thing of the past. For younger participants there was very little time for breakfast and few had cooked breakfast or kippers

in the morning (one study suggests an increase in the consumption of fish at breakfast since 1980 (Taylor Nelson, Special Report, 1986)).

It appears that there is a decline in the incidence of 'high tea' among the group participants (see also Palmer, 1977, Taylor Nelson, 1986). This meal was seen as a suitable occasion for a light meal and appropriate for using fish, notably tinned salmon.

Group participants still attach a lot of importance to the main meal which takes place in the early evening. The movement of the main meal from midday to the evening reflects the changing work patterns and lifestyles of the participants. Few came home from work for lunch, and most of their children ate lunch at school.

As the main meal participants felt that the evening meal needs to be substantial especially where children no longer get a 'proper' school dinner, relying instead on their school tuck shop. There appears to be a general trend towards snacking through the day and the use of quick, convenient, easy foods which are eaten 'on the move'. The importance of this meal may also be a hangover from the times when it was regarded as bad to eat between meals (see Avery, 1984).

The movement towards snacking and eating on the move may offer an opportunity for canned fish such as tuna, which people see as a sandwich filler.

5.6 FOOD BELIEFS AND FISH USAGE

The two main areas of concern in fish usage relate to the demand for freshness in the products and substantiality in the meal itself.

5.6.1 FRESHNESS

This concern with freshness in fish of all types and forms was apparent in all the groups covering a range of age, class and geographical regions. There is a general belief that freshness is an indispensable quality in fish. Freshness is synonymous with naturalness, and is of paramount importance in the decision to buy. It covers more than physical properties and is deeply rooted in general beliefs about food safety. A series of evaluative measures emerged within the groups, originating mainly from the older housewives and the days when whole fish was the common form in which it was sold. The

appearance of the whole fish offered the best opportunity for freshness (and hence quality) evaluation.

At the initial buying stage this was the only real measure of quality for the buyer and an essential criterion in the decision to use fish. Fresh fish, they said has a glossy rather than dull skin, with good scales and bright eyes. Really fresh fish had no smell at all, it was odourless. Fish that is bad or going off has a 'fishy' smell or strong fish odour, a dull appearance and appears to be drying out and curling at the edges. Really fresh fish is white not yellow or discoloured. This makes evaluation of smoked or dark fish more difficult and places a greater emphasis on the other evaluators. People said 'you just know when it is fresh'. The fish must be firm to feel, not limp or flaccid.

"Shiny eyes, a gloss to the skin where scales are fairly loose and slimy, then it is fresh."

(Group 1, Newcastle, 8.10.86)

"It has to be just perfect does fish, you cannot depend upon it, if it is horrid then it is horrid and that is it."

(Group 11, Edinburgh, 24.11.86)

"You think white is an appertising colour."

"Especially if it is clean."

"It looks fresh."

"You associate white with pureness and fresh."

(Group 5, Newcastle, 21.10.86)

HOW WOULD YOU KNOW IF A FISH WAS OFF

"It is sort of dry on the top."

"When it breaks away, you can run your finger down that puts you off."

"When its tail starts to curl up."

"You just look and think 'that is not fresh' and just walk away because she is going to give you that one when you ask for it, the fresh is on the bottom and yesterdays put forward."

"It still smells, you can still smell fish."

"If it is off it is off."

"If it has a strong smell, it is a different kind of smell all together."

"Oh yes it does fresh fish is by far the best, having said that I am not doubting it, but from a fishmonger it is definitely the best."

(Group 3, Newcastle, 15.10.86)

Most of the younger housewives find it difficult to articulate what freshness means. Most who use "fresh" fish trust the fishmonger and a good fishmonger is one who always provides the freshest fish. All agreed that the freshest fish comes from the 'quayside' - 'fresh off the boat'. Fish vans may offer a good alternative for some of those who have difficulty getting to the quay.

Not only different outlets, but different products are associated with various levels of freshness. Frozen products are not perceived to be as fresh as 'wet' fish and this is reflected in their taste evaluation. Freshness criterion resulted in an imperative to use fish quickly otherwise it will spoil. For many this means using fish within twelve hours of purchase, twenty four hours at the very latest. Even frozen products when defrosted are not allowed to remain for long before cooking. The added convenience of the freezing and canning process tampered with the fresh image.

This concern with freshness results in wariness amongst younger consumers who are unsure of what exactly to look for in fresh fish. The packaged product offers a safer alternative. With a sell by date the onus is on the manufacturer. Emphasis shifts towards the package and away from the actual products; towards price, nutritional information and the crucial sell by date.

5.6.2 SUBSTANTIALITY

The whole concept of substantiality is crucial in understanding the reaction to fish and fish products. When asked what substantiality involved, participants talked about 'mouth feel', being 'satisfied' or 'full' but also 'a good plateful', traditional combinations of ingredients and standard meal formats ("meat and potatoes with vegetables and gravy").

The evaluation of substantiality involves a comparison of fish with meat. Fish lacks the colour, the texture, the flavour and the mouthfeel of meat. Meat involves chewing; it offers resistance in the mouth, unlike fish which almost "melts" in the mouth. Meat needs to be cut, whereas fish falls apart. Meat produces a gravy in the cooking process which 'contains all the goodness' fish gives of water which does not possess the same intrinsic qualities. Gravy embodies flavour and signifies taste. Fish

in general is regarded as bland and lacking strong flavours, with a much less distinctive taste, so much so that it requires the accompaniment of sauces. Dark fish possesses more flavour and a stronger taste, but this seems to be a quality appreciated only by the frequent fish users. For the infrequent users it is "too fishy".

"I could not visualise having lemon sole bunged up into one big thick heap just to be a bigger mouthfull so that, it is important to be able to cut and be able to get a good chunk but as well I think it depends on what type of fish you are eating as to how it is presented as opposed to having it in chunks, there is things you would not have in chunks, you mentioned sardines I could think of nothing more gastly than a great wad of sardines all jammed together just to be able to get a big bite you know I mean sardines you probably would just have a little quarter of one."

(Group 3, Newcastle, 15.10.86)

"I wonder if it is because fish tastes light and bland that people think it is not sustaining whereas meat is dark and heavy and fatty and you tend to think you are going to be full after it."

(Group 8, London, 13.11.86)

"I think most people like meat and I think they find meat more satisfying for a main meal."

The idea of being 'filled up' is not simply related to 'volume'. Even if the number of portions or quantity of fish is increased fish is still not regarded as being substantial. These ideas relate also to the masculinity of meat in main meals. There was a feeling that since women are considered to be more figure conscious than men, they would be less likely to feel that a meal should necessarily entail substance. As one participant said "a 'light' meal is sometimes just what you want".

"Well I have fish two and three times a week but I never feel it is filling like meat is and when I have my family coming or friends in I would not serve fish as the main course it would always be something in the meat line."

"It is more filling I think especially from a mans point of view I think that is the main reason that my husband does not eat fish all that much and I think it is more traditional with meat."

(Group 1, Newcastle, 8.10.86)

"If you have fish, I think you have always got to have lots of potatoes."

"If you are eating a meal you normally have your meat and your vegetables, fish is always finished and you just have your vegetables left."

"Not for a man, I do not think it is enough for a man, I mean I know my husband does not like it but I still think of it just as a light meal, it does not seem to be filling, when you are eating it, it will fill you up at the time, it is like a salad, but about 15 minutes later you are starving, to me it is just not enough."

(Group 10, Edinburgh, 24.11.86)

Fish cannot be used as simple substitute for meat in most standard food combinations. The inherent product features of fish (as outlined in section 5.3) influence the type of meal in which fish is used. Fish meals are likely to involve fewer courses and ingredients, signifying less significant food events and so contributing to the association of insubstantiality. This is reflected in the perceptions of fish and chips. The addition of chips adds some substance to the meal but it is still regarded as cheap, and convenient. They are believed by many to taste better out of a newspaper (this is very self-consciously related to the occasion and the setting of the meal, and is not a simple taste evaluation) relaxing the normal rules of eating - no plates, no cutlery etc. This type of meal was enjoyable largely because it was identified by participants as a meal to be eaten on holiday or when time was short.

Chips are a main accompaniment to many fish meals at home, especially if the fish is fried. However, the addition of chips in the home is regarded as unimaginative, rather lazy, too convenient, too informal for a main meal and a bit working class, not to mention the health aspects. Nevertheless the range of potatoes and vegetables used with fish is limited.

Pork and chicken may be regarded as competing with fish in terms of prices but it is red meat which sets the standards in terms of product evaluation. Those fish products which come closest, are however also associated with oiliness. Fish which might suggest substantiality because of colour, flavour and appearance is paradoxically, likely to be less appealing to most consumers because it does not convey freshness and purity (which is associated with whiteness in fish).

5.6.3 FISH (General)

The sentence completion test (section 4.2.2.4) highlighted some of the general attitudes towards fish. The group participants would buy more fish if their families liked it ?. Main reasons for buying fish related to taste, nutrition and health. Smell and bones were reported to be the worst features. Almost half the sample felt it was suitable for a main meal, but not for breakfast meals or children's meals (Appendix F).

5.7 TYPOLOGY OF FREQUENT AND INFREQUENT FISH USERS

This typology is based on comments and observations within the groups with respect to users and non-users of fish and fish products. It represents a hypothetical description of fish users, drawing from the earlier desk research to supplement the qualitative findings. The descriptions do not represent hard and fast rules and to some extent vulgarise the complex interrelationships between the factors ignoring, the effects of specific factors influencing particular households (for instance, differences in individual attitudes, specifics of actual availability in particular locations, variations in quality of products, the quality of service in shops etc.). What follows represents broad general characteristics of various types of fish users.

5.7.1 FREQUENT USERS ARE MORE LIKELY TO BE

- i) older;**
- ii) more experienced and/or knowledgeable about fish as food, the variety of species, the ways to evaluate fish, methods of preparation and, the combinations of ingredients which might be included in fish meals;**
- iii) better educated;**
- iv) members of smaller households, or single person households;**
- v) using food in more complex ways, with a wider variety of types of meals being served;**
- vi) using food for wider range of social purposes - for instance, in entertaining family, friends, business acquaintances and so on, as a vehicle for developing the taste of children, and transmitting sorts of values or patterns of behaviour, as a way of demonstrating 'cultivated tastes' or sophistication;**
- vii) more likely to experiment with new foods., more likely to try new products;**
- viii) prepared to invest more time in acquiring and choosing food, and especially more time in preparing and serving food;**

- ix) have better cooking facilities and consumption facilities available to them (for instance, microwave ovens, convector fans to remove smells, recipe books, special utensils, and so on);
- x) more informed about food, and more health and diet conscious.

5.7.2 INEREQUENT USERS

Infrequent users of fish and fish products are more likely to be

- i) younger;
- ii) less experienced and knowledgeable about food matters and, methods of evaluation, preparation and consumption;
- iii) less well educated;
- iv) members of larger households, often with younger children;
- v) using food in limited numbers of ways, and to have a more restricted range of combinations and ingredients which are used in typical meals;
- vi) more concerned to produce food which can be conveniently acquired and served;
- vii) more concerned to 'fill their families up', to produce satisfying food to be constrained by the need to 'satisfy' their husbands and children;
- viii) having less time to spend on planning, acquiring, preparing, serving and eating food;
- ix) using food for a more limited range of purposes, and to have little interest, inclination or experience of entertaining with food, using it to educate children or display cultivated taste;
- x) less health conscious, and less well informed or experienced on food matters;

- xi) spending less money, and to be less well equipped, with kitchen technology and facilities for preparing, choosing and serving food;
- xii) simpler and more functional in their attitude to food.

5.8 AGE DIFFERENCES

Older housewives interviewed in the groups grew up with fish as a cheap alternative to meat, and a well established part of the meal pattern of their families. As a consequence they learnt to appreciate the range of species and the skills necessary to evaluate, choose, prepare and consume the various types of fish on the market. During the war meat was rationed and difficult to obtain, fish was unrationed but not widely available. These experiences have clearly influenced their attitudes towards fish and for them fish is still regarded as inferior to meat, a poor substitute, at best a change form serving various types of meat, and generally less popular. The association of fish with invalids and sickness derive from this group.

They have a very traditional attitude to the housewife role and see this as involving a significant degree of time investment in food preparation. Indeed, for many this is the central aspect of their role; 'satisfying and caring for' husband and children is accomplished, in very large part, through the medium of food.

They reported a higher usage of fresh white fish, and some of the darker fresh or smoked fish. They use canned products, more commonly salmon and tuna, (which they associate with high teas and sandwiches) and to a lesser degree, pilchards and sardines. They also mentioned using kippers (for breakfast) and other less familiar species. Even this group tended to see fish as a less substantial meal, although their use of fish with salads is less common than younger people.

Older participants generally have a negative attitude towards prepared recipe dishes, frozen and breaded fillets which they see as expensive and broadly inferior to the fresh. It was one of the older participants who refused to give her grandchildren fish fingers, because she felt they were 'full of rubbish'. Many have the skill to batter or breadcrumb their own fillets, they are prepared to dress whole fish and are generally more discriminating about the fish they buy.

They are more likely to shop more regularly and to buy food from specialist shops such as butchers and fishmongers which they will consume the same day. Many of the older housewives are shopping just for themselves, and perhaps their husbands so they are less constrained in their choice by the need to satisfy the whims and varied tastes of children.

In addition, they are less likely to use new kitchen technology, such as freezers or microwaves, so there is less advantage in using the new fish products.

Younger participants had grown up with a different notion of the housewife role. While still mainly responsible for food provisioning many had full or part-time jobs in order to supplement the household income and as a consequence their values and priorities differ from the older participants. Even those not involved in employment outside the home felt that time could and should be devoted to other activities besides food provisioning. One such activity involved spending more time with their children. For many of the younger housewives work, and the expectation of a reasonable share of leisure time, means that many are not prepared to devote more time than is reasonably necessary to food provisioning.

They insist that foods which they use are substantial, appetising and generally nutritious, but they also insist that they should be as easy to acquire, store, prepare and present as possible. Consequently the fish products chosen tend to satisfy these requirements. This usually means frozen fish products, especially fish fingers because they are regarded as safe and easy for children. Most of these younger participants had young families and they had to accommodate their children's needs and tastes.

While younger housewives themselves like certain prepared meal products which use fish as the central element they feel that these are inappropriate to serve to their husbands, in part due to small portion sizes. But such products are insufficient to constitute a full meal in themselves, and are regarded as a very expensive way to cater for a family. They do however use such products as a source of new ideas for meals.

Few of the younger participants seem to use dark fish, referring mainly to cod and haddock. Compared to the older participants they were less familiar with the range of species available or the various ways in which fish could be cooked or prepared. While they stress the need for freshness they are unsure how to evaluate freshness of whole wet fish. They look for safety and predictability in the fish products they buy and most use sell-by dates and product labels to determine the freshness of the

products. Fresh fish is less accessible due to their time constraints and 'one-stop' shopping pattern.

5.9 CLASS DIFFERENCES

Bourdieu regards food as part of the mechanism which permits distinction between the classes (see section 1.6, and Bourdieu, 1982). Middle and working class participants appear to use fish in different ways.

Middle class participants are less likely to pander to the wishes of their children. They see good food habits and table manners as part of their children's education at home. Some of the middle class participants felt that their children were prejudiced against fish of all kinds - except for fish fingers. The bones present a potential danger, fish is difficult for children to handle on a fork, and children do not like the taste and smell of fish. The middle class participants saw these as problems to be overcome as their children learn how to eat fish.

The working class participants feel fish is a 'hassle' for children causing unnecessary problems for children. They seem less likely to consciously condition their children's food habits, and more likely to succumb to children's individual preferences. It is not that they are in any sense weaker, but they see it as a way of expressing care. It is easier for them to provide fish fingers which still contain fish and at least their children will eat it in that form.

The middle class participants are more likely to use fish as an alternative to meat when entertaining. They place more value on variety and flexibility in the menu continually on the lookout for 'novel' foods and new ideas, this group are more likely to use cookbooks, and watch television and radio food programmes for new ideas,

The nature of the meal occasion has a strong influence on the types of fish used but working class participants did seem more concerned with the needs for filling and substantial foods. The middle class expressed a desire for light, non-fattening, healthy foods and fish fits this categorisation.

5.10 FISH AND THE FAMILY

Variety in meal provisioning is seen to be a central concern for participants within the home and

housewives from both the middle and working class feel that they have to provide variety to satisfy their husbands and children. Food provisioning involves, as stated, much more than functional satisfaction of physiological hunger drives. Lack of variety results in boredom at a social and a sensory level (Fischler, 1979; Rolls et al, 1982; Rozin et al, 1986). Variety is seen by the participants to show caring, it involves time and planning and for many, the most daunting task of all is simply deciding what to cook. Variety is not a *sine qua non*, but continually serving the same meals without variation can lead to boredom for families, and participants were continually looking for new ways to present and serve foods. The cyclical character of meals and food taking is an important characteristic, it marks the passing of time, but there is also evidence of a need for some variety in the meals served, and getting the balance between novelty and familiarity in food served.

Some of the housewives have a weekly or fortnightly cycle of meals. 'Preferred meals' are served interspersed with others selected from a repertoire of dishes according to the situation and time available. The one meal that remains consistent is the Sunday dinner, although even this tradition is becoming less common with some of the younger groups.

Children reject fish because it is "difficult", and demand easy to eat convenience foods. One mother said her child did not have time to eat, it prevented him from playing, and eating was a chore, he was quite happy with a biscuit or a jam sandwich. The ease of preparation and storage makes the fish finger a popular choice with parents, and it draws on the healthy image of fish. But as a result it is not seen as adult food, and not usually appropriate for main meals served to the husband or other adults.

With a male head of the household food provisioning takes on a greater significance. Men regard substantiality as an important feature of the meal and for the majority fish is insubstantial. Working class men seem much more traditional and prefer the standard meal combinations centred around meat with the usual vegetables, gravy and puddings. Middle class men seem more likely to tolerate experimentation with various types of fish, if only to please their wives. For them eating is different; they are used to situations like business lunches and exposed to a greater range of foods, including fish of various types. Whilst older males are more receptive to the usage of fish in the main meal, younger men have relatively little experience of fish other than cod, haddock, plaice. If anything they look to 'meaty-steaky' types of fish, or the familiar fried cod/haddock or fish and chips.

5.11 SUMMARY OF QUALITATIVE RESULTS

The following summary of the qualitative findings takes the form of a list of statements.

- 1) When asked questions about fish most participants took this to be a reference to "fresh/wet" fish, rather than canned or frozen products.
- 2) Meat is more commonly used in "main" meals and there appears to be restricted use of fresh fish in more important meals. The use of fish is limited to less important meals.
- 3) Fish is regarded as healthy, nutritious, easy to digest and quick to cook..

FISH PRODUCTS

Fresh Fish

- 4) Participants felt that fresh/wet fish had a superior taste to frozen, canned or prepared fish.
- 5) Fresh fish are considered unattractive and inconvenient to buy.
- 6) Fresh fish requires specialist knowledge of consumers when buying, preparing, cooking, serving and eating.
- 7) Fresh fish involves more risk for consumers as it will not keep and must be used immediately. This constrains the participants propensity to buy it from a supermarket where purchase is intended for use over a much longer time period.

Frozen Fish

- 8) Frozen fish products are thought convenient to acquire and store.
- 9) Frozen fish products are thought easy to prepare and cook.
- 10) Regular users of these products see them as "safe and consistent".

- 11) Ease of eating is an important reason for frozen fish products (especially fish fingers) being popular with children.
- 12) Participants perceived frozen fish products as "boring" or unexciting in taste and appearance.
- 13) Many frozen fish products are thought to be unsuitable for main meals because they are
 - i) children's food
 - ii) too informal
 - iii) only appropriate for limited meal combinations and restricted in the ways in which they can be served.
- 14) Many participants felt that the high added value of prepared meal products are well packaged and of good quality but would only be appropriate for younger, smaller, high income households.

Canned Products

- 15) Canned products, like frozen, are considered easy to acquire and store.
- 16) Canned products are seen by participants as having a very limited range of uses, mainly as sandwich fillers or salad accompaniments.
- 17) Canned products are felt to be old-fashioned (with the exception of tuna).

Food Provisioning

- 18) Food provisioning involves several stages from acquisition through to disposal.

Acquisition - compared to meat the availability of all types of fish is much more restricted.

Fish is also perceived to be much more difficult to store.

Preparation - participants feel that fish requires special preparation skills. Only committed fish users buy whole wet fish.

Cooking - fish is difficult to cook and still retain an attractive form. As most participants fry fish, cooking is perceived to be messy, smelly and unhealthy.

Consumption (Eating) - Fish lacks the "meaty" characteristics expected of foods served in a main meal. It is regarded as an inferior taste and 'fiddly' to eat. It also requires extra effort to make it look appetising.

Disposal - Fish leftovers are not retained for later use.

The decision to use fish demands much more careful meal planning to ensure the correct quantities are purchased, it cannot be easily stored and leftovers are not retained.

THE NATURE OF FOOD OCCASIONS

Time Availability

- 19) The role of women in society has changed, more women now work full or part-time spending less time in the home. They have less time available for food provisioning and feel that this limited time should be devoted to other activities outside of getting cooking and preparing food for their families. As a consequence "convenience" food products have a greater appeal to women in this position.

Presence of Guests

- 20) The presence of guests influences the choice of fish for a meal. The importance of the guests is reflected in the choice of fish.

Freshness

- 21) The paramount attraction of wet fish is in their perceived freshness.
- 22) Fresh fish carries a greater risk, and demands more specialised knowledge of consumers.

Substantiality

- 23) Fish is generally perceived to be a less substantial main meal centre.
- 24) Substantiality is based on the texture, flavour and mouthfeel of the fish species, the sauces used, combinations of ingredients and the mode of eating.

Fish Users

- 25) Frequent and infrequent users are likely to differ amongst other things, in terms of age, their knowledge and experience of using fish, household size, and time devoted to food provisioning.
- 26) Older and younger consumers differ in their attitudes towards food provisioning, and the role of the housewife.
- 27) Older housewives are more likely to use fresh fish, young housewives are more likely to use frozen.
- 28) Working class people are more likely to regard fish as a hassle for children, middle class people are more likely to 'educate' their children on how to eat fish.
- 29) Fish offers variety in the regular pattern of meals, but fish is less likely to be acceptable to husbands and children.

The next stage goes on to examine how fish is actually used in meals, how it is acquired, prepared, cooked and served on the table.

CHAPTER 6

FOOD DIARY FINDINGS

The food diary study examines food usage in one hundred Tyneside households, over a two week period. The diary was completed by the "Key Kitchen Person" (KKP), usually a housewife. All "main" and "light" meals eaten in the home were recorded, along with data on food usage and demographic information on the household. The opportunity to examine actual food usage and the structure of food provisioning offers fresh insight into the nature of food occasions, and foods used in specific meals.

Coding the diaries proved a more complex task than anticipated. The "open" design of the diary necessitated the compilation of a coding scheme for all foods used, and this was based on McCance and Widdowsons food codes (1985) with amendments to facilitate specificities in this study.

Analysis of the data was carried out using SPSSx statistical package. The analysis examines purchase, cooking and serving characteristics of individual foods, but analysis of individual meals is more limited. Over 21,000 food items were recorded in the food diaries used in 3891 meals. It is possible to identify individual meals utilising information on the day of the week, meal name, time the meal started, the number of courses and who prepared the meal (these are consistent across meals).

The problem arises with the examination of individual components of the meal, not possible in this analysis, although the need for a broader classification scheme is obvious (this might follow the staple/centre piece/trimming/dressing classification as used by Douglas and Nicod, 1974). Such a scheme would give an indication of the meal structure variation in main meals or light meals but give little clear indication of the role of fish. It is necessary to identify meals containing fish and meat (given the importance of meat in the qualitative research) and determine if they differ in their form or time of use. The study examines 3891 meal occasions and the role of fish as part of that entity. The results which follow relate to 425 fish items which were used over the study period in 406 meals which contained at least one fish item.

6.1 THE SAMPLE

The respondents were professionally recruited using an independent quota sample. Although ambitious, it was hoped that there might be some clear demographic differences between fish users and non or infrequent fish users. This was not the case. The household numbers are small and it would be dangerous to attempt a demographic profile of fish users on this basis. However, the sample characteristics are reported on to give some indication of the wide cross section of households involved in the study.

6.1.1 SOCIAL GRADING¹

Table 6.1 indicates the characteristics of the sample in relation to social grading

Table 6.1: Social Grade of Households in the Sample

		Number of Households	Percent of Households	National* Profile %
Professional and Managerial	AB	11	10.8	17
Skilled Manual	C1	31	30.4	22
Semi-skilled Manual	C2	28	27.4	28
Unskilled and Unemployed	DE	32	31.4	33
TOTAL		102	100.0	100.0

Source: JICNARS (1987)

The distribution of the sample across social grade is sufficiently close to the national distribution to ensure reasonable representation in the sample of all social classes.

¹Social grading exists in a number of forms (see for example Douglas and Isherwood, 1979, pp99-100, 1979, pp100-101; Chisnall, 1975, pp105-123; Monk, 1985; D.O.E., 1972), the most commonly used is the National Readership survey classification. This is based on occupation of the head of the household. The system is arguably less appropriate today than in its initial conception due mainly to multiple income households, the changing significance of occupations and a narrowing of the wage differentials. With an increase in working women there may be two or more wages coming into the household, reducing the difference in disposable income between classes based on occupation of the head of the household. Although the concept of 'class' extends beyond occupation and education, these are taken as its main indicators. Lifestyle and social attitudes may be more important for consumption patterns. The social grade of the household is based on the highest social grade where there is more than one working adult in the household. The underlying assumption is that the household will aspire towards the higher category.

6.1.2 EDUCATION

Only 60% of the sample responded to this question. The majority left school at the age of fifteen. 24% of those who responded have no qualifications. The most common qualification was GCE 'O' levels, 'other qualifications' accounting for 30% and 20% of responses, respectively. 42% of the KKP's possessed GCE 'O' levels. 10% had 'A' levels and 2% university degrees. In general the level of education was what one would have expected across the population.

Only 7% of the under thirties in the sample possess no qualifications compared to 35% of those between thirty and sixty. 53% of the over sixties had no qualifications. Level of education and age of the KKP seem directly related. It is the younger groups who possess most of the 'O' and 'A' levels. The C1's are more likely to have higher educational qualifications, and possess the majority of 'O' levels (Table 6.2).

Table 6.2: Educational Qualifications by Social Grade

EDUCATIONAL QUALIFICATIONS	SOCIAL GRADE %				TOTAL
	AB	C1	C2	DE	
Higher Education	100	-	-	-	100
Intermediate Education	45.3	18.8	34.0	1.9	100
No Qualifications	41.4	6.9	37.9	13.8	100
All Qualifications	48.9	13.3	32.2	5.6	100

SPSSx significance=0.000²

The relationship between gross household income is complicated by the fact that we are looking at the educational level of the KKP; mainly women; but gross household income represents in most cases the earnings of the husband or partner, plus any additional earnings of the KKP. Of those with no qualifications 40% are in low income groups, 9% in the high income bracket. Many of the KKP's with 'O' and 'A' levels are intermediate gross income households with £6,000-14,999 gross household income. The 2% with university degrees (one old and one young respondent) are in the low income classification.

²Crosstabulated variables are subjected to the chi squared test for significance (Appendix L). Figures below SPSSx significance of 0.0500 are considered to be statistically significant.

In summary it appears that the young and middle classes in this sample, are more likely to be better educated.

6.1.3 WEEKLY FOOD EXPENDITURE

This represents the household expenditure on food for the home, in the previous week. The figure gives no indication of the frequency of shopping i.e. once a week, once a month, but does include all food expenditure for the previous week. On average households spend around £30 on food, the range of expenditure is given in Table 6.3.

Table 6.3: Weekly Food Expenditure for Households (based on previous week)

Weekly food expenditure (£)	% Households	Cumulative %
Up to 10	14.7	14.7
11 to 20	12.8	27.5
21 to 30	23.4	51.0
31 to 40	19.6	70.6
41 to 50	10.7	87.3
51 to 60	7.8	95.1
61 to 70	2.9	98.0
Over 71	2.0	100.0

Most household expenditure is within the range of £21-30 for the previous week. Over 70% of the sample spent up to £40 on food in the previous week.

There is little evidence of any significant relationship between social grade and weekly expenditure on food within the sample. Proportionately more of those households spending up to £20 are in the lower socio-economic groups C2, D and E. In contrast, a higher proportion of those spending between £30-50 in the previous week are in C1 households. Two of the DE households spent £60-70 on food in the previous week. One suggested explanation for this may be shopping behaviour which relates to periods greater than one week, resulting in higher expenditure in the previous week.

6.1.4 GROSS HOUSEHOLD INCOME

This represents total income available to the households as a unit. It covers all earnings coming into the home including social security benefits and contributions from household wage earners. Despite the sensitivity of such a question 93% of the sample gave some indication of their yearly gross household income. Table 6.4 indicates the distribution of the sample across the household income

brackets.

Table 6.4: Gross Household Income (£/pa)

Gross Household Income (£/pa)		% Households
Low:	up to 5999	33.7
Medium:	6000 to 14999	49.5
High:	over 15000	16.8
TOTAL		100.0

Almost half of the sample are in the medium income bracket, with over one third on a gross income of less than £6,000 per year.

6.1.4.1 Social Class and Gross Household Income

There appears to be a statistically significant and direct relationship between social class and household gross income. Compared to the distribution of incomes across all households, proportionately more DE's are found in the lower bracket, C2's in the intermediate bracket and AB's in the upper bracket (Table 6.5).

Table 6.5: Social Class by Gross Household Income

Social Grade	HOUSEHOLD GROSS INCOME			TOTAL
	Low: under 5999	Medium: 6000-14999	High: over 15000	
AB	-	40.0	60.0	100
C1	29.6	55.6	14.8	100
C2	23.1	61.5	15.4	100
DE	48.2	44.4	7.4	100
All households	30.0	52.2	17.8	100

Significance=0.0036

6.1.4.2 Weekly Food Expenditure and Gross Household Income

The relationship between household gross income and weekly food expenditure is statistically significant. Those households with lowest gross income spend less on food, 75% and 84% of those

spending up to £10, and £10-20 respectively are in the low income bracket (Table 6.6). None of the high gross income households are found in this bracket. A high proportion of those spending £21-20 are high income households, compared to their representation in the sample. It is the medium gross income households who spend most on food, £40-70 in the previous week.

Table 6.6: Weekly Food Expenditure by Gross Household Income

HOUSEHOLD GROSS INCOME							
Weekly Food Expenditure (£)	Low: up to 5999 (Frequency) %		Medium: 6000-14999 (Frequency) %		High: over 15000 (Frequency) %		Total %
Up to 10	(9)	75.0	(3)	25.0	(0)	0.0	100
11-20	(11)	84.6	(2)	15.4	(0)	0.0	100
21-30	(6)	25.0	(11)	45.8	(7)	29.2	100
31-40	(4)	21.1	(11)	57.9	(4)	21.0	100
41-50	(1)	6.2	(12)	75.0	(3)	18.8	100
51-60	(1)	14.3	(5)	71.4	(1)	14.3	100
61-70	(0)	0.0	(2)	66.7	(1)	33.3	100
Over 70	(0)	0.0	(1)	100.0	(0)	0.0	100
TOTAL	(32)	33.7	(47)	49.5	(16)	16.8	(93) 100

Significance=0.0004

6.1.5 HOUSEHOLD COMPOSITION

This classification includes information relating to three variables; household size which includes residing grandparents or lodgers, age of adult household members, and the presence of children.

The majority of households in the sample (58.8%), have children living at home (Table 6.7). Single person households account for under 20%, two person households with no children the remaining 20%.

Table 6.7: Household Composition

	Number of Households	Percent of Households	
Older single (>60 yrs)	10	9.8	
Other single (<60 yrs)	11	10.8	
Older couple no children	6	5.9	
Other couple no children	15	14.7	
Households with children	60	58.8	
- children <10 yrs	19		
- children >10 yrs	36		
- both young and older children	5		
TOTAL		102	100

6.1.5.1 Household Composition and Gross Household Income

There is a significant relationship between gross income and household composition. Proportionately more single person households and older couple households without children, are in the low income bracket (Table 6.8). These groups include a high proportion of individuals on state or private pensions and younger single households. In the sample households with children mainly fall in the medium and high income bracket.

Table 6.8: Household Composition by Gross Household Income

Household	HOUSEHOLD GROSS INCOME			Total
	Low: up to 5999 %	Medium: 6000-14999 %	High: over 15000 %	
Older single (>60 yrs)	100.0	-	-	100
Other single (<60 yrs)	70.0	30.0	-	100
Older couple no children	50.0	33.3	16.7	100
Other couple no children	40.0	46.7	13.3	100
Households with children	11.1	64.8	24.1	100
All Households	33.7	49.5	16.8	100

Significance=0.000

6.1.5.2 Household Composition and Weekly Food Expenditure

Household composition and weekly food expenditure appear to be significantly related. Single person households are spending up to £20 (Table 6.9) while more two person households spend £21-40, it is the households with children who spent most on food in the previous week. They represent the highest proportion of expenditure in the £41-60 range. Couples appear to be spending twice as much as single person households on food whilst overall expenditure is highest in households with children.

Table 6.9: Household Composition and Weekly Food Expenditure

Household	WEEKLY FOOD EXPENDITURE (previous week)				Total
	Up to £20 %	£21-40 %	£41-60 %	Over £61 %	
Older single (>60 yrs)	100.0	-	-	-	100
Other single (<60 yrs)	72.7	27.3	-	-	100
Older couple no children	16.0	66.7	16.7	0.6	100
Other couple no children	20.0	60.0	20.0	-	100
Households with children	11.7	46.7	35.0	6.7	100
All Households	26.7	43.6	24.8	5.0	100

Significance 0.000

Those households with children have the highest gross incomes and also the highest weekly food expenditure. Although income and occupation are related to social class there appears to be no clear relationship between household composition and class.

6.1.6 KITCHEN TECHNOLOGY

Each household was asked to indicate kitchen equipment which they currently possessed, in order to get a measure of the level of 'kitchen technology'. The most commonly owned items were toaster (73.5% of sample), grill (71.6%), chip pan (67.6%) and refrigerator (56.9%). Assuming no households have a gas and an electric oven, most possessed one or the other (Appendix M).

Examining ownership and demographics by individual items reveals little. It is the C1's who own proportionately more dishwashers, extractor fans and microwaves, accounting for 80.0%, 60.0% and 53.8% of ownership respectively. Those in the middle income bracket are more likely to possess a

dishwasher, no household with a gross income under 5,999 owns a dishwasher. Extractor fans are found predominantly in the high income households, otherwise there is little to distinguish between gross income or social class and utensil ownership. It is the younger KKP's who are more likely to possess slow cookers, food choppers and dishwashers, none of the KKP's over sixty years old have a dishwasher. The households were classified into high technology households (possessing more than twelve of the kitchen items listed in the diary), intermediate technology households (nine to twelve items) and low technology items (less than nine items). Table 6.10.

Table 6.10: Kitchen Technology

Technology	Number of Households	Percent of Households
Low Technology (<9 items)	31	30.4
Intermediates (10-12 items)	41	40.2
High Technology (>12 items)	30	29.4
TOTAL	102	100.0

There was little to distinguish between the groups in terms of age or social class. The low technology households included a higher proportion of other single households, high technology households a higher proportion of households with children compared to the sample overall. The relationship between technology and household composition is better explained by the gross income differences.

6.1.6.1 Kitchen Technology and Gross Household Income

There is a statistically significant relationship between gross household income and the level of kitchen technology. The ownership of kitchen utensils is directly related to the level of gross income. Those on lower incomes own fewer utensils than those on higher incomes (Table 6.11). The higher income group contain more households with children.

Table 6.11: Kitchen Technology by Gross Household Income

Technology	HOUSEHOLD GROSS INCOME			Total
	Low: up to 5999 %	Medium: 6000-14999 %	High: over 15000 %	
Low technology	51.8	44.8	3.4	100
Intermediate technology	27.8	61.1	11.1	100
High technology	23.3	40.0	36.7	100
Significance 0.0023				

6.1.7 COOKBOOKS, FOOD PROGRAMMES AND COOKERY CLASSES

The use of such 'educational' material reflects the degree of interest and time devoted to food provisioning within the home. No strong demographic traits were evident in that portion of the sample who were 'self-educators', in relation to food and cooking.

Cookbooks were most commonly used by the sample, 44.6% used cookbooks regularly (Table 6.12). However, almost half of the sample never or seldom used cookbooks. 61% and 78.4% of the sample respectively never or seldom watched food programmes or attended cookery classes. Those who use cookbooks regularly are more likely to be housewives in the 30-60 age group, probably at that stage in the family lifecycle when food provisioning is more demanding.

Table 6.12: Usage of Cookbooks, Food Programmes and Cookery Classes

(% sample)	USAGE				TOTAL
	Never	Seldom	Regularly	A Lot	
Cookbooks	11.9	35.6	44.6	7.9	100
Food programmes	12.0	49.0	32.0	7.0	100
Cookery classes	78.3	16.5	5.2	-	100

6.2 FINDINGS

Food items specific to the diaries were incorporated into the coding scheme at the coding stage. The day of the week, and who was involved in preparing the meal was also coded directly into the

diary³.

The main problem which exists is the treatment of individual food items as one record, it is possible to look at the food items 'per se', and identify purchase and cooking methods, serving and presence of guests. With this coding scheme the analysis of individual meals is extremely limited. The unit of analysis remains the food item rather than the meal. A common household identifier, week, day, meal number, preparation and meal time across individual meals does however afford a particular analysis. It was possible to identify 3891 individual meals. However, within this analysis it has not been possible to usefully characterise in totality, different types of meal on the basis of individual food items contained within the meal. This added complication is partly a characteristic of the data, the way in which it was inputted, and partly a reflection of the ability of SPSSx to deal with this type of 'nested' data. The analysis takes the following form:

- 1) an examination of meals in general
- 2) an examination of fish items as contained within meals
- 3) an examination of meals which contain fish

The first approach considers the characteristics of individual meals, whether they were light or main meals, the type of meal occasion they are associated with, the time of different meals throughout the day and foods most commonly used. The analysis then concentrates more specifically on the form in which fish was purchased, how it was cooked, the time it took to prepare and cook, whether it was served hot or cold, and who ate the food.

The uniqueness of the diary lies in its open design and the ability to locate specific food items in meals thus relating cooking and purchase form to the types of meal in which foods are used. In the analysis specific variables have been crosstabulated and subjected to the chi-squared test for significance (Appendix L).

³Errors inevitably occurred in this transfer process and ideally the data would be verified. However financial and time limitations made verification impractical. The data set is by no means error free, and routine checks for outlying codes and more obvious errors were made and consequently checked against the original data. The fish meals were scrutinised closely and the food codes verified. Only six foods were misscoded as fish items when the codes were checked. More errors occurred in the coding of meal times, which did not correspond with meal names. The meal data set involved 1288206 character strikes, i.e. 21,834 items with information in 52 columns.

6.3 MEALS IN GENERAL

This section examines the characteristics of meals in general, their structure and the most common food items used. A total of 21,834 food items were used in 3891 meals an average of 2.72 meals per day in each household. These meals comprised both main and light meals eaten in the home. It is interesting to note that 51.4% of all the food items recorded involved no preparation time, 26.2% involved 1-4 minutes and 17%, 5-10 minutes.

6.3.1 MAIN AND LIGHT MEALS

Three meals per day was the most common pattern for the sample households. Most meals involved one course; 33.3% involved two courses. Main meals represented 39.2% of all meals, with 60.8% recorded as light meals. However 48% of all the food items were served in main meals, 52% in light meals. The key kitchen person (KKP) was involved in 90% of all food preparation for these meals, husbands and children in 12% and 8% respectively. In the sample women (92% of all KKP's) are the main food provisioners in the home.

6.3.1.1 Meal Name and Meal Type

Table 6.13 classifies the 3891 meals into meal names, and meal types.

Table 6.13: Meal Name by Meal Type

MEAL NAME	MEAL TYPE			
	Number of meals	All meals (n=3891)	Light meals (n=2366)	Main meals (n=1518)
Breakfast	1146	29.5	66.7	33.3
Lunch	855	22.0	66.7	33.3
Dinner	812	20.9	7.4	92.6
Tea	623	16.0	51.2	48.8
Supper	416	10.7	86.8	13.2
Unclassified	39	1.0	92.3	7.7

Breakfast is the most common meal served over the study period and represents 29.5% of all meals. Lunch and dinner meals account for 22.0% and 20.9% of meals respectively. Breakfast, lunch and supper are categorised as light meals, dinner as a main meal and tea falls somewhere between the two.

Examination of the number of food items used in each of the different meals, gives some indication of the relative importance of each meal occasion.

Dinner involves more food items than any other meals, suggesting more complexity⁴ in food combinations for main meals. Breakfast and lunch are served more often but dinners involve more food items.

A higher proportion of foods served as main meal constituents are served in dinner meals (Table 6.14). Of those foods served in light meals more are served in breakfast (41.9%) and lunch (28.6%).

Table 6.14: Usage of Food Items Across Meal Types and Meal Names

MEAL NAME	MEAL TYPE		
	All meals (% items)	Light meals (% items)	Main meals (% items)
Breakfast	24.7	41.9	6.4
Lunch	20.5	28.6	19.1
Dinner	26.9	3.6	52.9
Tea	17.5	16.1	19.0
Supper (+ other)	10.4	10.3	2.6

The majority of breakfasts were served between seven and nine o'clock a.m. Lunches between twelve o'clock midday and two o'clock p.m. A small percentage of dinners, 16.8% were served between twelve and one, but the majority of dinners occur between five o'clock and seven o'clock p.m. Teas tended to start earlier than dinners around four o'clock p.m. Supper meals may occur anytime between seven o'clock and eleven o'clock p.m., but are concentrated in the latter part of the evening.

The meals themselves serve as markers in the daily cycle. 'Dinner' is the main meal of the day and signifies the end of the working day, breakfast the start.

⁴The notion of complexity is very different from that used by Douglas (1984), it has not been possible to employ the concept in this study. Complexity in this case simply refers to the number of food items used. It does not relate to preparation, cooking and serving methods.

6.3.1.2 Mode of Purchase (Product Form), Cooking Methods and Meal Type

Fresh foods are used for both main and light meals. Proportionately more frozen foods, (73%) are used in main meals (compared to 48% of all food items used in main meals). proportionately more canned foods, (62%) are used in light meals (compared to 52% of all food items used in light meals).

Table 6.15 considers the cooking methods employed across meals which the foods were used in. It shows that a higher proportion of foods which were heated in the oven, fried, boiled and steamed or microwaved are used in main meals. In contrast proportionately more grilled and ready prepared foods were used in light meals.

Table 6.15: Cooking Method for Food Items Used in Main and Light Meals

MEAL TYPE	COOKING METHOD						
	Heated/ Roasted %	Fried %	Grilled %	Boiled/ Steamed %	Micro- waved %	Ready Prepared %	Other %
Main meals	81.6	79.3	29.9	67.3	65.3	32.6	53.9
Light meals	18.4	30.6	70.1	32.7	34.7	67.4	46.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SPSSx significance 0.0000

While light meals are spread throughout the day the main meal, notably dinner, takes place at the end of the working day around five o'clock to seven o'clock, when all family members are likely to be present.

Main meals last longer than light meals, and involve more than one course. Light meals involve foods which require less preparation and shorter cooking times. One major difference between light and main meals appears to be the amount of time invested in food preparation and cooking. A higher proportion of light meals involve one course and no cooking or preparation time (Appendix N: Tables N1, N2, N3). A higher proportion of light meals are eaten in less than ten minutes. In less formal meals like lunch and breakfast, all the family members are less likely to be present. The meal system in the UK is coming to be increasingly dominated by foods which are quick and convenient to prepare and cook.

6.3.2 FREQUENCY OF FOOD USAGE

The frequency of food usage gives some idea of the relative importance of different foods in the meal system. This section examines the usage of broad food categories across the meals and those foods more specifically confined to light or main meals.

Table 6.16 shows that cereals, vegetables, beverages, meat and dairy products constitute the bulk of the food items used (77.1%). Fish represents 2.0% of all food items recorded.

Table 6.16: Frequency of Food Usage

Foods	% of food items recorded
Cereals	26.2
Vegetables	22.6
Beverages	17.1
Meat	10.8
Dairy products (inc. eggs)*	10.4
Fruit	4.6
Sugars	3.1
Fish	2.0
Miscellaneous	0.9
Sauces	0.6
Soups	0.6
Nuts	0.2
TOTAL	100.0

* dairy products include cheese and cheese dishes, yoghurt, custard, milk/cream, quiche (pizza included), eggs.

Food items involving no preparation are more likely to be used by households with children and other singles. Food items which require 11-20 minutes preparation are more likely to be used by couples. Foods which involve no cooking are more likely to be used by older couples. Foods are more likely to be fried or grilled in other single households, those boiled/steamed and microwaved in the older single households, while roasted foods are more common in the older couple households.

Fresh food items are more likely to be used by older households while frozen and canned foods are more likely to be use by households with children. Takeaway foods in contrast are more likely to be used by other singles.

6.3.3 FOODS SERVED IN LIGHT AND MAIN MEALS

This Table (6.17) does not examine the popularity of different food items in main and light meals. It indicates those food items which are more strongly associated with main or light meals. By examining the degree of usage across the meal types one can see that specific foods are perceived as suitable for main meals others for light.

Table 6.17: Foods Associated with Light and Main Meals

Main meals (48%)	% of occasions used	Light meals (52%)	% of occasions used
Custard	95.9	Cereal	88.8
Other vegetables	90.7	Sandwich/Roll	87.8
Beer/Lager	88.9	Sugar/Jam	83.4
Milk pudding	88.3	Sweets/Crisps	83.2
Potatoes	87.6	Bread	79.0
Root vegetables	86.2	Fruit juice	72.6
Pork	83.2	Cheese	72.4
Lamb	82.5	Soup	71.6
Greens	81.8	Yogurt	67.1
Wine	81.1	Tea/Coffee	65.4
Sweet puddings	79.5	Eggs	62.8
Game/Fowl	77.4		
Beans	77.2		
Sauces	72.3		
Fish	59.8		

Custard seems almost exclusively restricted to main meals as do 'other vegetables' (which includes potatoes). Around 90% of the potatoes are used in main meals, representing the staple element in the structure. Vegetables also feature heavily in main meals as accompaniments to meat centres. White meats are almost exclusively confined to main rather than light meals. (83.2% of pork items, 82.5% of lamb and 77.4% of game/fowl was served at main meals). In the case of red meat 56.8% of meats were associated with main meals.

The centrality of red meat in the meal structure is not negated by this however, it fails to account for absolute numbers of the different items used. The total of 1043 red meat items served in main meals exceeds all fish, poultry, pork and lamb used across both light and main meals (939 items in total).

The use of sauces and puddings in main meals rather than light meals strongly supports the meal structure proposed by Nicod (1979). "Major food events" in his study always involved a 'sweet'

course. (This does not appear to be the case with the light meals.) The main meals structure involves combination of staple (potatoes) with centre (meat) and trimming (vegetables).

Most of the cereals are confined to light meals (breakfasts). A high proportion of sandwiches and bread along with sugars/jam/crisps/sweets are used in light meals as is most cheese (72.4%) and eggs (62.8%).

6.4 MEALS CONTAINING FISH AND FISH PRODUCTS

Of the 3891 meals recorded 406 (10.4%) contained at least one fish item. A total of 425 fish items were used by the sample over the two week period. In only a few instances (3.7%), was the fish meal the only meal recorded for that day, 46.5%, of these meals represent one of three meals consumed during the day. Closer examination of the fish meals shows that 58.9% of them involved only one course, 37.4% involved two courses, i.e. either a starter 'course' or more commonly a sweet to follow. Only 3.6% of fish meals involved three or more courses (Table 6.18).

Table 6.18: Number of Courses in Fish Meals

Number of Courses	Percent	Cumulative Percent
1	58.9	58.9
2	37.4	96.3
3	3.4	99.7
4	0.2	100.0

Those fish meals which involved only one course were predominantly lunch and tea. Fish meals with two courses were mainly dinners. The figures suggest that very few of the fish items used were involved in more formal meals, characterised by three courses (see Nicod, 1979).

The most common type of fish used over the diary period was demersal or white fish, notably cod. This accounted for 41% of all the fish consumed (Table 6.19). Fish fingers accounted for just under twenty percent of the fish used, followed by tuna (12%), and pelagic fish (9%). Sixty percent of fish usage is then accounted for by white fish products in the sample.

Table 6.19: "Type" of Fish Used⁵

	Number of items	Percent of items
Demersal (white)	175	41.2
Fish fingers etc.	74	17.4
Tuna	53	12.5
Pelagic (dark)	38	8.9
Shellfish	34	8.0
Salmon	26	6.1
Processed	13	3.1
Pate/Paste	12	2.8
TOTAL	425	100.0

6.4.1 MEAL TYPE

Classification by 'meal type' shows 57.9% of fish meals were categorised as main meals, 42.1% as light meals. This in itself is encouraging given that the qualitative research suggested that fish in general was not considered appropriate to serve in a main meal. The complexity of what constitutes a main meal obviously extends beyond the simple 'light' and 'main' categorisation. It relates to features like the time involved in preparation, cooking and the meal duration. The range and number of foods used, plus the presence of family members also constitute evaluative features. The following section relates the species and types of products used.

6.4.1.1 Meal Type and Type of Fish

Table 6.20 gives some indication of the use of different types of fish across main and light meals. Of those fish used in main meals proportionately more are demersal fish. With light meals proportionately more tuna, salmon and pates are used. Fish fingers and shellfish feature in both types of meal.

⁵Demersal includes cod (fresh, frozen, smoked), haddock (fresh, smoked), gunnard, lemon sole, ling, plaice, turbot, whiting. Fish fingers includes fish fingers and fish cakes. Pelagic includes herring (fresh, pickled), kippers, mackerel (fresh, smoked), pilchards, sardines. Shellfish includes crab, prawns, shrimps, mussels, scampi. Salmon includes trout. Processed includes crab sticks, ocean pie, fish in sauce.

Table 6.20: Meal Type by Product Type (type of fish)

MEAL TYPE	FISH (% fish items)							
	Demersal	Fish Fingers	Tuna	Pelagic	Shell Fish	Salmon	Proc-essed	Pate
Main meal	55.6	16.5	5.9	5.9	9.4	2.4	3.9	0.4
Light meal	20.3	18.6	22.1	13.4	5.8	11.6	1.8	6.4
All meals	41.5	17.3	12.4	8.9	8.0	6.1	3.1	2.7

SPSSx significance=0.000

6.4.1.2 Meal Type and Mode of Purchase

Proportionately more frozen and fresh products are used in main meals (Table 6.21). It is the canned products which feature most strongly in light meals. Main meals with fish are more likely to include fresh or frozen white fish., light meals, canned salmon and tuna.

Table 6.21: Meal Type by Mode of Purchase (product form) for Fish Meals

MEAL TYPE	MODE OF PURCHASE					
	Frozen	Fresh	Canned	T'away	H'made	TOTAL
Main meal	44.0	32.4	10.0	11.2	2.4	100
Light meal	21.5	12.4	44.7	14.7	1.8	100
All meals	36.9	24.3	24.0	12.6	2.2	100

SPSSx significance=0.000

In terms of preparation the KKP was involved in preparing 83.7% of the fish meals. The husband/partner participated in preparation of 7% of the meals, children in 4.4%.

6.5 USAGE OF FISH IN MEALS

This section looks at the usage of fish items within fish meals and the association of specific species and product forms with specific meals.

Most fish items were used in lunches (35.3%) as opposed to dinner (29.2%) or tea (24.9%) (Table 6.22). The number of fish items used in breakfast meals is negligible. Given that breakfast is the most common meal occasion fish is excluded from a significant food event where once it held a prime place. Breakfasts have become less significant social events and involve more convenience foods, e.g.

breakfast cereals.

Table 6.22: Meals Containing Fish Items

-

MEAL NAME	% FISH ITEMS
Lunch	35.3
Dinner	29.2
Tea	24.9
Supper	9.4
Unclassified	0.7
Breakfast	0.5
TOTAL	100

There is no evidence of fish meals starting at different times to other meals. Dinner as we have already seen is perceived to be the main meal of the day, lunches are regarded as secondary.

Of the demersal species proportionately more are associated with dinner compared to fish meals overall, proportionately less with tea (Table 6.23). With the pelagic fish proportionately more are consumed in lunch meals, whereas salmon is associated with tea and packed lunches. Tuna is used in more lunch meals (including packed lunches) and not used very heavily in dinners, although there is evidence of its use in teas. Proportionately more of the shellfish is used in supper meals compared to the overall use of fish for this meal. Closer examination reveals much of this consumption is in the form of frozen ready prepared meals eaten at home. By far the largest proportion of processed fish meals are consumed at dinner whereas fish fingers are more commonly used for tea. Fish fingers are used in a much higher proportion of teas compared to all fish. The associations of this meal with early evening and childrens presence contributes to their place in the meal. They do not feature so strongly in dinners but are a feature of lunch meals, characterised as less formal. The fish pate and pastes are almost exclusively used in packed lunches and light meals.

What is apparent from Table 6.23 is the strong positioning of particular types of fish within specific meals; demersal in dinners; pelagic in lunches; salmon and tuna in tea; tuna in lunch; shellfish in suppers; processed in dinners and pate, paste in packed lunches. Fish obviously has very defined roles in the meal system and at present there is little usage of fish products in breakfast and packed lunch meals.

Table 6.23: Product Type by Type of Meal

	% items						
	Lunch	Dinner	Tea	Supper	B'fast	Other	Total
Demersal	31.4	38.3	18.9	11.4	-	-	100
Fish fingers	35.1	25.7	35.1	4.1	-	-	100
Tuna	49.1	13.2	32.1	3.8	-	1.8	100
Pelagic	50.0	15.8	15.8	13.2	5.2	-	100
Shellfish	11.8	38.2	23.5	20.6	-	5.9	100
Salmon	34.6	15.4	46.2	3.8	-	-	100
Processed	15.4	61.5	7.7	15.4	-	-	100
Pate	75.0	-	25.0	-	-	-	100
All fish	35.3	29.2	24.9	9.4	0.5	0.7	.

SPSSx significance=0.000

The type of product also differs between meals. While lunch meals use mainly frozen fish, they contain proportionately more canned and takeaway products. Dinners involve fresh and frozen whereas teas involve frozen and canned. Packed lunches use canned fish almost exclusively. Supper meals involve a higher proportion of takeaway fish meals. Takeaway fish is split between lunch and supper meals (Appendix N; Table N4).

Fish dinners and teas involve a large number of fried fish items. Most fish items in supper meals are ready prepared fish and chips. Only two fish items were served at breakfast both were microwaved. A high proportion of fish items served at lunch are ready prepared, emphasising the 'convenience' aspect of this meal (Appendix N; Table N5).

6.6 FAMILY MEMBERS AND FISH MEALS

There is little difference in participation by family members in these meals involving fish, although children do seem slightly less willing to eat fish when it is served compared to their parents. The KKP was present at 92.6% of meals involving fish, partners and spouses were present at 63.3% of meals. Daughters were present at 75% of the fish meals, sons at 74%.

6.7 WAYS IN WHICH FISH WAS USED

6.7.1 HOW FISH WAS BOUGHT

Most of the fish items used were purchased frozen (37.1%) (Table 6.24). A reflection of the wider availability of frozen products.⁶ Within our sample canned fish was used as frequently as fresh i.e. wet fish. Fresh and canned fish both represented 24% of the purchases. Chilled products are relatively new to the market.⁷ Takeaway products notably fish and chips represent one tenth of all fish meals eaten in the home over the study period. This is a substantial proportion of total consumption. With homemade/homemade-then-frozen it is impossible to determine the form in which the fish was originally purchased. A small proportion of fish was prepared as a 'homemade' dish.

Table 6.24: How Fish was Bought

Mode of purchase (Product form)	% items (n=419)
Frozen/chilled	37.1
Fresh	24.3
Canned/bottled/dried	24.1
Takeaway/other	12.4
Homemade/homemade frozen dishes	2.1

6.7.1.1 Mode of Purchase (product form) and Product Type

It is possible to develop the investigation and relate the product form to the type of fish bought (Table 6.25). Of the demersal fish used a much higher proportion was either fresh or takeaway compared to the fish overall. In the case of tuna, pate, salmon and pelagic fish a higher proportion was canned. Frozen fish products are mainly fish fingers, shellfish and processed product. Mode of purchase reflects what is currently available and contributes to the association of particular species with particular product form. Hence tuna and salmon are seen as canned rather than fresh. A high proportion of takeaway fish are demersal (Appendix N; Table N6)

⁶The region is located fairly close to the sea, and given its traditional links with fishing one might have suspected the frozen figure to be slightly lower and the fresh figure slightly higher.

⁷This low incidence of chilled fish usage (1.1%) resulted in their inclusion in the frozen figure.

Table 6.25: Product Type by Mode of Purchase (product form)

	Frozen	Fresh	Canned	Takeaway	Homemade	Total
Demersal	31.6	42.0	1.1	24.7	0.6	100
Fish fingers	87.8	5.4	1.4	-	5.4	100
Tuna	-	1.9	92.3	5.8	-	100
Pelagic	10.8	32.4	54.1	2.7	-	100
Shellfish	68.8	3.1	9.4	15.6	3.1	100
Salmon	3.8	19.2	73.2	-	3.8	100
Processed	61.5	23.1	-	-	15.4	100
Pate	-	27.3	72.7	-	-	100
All fish	37.1	24.3	24.1	12.4	2.1	100

SPSSx significance=0.000

6.7.2 HOW FISH WAS COOKED

Over one third of fish was fried (Table 6.26), 26.0% ready prepared and 15.5% grilled. While 10.5% of the fish was heated/cooked in the oven no fish item was roasted. This is likely to reflect almost the exclusive association of 'roasting' with red meats rather than fish. Fish is arguably more likely to be described as 'baked'. A small percentage of the fish items were boiled/steamed which may reflect the rather negative attitude towards boiled fish and its association with invalid food. The figure for microwave cooking seems very low given the suitability of fish to this form of cooking, and the high ownership of microwaves (40%). No cooking information was recorded for seventy two of the fish items, 16.7% of the total.

Table 6.26: How Fish was Cooked

Form of cooking	% (n=354)
Fried	31.1
Ready prepared	26.0
Grilled	15.5
Heated/cooked in oven	10.5
Boiled/steamed	6.2
Other	5.3
Microwaved	5.4
TOTAL	100

6.7.2.1 Cooking Method and Product Type

Particular types of fish product are associated with specific cooking methods (Table 6.27). Demersal fish is mostly fried (45.0%) or ready prepared (18.1%). A higher proportion of demersal fish is fried

compared to all fish. Contained within the ready prepared category are takeaway meals many of which are likely to be fried. Fish fingers tend to be grilled and fried. More fish fingers are grilled than is the case with many other fish products and their association with frying less than anticipated. This contributed in some way to a reasonably healthy image for this product. Most of the tuna products were ready prepared (77.4%), and required no further cooking. This is also reflected in the figure for salmon and trout, where 64.3% were ready prepared. The previous table showed most of these to be canned products (suggesting salmon sandwiches!). In the case of pelagic fish a much higher proportion is ready prepared. This again is purchased predominantly in canned form. Shellfish also requires little cooking, 45.8% of all shellfish were fried. Compared to other fish proportionately more processed products are microwaved. Alternatively they may be boiled/steamed or cooked in the oven. These products exhibit the greatest range of methods. They tend not to be grilled or fried lending to a more 'healthy' image. Pates and pastes are served as bought and count as pre-cooked.

Table 6.27: Product Type by Cooking Method

PRODUCT TYPE	COOKING METHOD							Total
	Fried	Ready prepared	Grilled	Heated/ Roasted	Boiled/ Steamed	Micro-waved	Other	
Demersal	45.0	18.1	6.3	13.8	10.0	6.3	0.6	100
Fish fingers	38.4	2.7	52.1	5.5	1.3	-	-	100
Tuna	-	77.4	-	-	3.2	-	19.4	100
Pelagic	3.2	41.9	19.4	16.1	3.2	9.7	6.5	100
Shellfish	37.5	45.8	-	4.2	-	8.3	4.2	100
Salmon	-	64.3	7.1	14.3	-	-	14.3	100
Processed	-	16.7	-	25.0	25.0	33.3	-	100
Pate	-	22.2	-	-	-	-	77.8	100
All fish	31.1	26.0	15.5	10.5	6.2	5.4	5.3	100

SPSSX significance=0.000

6.7.3 PREPARATION AND COOKING TIMES

The time taken to prepare and cook fish gives some indication of the element of convenience in the products. One aspect of convenience is economy in time spent in preparation.

Nearly 50% of all fish items were recorded as involving no preparation time (Table 6.28). One quarter require 1-4 minutes, while only 8% involve over ten minutes for preparation. Proportionately more of the fish items requiring no preparation include shellfish, processed products and fish fingers, the "convenience" products (Appendix N; Table N7).

Table 6.28:Preparation Time (all fish items)

(Mins)	% items (n=425)
0	48.5
1-4	24.0
5-10	19.5
11-20	6.8
over 20	1.2

Interestingly, salmon and tuna represent a high proportion of the products requiring 11-20 minutes preparation. This is despite the fact that they are regarded as 'ready prepared'. Indeed a much lower proportion of tuna involves no preparation compared to the average overall. This reflects the way in which these products are used, notably as sandwich fillers. Whilst they are convenient in that they involve no further cooking, time is involved due to the way in which the food is used, for example preparing sandwiches or salad meals.

The high incidence of fish items which require no further preparation suggests a very convenient product. It also reflects the general lack of knowledge and uncertainty expressed in the qualitative research regarding fish preparation. Products requiring no further preparation offer convenience but distance the consumer from the fresh products and reinforces the classification of fish as a light, rather than a main meal ingredient.

Convenience is also related to the time required for cooking, 43% of fish items were recorded as requiring no cooking at all (Table 6.29). These are mainly salmon, tuna and shellfish. proportionately fewer of the processed products and fish fingers require no cooking. A higher than average proportion of demersal and processed products are cooked for 11-20 minutes in contrast to the shellfish and pelagic items which require little cooking (many of the latter are presumably precooked, but not ready for consumption) (Appendix N; Table N8).

Table 6.29: Cooking Time (all fish items)

(Mins)	% items (n=425)
0	43.8
1-10	32.2
11-20	18.4
over 20	5.6

This has interesting implications for the convenience of fish products in current usage. Shellfish and processed products offer convenience and time saving by needing no further preparation. But, due to the way in which they are presented and used in the meal they still need to be cooked.

Salmon and tuna offer convenience by the virtue that they involve no cooking, although they do require time for further preparation (because of the way in which they are used).

Only shellfish offers both time saving in preparation and cooking, again depending on how they are used.

6.7.4 SERVING METHODS

Almost all demersal fish was served hot as were processed products and fish fingers. Most of the salmon, tuna and the fish paste items were served cold. Pelagic species and shellfish were divided fairly evenly between meals served hot and those served cold. This may in part account for the use of demersal in main meals. Dinner which represents the main meal of the day, usually involves food which is served hot in the main course⁸.

These findings reinforce the idea that fish has a clearly defined place in the meal system and that uses are limited in their scope. There are clear conventions in the ways in which most people prepare and serve fish, and these clearly have implications for the kinds of meals in which it would be served.

Main meals, as evidenced by the qualitative study and the diary require time investment in preparation, cooking and consumption. Fish is generally used in more limited preparation and cooking regimes. However, the perception of fish as fresh/wet fish overlooks the wealth of convenience features, evident in its usage. It is quick to prepare (the exception being wet fish) and cook but these features may account for its poor image as a main meal centre.

As a food it is perceived more appropriate to light convenient meals. Sixty percent was used in main meals, but whether it is regarded truly as a main meal centre is questionable, and certainly the qualitative findings did not suggest that this was the case. The practicalities and convenience which some of the fish products offer may account for its inclusion in main meals, and reflect the trend towards less formal eating.

⁸One must also remember that the diaries were recorded in mid-June.

6.8 FOOD COMBINATIONS

By examining the frequency of other foods served at fish meals, one can get some idea of the types of foods associated with fish, most fish items are served in meals which involve tea and coffee. The main food items associated with fish are potatoes and uncooked salad vegetables. Greens are also strongly featured, notably peas. The standard form of fish, chips and peas seems to be common. Potatoes, chips, feature strongly in the lunch and dinner meals as do salad vegetables. Greens occur more commonly as an accompaniment for dinner rather than lunches, and include cauliflower, cabbage, carrots, corn, brussel sprouts etc. (Appendix O). Cake and biscuits also feature quite regularly in fish meals, more so in lunches and teas, rather than at dinner meals. The same can also be said for bread.

Lunches are more likely to involve a fish item plus bread for the staple, whereas dinners involve potatoes, (substitute for the bread), and "trimmings" in the form of vegetables. At these meal occasions there is evidence of a significant amount of meat.

Sandwiches and rolls are almost exclusively tied to lunch and tea meals. Quite a high proportion of the accompanying foods in fish meals are fruit, particularly in lunch and dinner meals. There is evidence of some usage of sauces in fish meals, at both dinners and lunch. This 'gravy' element suggests more formality but it is likely that the sauces served at lunch meals are part of the product itself e.g. fish in parsley sauce etc.

Although the majority of those present at the meal eat fish of some sort, this is not always the case. Others will have meat meals alongside the fish eaters (Appendix P).

Most of the meals recorded also involve fairly standard platter formats (Appendix Q).

6.9 FISH AND MEAT

Fish was constantly compared to red meats in the qualitative research both in terms of product qualities, and appropriateness to meal provisioning. It was meat which commanded most respect as a food given the demands of the 'main meal'. This section looks at the actual usage of meat⁹ and chicken over the study period. Meat¹⁰ and chicken are more commonly associated with dinner, fish

⁹Meat refers to red meat/beef products.

¹⁰The relationship between meat, chicken and fish is explored in the attitude survey.

with lunch and tea (Table 6.30).

Table 6.30: Usage of Fish, Meat and Chicken Items Across Meals

MEAL NAME	PRODUCTS (% items)		
	Fish (n=425)	Meat (n=1837)	Game/Fowl (n=274)
Lunch	35.3	29.4	25.1
Dinner	29.2	32.0	47.2
Tea	24.9	19.5	20.3
Supper	9.4	5.9	7.4
Breakfast	0.5	13.0	-
Other	0.7	0.2	-
TOTAL	100	100	100

6.9.1 FREQUENCY OF USE

The frequency of usage of the three products gives some idea of their relative importance. Out of the 21,834 food items 425 were fish, 1837 were meat and 274 were game/fowl (almost exclusively chicken and hereafter referred to as chicken). Meat is by far the most popular, and it tends to be used in more meals.

In order to get some insight into the roles of these foods, it is useful to look at the methods of cooking and preparation , plus the time involved. An equal proportion of fish and meat items involve no further investment in preparation. Meat is very similar to fish except that 3.4% of meat items involve over 20 minutes preparation compared to 1.2% of fish items. Chicken usually takes slightly longer to prepare than meat or fish, with a high proportion of chicken items requiring 11-20 minutes. There is little to distinguish between the three regarding preparation times. However the products do differ markedly in the form in which they are purchased.

6.9.2 MODE OF PURCHASE

Both fish and chicken were most often purchased frozen, in contrast to meat which was usually purchased 'fresh' (Table 6.31). A much higher proportion of fish was canned compared to meat and chicken. The use of more frozen fish reflects respective availability of fresh and frozen. (The qualities of freshness were emphasised in the qualitative work and differences between meat and fish

explored.) Chicken, although used with less frequency than fish was considered more suitable, than fish, for a main meal.

Table 6.31: Product Form for Fish, Meat and Chicken

Product form	% items		
	Fish	Meat	Chicken
Frozen/chilled	37.2	16.8	41.3
Fresh	24.3	62.6	39.3
Canned	24.1	7.3	3.1
Takeaway	12.4	3.6	9.5
Homemade	2.1	9.7	6.9
TOTAL	100	100	100

6.9.3 COOKING METHODS

A much higher proportion of fish items are fried or ready prepared, compared to meat and chicken (Table 6.32). The main method of cooking used for meat and chicken is heating/roasting in the oven. As well as being healthier than frying, roasting is regarded as the 'highest' form of cooking in our food system (Levi-Strauss, 1970). It is certainly the most popular with chicken items. A much higher proportion of meat items are grilled rather than fried.

Table 6.32: Cooking Method for Fish, Meat and Chicken

Cooking method	% items		
	Fish	Meat	Chicken
Fried	31.1	19.2	3.3
Ready prepared	26.0	16.0	20.8
Grilled	15.5	23.8	2.4
Heated/roasted in oven	10.5	27.6	55.2
Boiled/steamed	6.2	3.6	2.0
Microwaved	5.4	5.6	11.8
Other	5.3	4.2	4.5
TOTAL	100	100	100

Nearly 50% of the fish items involved no cooking (Table 6.33). The major difference in cooking times is exemplified by the percentage of meat and chicken items which require over twenty minutes for cooking, 18.8% in the case of meat items, 46% in the case of chicken, only 5.6% in the case of fish. More chicken in the study was purchased in the frozen form but cooking regime is more characteristic

of meat.

Table 6.33: Cooking Times for Fish, Meat and Chicken

Cooking time (mins)	% items		
	Fish	Meat	Chicken
0	43.8	33.5	32.5
1-10	32.2	31.6	14.2
11-20	18.4	16.2	7.3
20 plus	5.6	18.7	46.0
TOTAL	100	100	100

Time investment is important, the amount of time invested is directly related to the importance of the meal. We are reminded that food needs to be cooked and fish involves less cooking than the meats. The products also differ in the ways in which they are cooked and many fish items are considered precooked.

6.9.4 MEAL DURATION

Light meals were much shorter than main meals, 66% of light meals took less than 15 minutes, while 52.6% of main meals took over 20 minutes to consume. A comparison shows that around 20% of fish, meat and chicken meals lasted less than 10 minutes (Table 6.34). One quarter of fish items were included in meals which took 11-15 minutes against 16% of chicken items. The main difference occurs in meals which last over twenty five minutes. A much higher proportion of meat and chicken items are used in meals which lasted over 25 minutes.

Table 6.34: Meal Duration in Minutes

mins	% items		
	Fish	Meat	Chicken
<10	19.5	20.6	17.8
11-15	24.5	20.9	16.1
16-20	20.9	20.9	22.3
21-25	11.8	8.4	11.7
>25	23.3	29.2	32.1
TOTAL	100	100	100

Meal duration gives some indication of meal formality. Less socially significant meals are assumed to involve less time spent at the table consuming food. The lower incidence of fish items in meals

lasting over twenty minutes lends support to its image as a secondary meal item.

It was revealed in an earlier section that chicken is more likely to be used in a main meal (see Section 6.3.3). Proportionately half of red meat is used in main meals, but in terms of absolute numbers of food items it represents the major main meal centre compared to all other meats. The time involved and methods of preparation direct fish usage away from main meal occasions, which are characterised by more time investment. Chicken is much closer to meat in its preparation and cooking characteristics. These usage features further differentiate fish from meat and chicken.

6.10 FREQUENT, INTERMEDIATE AND INFREQUENT USERS

Food usage is a complicated business and the attempt to distinguish between those who use fish and those who do not is no easy task. Within the sample, surprisingly, only five households did not use fish in any form. The numbers are obviously too small to draw any general characterisation of non users. Frequency of fish use was decided upon due to the ease of categorisation and difficulty of dividing the sample up into those who used only specific types of fish. Again the numbers proved too small and few households only used one type of fish.

Households were categorised into three types according to frequency of usage. Infrequent users had used up to three fish items, over the two week period (this included non users). Intermediates used four to six fish items inclusively. Frequent fish users had used over seven fish items in the study period¹¹. The aim was to try and identify demographic or usage characteristics particular to these users, and test the typology of fish users suggested in the qualitative research.

Infrequent users form the bulk of the sample, (42%), intermediate 40% and frequent fish users some 20% (Table 6.35). In terms of demographic characteristics there is little of statistical significance to distinguish each of the groups (assuming a random distribution of the different features over the users). However some interesting descriptions do emerge.

¹¹The maximum recorded frequency of use was twelve fish items.

Table 6.35: Frequency of Fish Usage

Frequency	Number of Households	%
Infrequents	43	42.2
Intermediate	41	40.2
Frequents	18	17.6
TOTAL	102	100

6.10.1 DEMOGRAPHIC CHARACTERISTICS

Overall there were no obvious demographic or socio-economic differences between the groups of users. It is however worth commenting that:-

- i) a higher proportion of frequent users were families with children
- ii) of intermediate users a higher proportion were older singles over sixty and older couples with no children.
- iii) Of infrequent users, a slightly higher proportion were single persons or couple households under sixty years old

The older households which one would have anticipated to be the highest consumers of fish, were categorised as intermediate users. However, frequency of use examines the number of occurrences of fish not the volume or weight of fish consumed. Households with more members are more likely to have more items in their diaries, and thus greater overall variety.

Frequent user households are more likely to be those households with children and the KKP aged between 31-45. Households with children are more likely to be using frozen and canned products as sandwiches, light meals and childrens meals. It is fairly striking that amongst the frequent users there are no younger singles at all, and only one older single household.

It seems reasonable to conclude that general frequency is related to numbers of household members; the more people there are in the household, the more likely it is that fish will feature in the food regime.

There was no strong relationship between the frequency of use and education level of the KKP, there is a slightly higher proportion of frequent fish users with higher education, and gross income is also slightly higher in this group.

Slightly more of the intermediate users were C1 households, while infrequent users contained a higher proportion of C2/ DE (see Table 6.1 for descriptions)

6.10.2 POPULARITY OF FISH PRODUCTS AND FREQUENCY OF USE

Demersal fish remains the most popular fish item used by the sample (Table 6.36). Infrequent users, compared to the sample overall, use proportionately more demersal, processed and tuna fish. Intermediates use proportionately more pelagic fish and salmon. Frequent users use proportionately more fish fingers, pate/paste, shellfish and pelagic fish.

Table 6.36: Frequency of Use by Product Type

(%)	FISH PRODUCTS							
	Demersal	Fish Fingers	Tuna	Pelagic	Shell Fish	Salmon	Processed	Pate
Infrequent	56.6	13.2	14.5	5.3	1.3	3.9	5.3	0.0
Intermediate	39.7	17.8	13.9	9.3	8.2	8.2	2.1	1.5
Frequent	35.9	19.9	9.6	10.3	10.9	4.5	3.2	5.8
All users	41.3	17.4	12.4	8.9	8.0	6.1	3.1	2.8

SPSSx significance=0.0112

6.10.3 AVERAGE USE OF FISH PRODUCTS AND FREQUENCY OF USE

Table 6.37 looks at average consumption per household which accounts for the differences in sizes of the respective groups. It shows that frequent fish users eat more of all types of fish on average per household. Only in the case of salmon do the intermediate users eat more per household. This group remain the highest consumer of demersal fish, on a per household basis, despite the fact that they eat proportionately more fish fingers, shellfish, pelagic fish and pates.

Table 6.37: Average* Use of Fish by Frequent, Intermediate and Infrequent Users

FISH PRODUCTS								
(%)	Demersal	Fish Fingers	Tuna	Pelagic	Shell Fish	Salmon	Processed	Pate
Infrequent	1.00	0.23	0.26	0.09	0.02	0.07	0.09	-
Intermediate	1.88	0.80	0.66	0.44	0.39	0.39	0.10	0.07
Frequent	3.11	1.72	0.83	0.89	0.94	0.39	0.28	0.50
All Households	1.72	0.73	0.52	0.37	0.33	0.26	0.13	0.12

SPSSx significance=0.0122

* Average use is the total number of fish products in each category divided by the number of households in each Frequency of Use group.

6.10.4 POPULARITY OF MODE OF PURCHASE (PRODUCT FORM) AND FREQUENCY OF USE

It appears from Table 6.38 that a greater proportion of the fish items used by infrequent users are homemade, fresh and takeaway fish items compared to the rest of the sample. Frozen products remain the most popular form of fish used over the whole sample and for the intermediate users a much higher proportion of fish is used in this form. For frequent users a higher proportion of fish is fresh or canned compared to usage of this type of product across the whole sample.

Table 6.38: Frequency of Use by Mode of Purchase (product form)

MODE OF PURCHASE					
% of occasions of usage	H'made	Fresh	Frozen	Canned	T'away
Infrequent	5.3	26.3	28.9	17.1	2.4
Intermediate	2.1	22.1	41.6	25.3	8.9
Frequent	0.6	26.0	35.1	26.0	12.3
All users	2.1	24.3	36.9	24.0	12.6

SPSSx significance=0.0216

6.10.5 AVERAGE MODE OF PURCHASE (PRODUCT FORM) AND FREQUENCY OF USE

Frequent households exhibit higher overall use of all types of fish products, except for those specifically identified as homemade. For 'infrequents' the highest average consumption is for frozen followed by fresh products, for intermediates it is frozen and canned. Frequent users use more frozen products on average per household with equal use of canned and fresh fish (Table 6.39).

Table 6.39: Average Mode of Purchase by Frequent, Intermediate and Infrequent Users

MODE OF PURCHASE	FISH				
	H'made	Fresh	Frozen	Canned	T'away
Infrequent	0.09	0.47	0.51	0.30	0.40
Intermediate	0.10	1.02	1.93	1.17	0.41
Frequent	0.06	2.22	3.00	2.22	1.06
All users	0.09	1.0	1.52	0.99	0.52

SPSSx significance=0.0216

It seems likely that frequent users compared to other groups use a wider range of fish products, using different products for different meals, and are more likely to use fresh fish for main meals. Intermediate users appear to be more convenience orientated, using fish products which require little preparation. 'Infrequents' are more likely to regard fish as an occasional change.

6.10.6 PREPARATION AND COOKING

Taking the preparation and cooking methods for all foods used by the three groups there is little to distinguish between them. Infrequent users are more likely to use ready prepared foods, 'infrequents' to boil or steam the food and frequent fish users to fry. Ready prepared, boiled and oven cooked are the most popular cooking methods for all groups. Food choice and combination is complex. The frequent fish users appear to spend slightly less time preparing food.

The infrequent users use proportionately more tea and coffee than the sample overall. Intermediate users are characterised by a higher overall usage of cakes and biscuits, salad and salad vegetables, and fruit. Frequent users used more meat, potatoes, sweets, crisps, lemonade and squash than the rest of the sample. This suggests that the choice of food is related to household type. The frequent users contain a higher proportion of households with children compared to the other groups. The types of foods used more frequently by the frequent fish users are more readily associated with childrens food preferences.

6.10.7 RANGE OF FOODS

One feature of meal complexity relates to the range of food items used within the meal regimes of each household. The average range of food items for frequent, intermediate and infrequent fish users is

outlined in Table 6.40.

Table 6.40: Average Range of Food Items Used by Frequency of Fish Use

Average range of different food items used over 2 week diary period	
Infrequents	63.6
Intermediates	72.7
Frequents	77.9

* Statistically significant difference between frequent and infrequent users, at 95% significance level (sample of 18 infrequent and intermediate households).

The frequent fish users use a greater range of food items overall in comparison to the infrequent users. This suggests a higher level of complexity in those households using fish items, where on average fourteen more food items are used. This will be influenced by demands from within the food system exerted by family needs, experience, availability of food and willingness to experiment with foods.

The examination of frequency of fish use by the diary sample suggests that households with children are more likely to be frequent users of fish, than infrequent users, although one must not confuse frequency of use with quantity of fish consumed.

6.11 DISCUSSION OF DIARY RESULTS

The diary study provides good support for the qualitative research and helps to clarify some of the ideas and dispel some of the myths regarding the use of fish. The diary helps to overcome the problem that regardless of what people do they may actually believe they do otherwise. It focuses on what they actually do; for example many of the group respondents felt that fish consumption was no longer tied to any particular day, but the diary study indicated that much of the consumption occurred on Friday.

The qualitative research had suggested a fairly standardised British meal cuisine, with particular foods strongly associated with particular occasions and kinds of meal. Fish and fish products were expected to have a limited and clearly defined role in the meal system.

Meals were identified as either main or light meals and within this categorisation dinner was identified predominantly as a main meal while breakfast, lunch and supper were light meals. Across these meal classifications there was little evidence of extensive use of fish which accounted for 2% of all food items recorded.

Proportionately more fish was found in lunch meals than dinner confirming some of the qualitative findings that this food is more suited to lighter meals, this apparent conflict with the high use of fish as a main meal item may be explained by the fact that main meals mean dinner for most households, but lunch for some, the definitions are by no means clear cut.

Fish use is characterised by the association of particular species and product forms with different types of meal occasion. Species and product form are by no means mutually exclusive. Demersal fish tends to be bought fresh and frozen, fish fingers and processed products are predominantly frozen and salmon, tuna and mackerel are canned.

Fresh and frozen products are used for main meals such as dinner while canned products are used for lighter meals such as lunch and tea. Takeaway products feature strongly as supper meals.

Fresh fish seems to have a limited role within the household food system. It is little used; in terms of overall usage of fish and fish products it is a small proportion, and appears to be served mainly at dinner.

Canned products, which do not seem to be strongly associated with fish in the minds of the consumer, fit in readily as sandwich fillers, and the centre for salad lunches and teas. Although they involve no further cooking they take time to prepare because of the way in which the products are used.

The convenience of the frozen fish products is likely to rest on their ease of acquisition and they certainly seem to be quick to cook and prepare compared to meat and chicken. While frozen fish fingers seem confined to lighter meals other frozen fish products are permitted to main meals. Ease in cooking and confidence in selection, are likely to be important here.

Cooking and preparation methods used for fish suggest a convenient product. Convenient that is in terms of cooking time and further preparation involved. Fish appears to involve little additional

preparation and is reasonably quick to cook. However, the image of inconvenience may stem from the strong association of fish with the fresh product, and the inconvenience of bones when eating.

Those products which offer convenience have a more general appeal and it seems probable that this will be sustained and probably increase. The data suggests that food regimes are dominated by convenience. Ready prepared foods and certain foods are associated with particular types of meal.

Time priorities clearly make economies in preparation and cooking attractive to households, especially those with children. The predominance of 'light' meals and the very small amount of time invested in preparation and cooking, along with the clear dominance of meat and chicken in main meals as a meal centre strongly suggest that food regimes are changing to fit in with changing household structures and lifestyles, adding further support to the quantitative findings.

The restricted range of foods served with fish suggests a rather 'limited' use and the association of fish products with specific meals helps to explain the perceived lack of versatility.

Households which use fish more frequently appear to have more varied tastes as indicated by the range of food products used over the study period. Rather than using fish instead of meat it is used in addition. Frequent users are not distinctive, but they are arguably the most important consumer group, because they are likely to try new products. As well as using the widest range of fish products they are heavy users of fresh fish.

The diary study highlights the problems of relating fish consumption to meal patterning. Although the sample is small, it gives some indication of the 'unspoken rules' which exist and the various types of meals in which fish is used. It does suggest that the characteristics of fish usage may relate more strongly to the functioning of the meal system than to demographics¹². The problem remains of identifying and characterising individual meals as the unit of analysis.

The relationship between meat and fish is evidently important and requires further investigation.

¹²In the literature on segmentation several authors stress the limited use of demographics to explain behaviour given the descriptive rather than causal relationship between demographics and behaviour (see for example, Frank et al, 1967; Haley, 1968; Stanton, 1978).

CHAPTER 7

CONSUMER ATTITUDES TO FISH AND MEAT PRODUCTS

This chapter reports on the analysis of a national survey carried out at the end of 1987, on consumer attitudes towards fish and meat.

7.1 THE SAMPLE

The survey achieved a return of nine hundred questionnaires a response rate of approximately 50% against the target number of 2000, although quota sampling was achieved. Of these, nine hundred and eighty six (98%) were analysed. The remaining 2% were unacceptable due to missing values and incomplete data.

Table 7.1 illustrates the distribution of the total response across the country, with London (19.6%) and Aberdeen (18.5%) returning the highest number of questionnaires. The distribution of the response between the North (55.6%) and South (44.4%) reveals a slight over representation of the North (Table 7.2).

Table 7.1: Survey Distribution by Area

Region	Percentage of sample
Newcastle	15.5
London	19.6
Bath	15.5
Birmingham	9.3
Liverpool	12.0
Glasgow	9.6
Aberdeen	18.5
Total	100

Table 7.2: Survey Distribution - North and South

	Percentage
North	55.6
South	44.4
Total	100

A higher percentage of those interviewed were female (64%) compared to male (46%). There was a high incidence of missing values on this variable but quota controls (section 4.3.10) should at the extreme ensure that the ratio was 60:40, either way.

7.1.1 AGE DISTRIBUTION

The age distribution and marital status across the sample are summarised in Table 7.3. The higher proportion of younger respondents was expected given the survey design, and it is this sector of the market which represents the greatest potential for future fish consumption. Earlier work highlighted the age difference in fish usage with heavier consumption in the older age group (Lesser et al, 1982; Q Search 1982, Young, 1987; Goulding, 1985).

Table 7.3: Age and Marital Status of Sample

	Age			Marital Status		
	<25	26-55	>55	Single	Married	Separated/Divorc'd Widowed
	%					
Survey	38.7	43.3	18.0	45.5	45.1	9.4
UK*	35.3	40.6	26.1	-	-	-

*Source: OPCS.

7.1.2 SOCIAL GRADE

The sample was biased towards the middle class with AB's representing 16.8%, C1's 53.0%, C2's 10.1%, DE's 20.1% (Table 7.4). The high occurrence of C1 social grade is accounted for by the classification of students into this category. As the survey was carried out by students it is highly likely that many of the young respondents were students. Analysis of the sample reveals a significant

association between those under 30 and C1 social grade. These two variables were not independent at the selection stage. Given this association, it may be more correct to say that we are examining young as opposed to middle class attitudes towards fish consumption. The figures reveal the C1 bias in the sample and it is likely that the older respondents within the sample are relatives of the interviewer.

Table 7.4: Social Grade of Respondents

Social grade		Percentage of sampleNational Profile*	
Professional and Managerial	AB	16.8	17
Skilled Manual	C1	53.0	22
Semi-skilled Manual	C2	10.1	28
Unskilled and Unemployed	DE	20.1	33
TOTAL		100.0	100.0

*Source: JICNARS.

7.1.2.1 Age and Social Grade:

Examined by age group (Table 7.5) 91.9% of the under 20's and 60.3% of the 21-30's were C1. Across all age categories (except the over 50's) the highest proportion of respondents were identified as C1.

Around 70% of the sample own or have access to the use of a car (reinforcing this middle class bias).

Most of the respondents (85.4%) ate their 'main' meal in the evening, 10.3% at midday, and 4.3% specified no preference. This complements the diary findings that the majority of main meals are eaten in the evening.

Table 7.5: Age by Social Grade (%)

AGE	SOCIAL GRADE						TOTAL
	A	B	C 1	C 2	D	E	
<20	0.5	2.4	91.9	2.4	1.4	1.4	100
21-30	2.5	13.6	60.3	13.1	4.0	6.5	100
31-40	9.2	16.3	43.9	10.2	7.1	13.3	100
41-50	8.5	16.9	35.2	13.4	7.7	18.3	100
>50	4.1	17.4	24.7	12.8	7.3	33.0	100

7.2 SURVEY ANALYSIS

The analysis attempted to characterise the different products (white and dark fish, white and red meat) by examining those statements most strongly associated with each of the four products. Initially the analysis was confined to the perceptions of the survey population but subsequent analysis identified specific subgroups and their attitudes and perceptions were analysed independently.

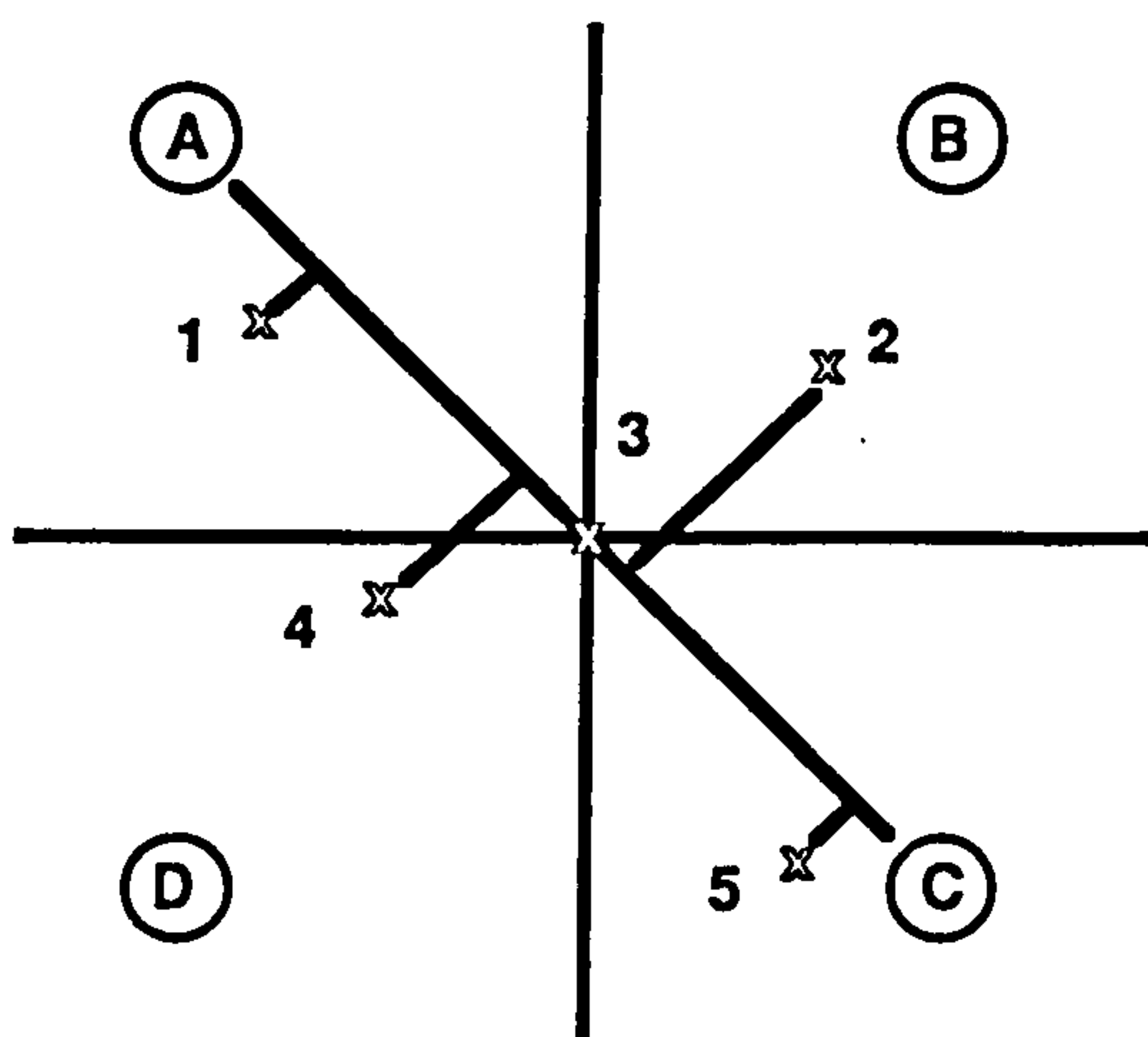
The data was aggregated across the survey sample and average scores computed for each product on the twenty statements. Given the need to examine the ability of the attitudinal statements to discriminate between meat and fish (and thus identify those attitudes most strongly associated with each of the four products) the data was centred prior to analysis. This procedure carried out by the MDPREF programme involves computing a mean score for each statement across the four products, and then calculating deviations for each of the four products from this mean score (Appendix S). It is these deviations which are used as the basis for the analysis. Centering ensures that the analysis highlights the ability of these twenty seven statements to distinguish between the four products and their relative differences by only considering that range of the agree/disagree scale which was used by the respondents.

7.2.1 INTERPRETATION OF MDPREF

In the perceptual space produced using MDPREF subject points are positioned on the periphery of a unit circle, which contains the stimuli. In this instance subject points represent the four products, and stimuli represent the twenty seven statements employed in the survey. The relative position of the subjects and the stimuli reflect the perceived relationship between the products and the attitudes.

It is possible to identify those attitudinal statements most strongly associated (positively or negatively) with a product. This involves constructing a vector which passes through the origin and the product (subject). By projecting perpendiculars from each attitudinal statement (stimulus) to this vector one can identify the ranking of statements associated with the product (subject), and construct a product image. Figure 7.1 illustrates this principle. A, B, C, and D represent four products, 1, 2, 3, 4 and 5 represent five attributes.

Figure 7.1



If a vector is constructed for A and perpendiculars projected onto this vector the rank association of the attributes with product A can be identified. Attribute 1 is strongly positive associated with product A as it lies close to the subject point, attribute 4 is also positively associated but the association is much weaker compared to attribute 1. Attribute 3 is neither positively or negatively associated (in fact this attribute could be discarded for reasons outlined below) and attribute 2 is negatively but weakly associated with product A. Attribute 5 is strongly negatively associated with product A. The analysis can then be taken a stage further to determine the usefulness of these attributes in examining differences between the products. For this analysis one can consider the attributes:

- 1) discriminatory value¹
- 2) exclusiveness
- 3) reversibility

The discriminant value relates to the attributes ability to discriminate between products. The further the attribute lies from the centre of the spatial configuration the greater its discriminatory value. If

¹Adapted from Coxon, 1982, p138 and based on the work of Roskorn, 1968. My thanks to Dr J Currall, Torry Research Station with these property descriptors.

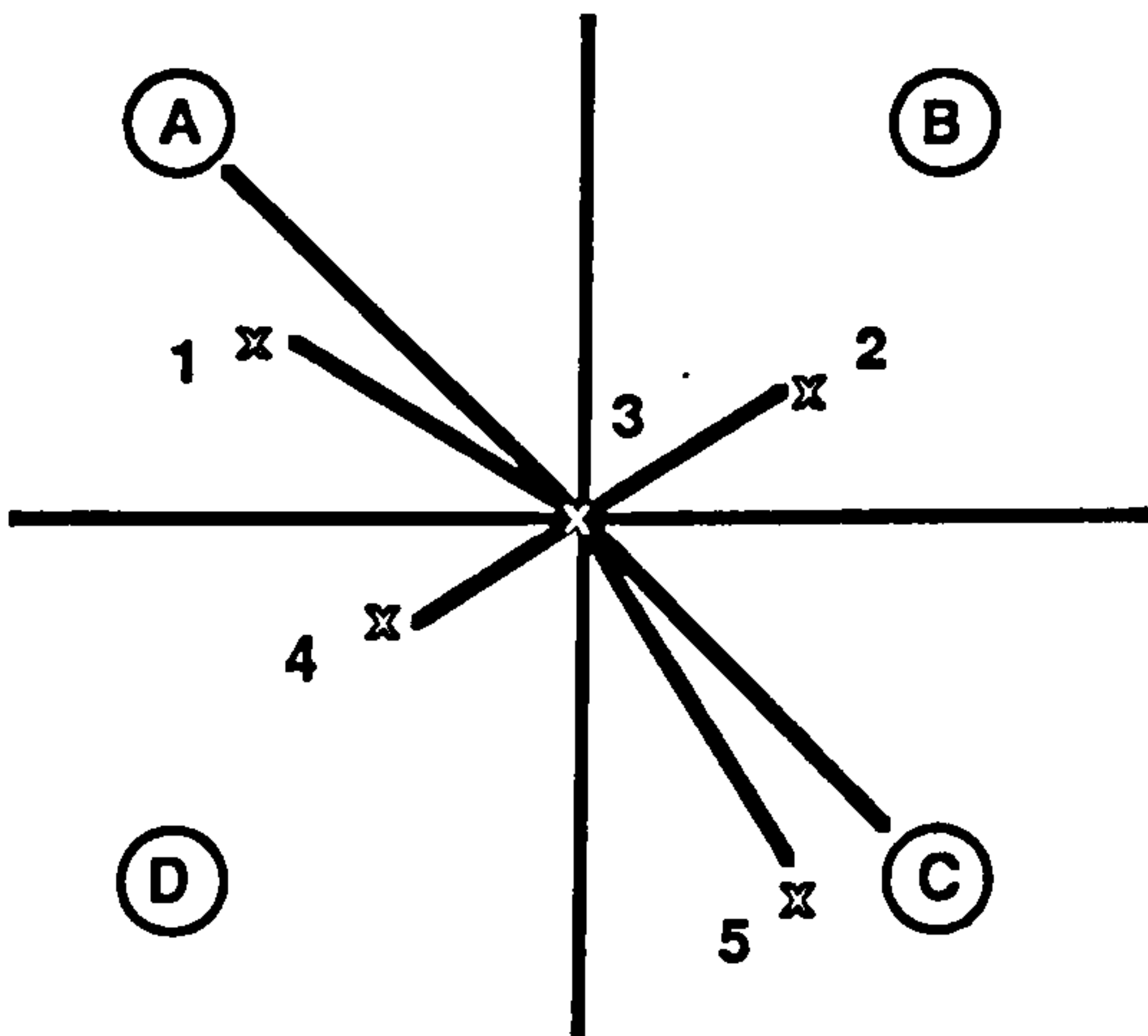
vectors are constructed for attributes those with the largest vectors are the better discriminators. In Figure 7.2 (which utilises the same spatial configuration as Figure 7.1) attributes 1 and 5 are the best discriminators as they have the largest vectors. Attribute 2 is much less discriminatory than attribute 1.

Exclusivity examines the uniqueness of the association between a product and an attribute. The direction of the attribute vector relative to the product vector determines its exclusivity. Exclusivity can be measured by the angle between the product vector and the attribute vector, the smaller the angle the more exclusive the attribute to the product. In Figure 7.2 attribute 1 is exclusive to product A, as measured by the angle between attribute 1 and the vector constructed for product A. Attribute 5 is exclusive to product C were the product vector to be constructed.

Highly discriminatory and exclusive² attributes represent attributes which are good indicators of a products main characteristics.

Reversibility refers to opposite ordering, where attributes associated with the negative section of the vector are not preferred. In Figure 7.2 attribute 5 displays reversibility on product A.

Figure 7.2



²The exclusivity of attributes can be confirmed with reference to the ANOVA scores for products on each attribute.

The analysis of the attitude survey uses this interpretation to identify the association both positively and negatively of attitudinal statements with each of the four products and identifies the exclusiveness of these associations, and the ability of the attitudinal statements to discriminate between the four products.

7.3 SURVEY FINDINGS

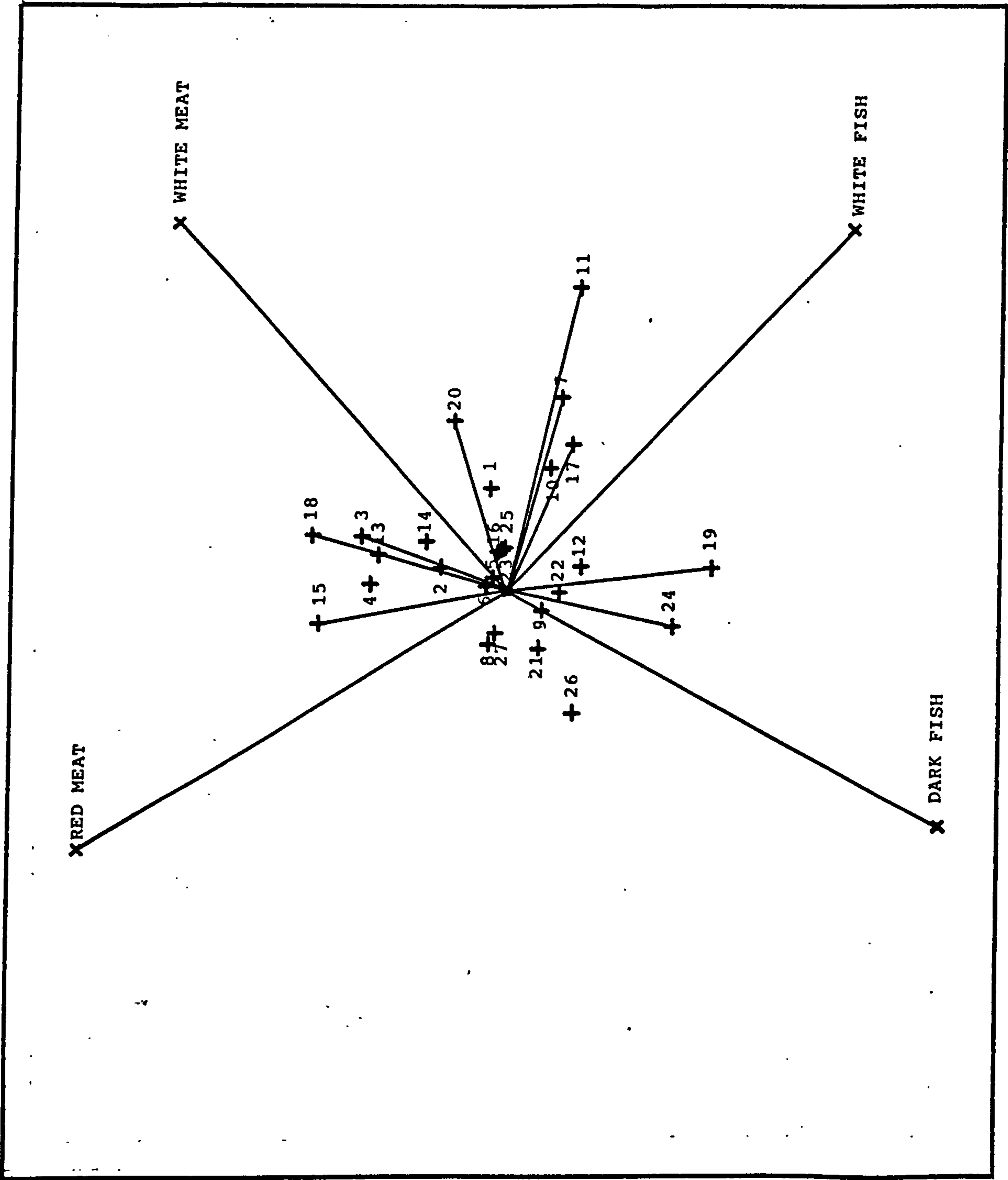
Multidimensional scaling (MDS) is used in this work to show pictorially how the pattern agreement with the twenty seven statements (see Appendix T) as a whole relates to the four products (red and white meat, dark and white fish). The perceptual map (Figure 7.3) enables one to see the relationship between statements and products simultaneously. Some statements will largely exhibit the same pattern. For example: 'a really healthy food' (7) and 'good for slimming' (11) while some show opposite patterns (reversibility): 'popular with men' (15) and 'fidelity to eat' (14).

The pictorial representation will show those statements in substantial agreement plotted close together i.e. on the same side of the diagram, those in substantial disagreement plotted far apart on opposite sides of the diagram and the remainder in locations appropriate to their relationships.

This allows one to identify those statements which discriminate between products in the perception of those completing the questionnaires. The statements that fail to discriminate and get similar answers for all products will be more centrally placed.

In Figure 7.3 dark products are located to the left, white products to the right. Meat products are located in the top of the figure, fish products at the bottom. The most striking features are the relative positions of red meat to white fish and white meat to dark fish. It appears as if these products are diametrically opposed. The following statements are ranked the best discriminators between the products, evidenced by their distance from the centre (illustrated in Figure 7.3).

Figure 7.3: Relationship Between Statements and Products³



³In MDS the 'goodness of fit' between the model and the data is indicated by 'stress' measurement. This is not given directly in MDPREF but the fit of the model to the data can be indicated by the Shepard diagram - Appendix W. A high degree of linearity on the Shepard plot indicates a good fit. For goodness of fit between the statements and products see Appendix W

- (11) Good for slimming
- (18) Good meal for guests
- (19) Fiddly to eat
- (7) Healthy
- (15) Popular with men
- (20) Childrens food
- (24) Not go with usual vegetables
- (3) Good main meal centre
- (17) Best for a light supper

The position of the statement vectors and the product vectors (illustrated in Figure 7.3) indicates the exclusivity of each of these attitudinal statements with each of the products (see section 7.2.1).

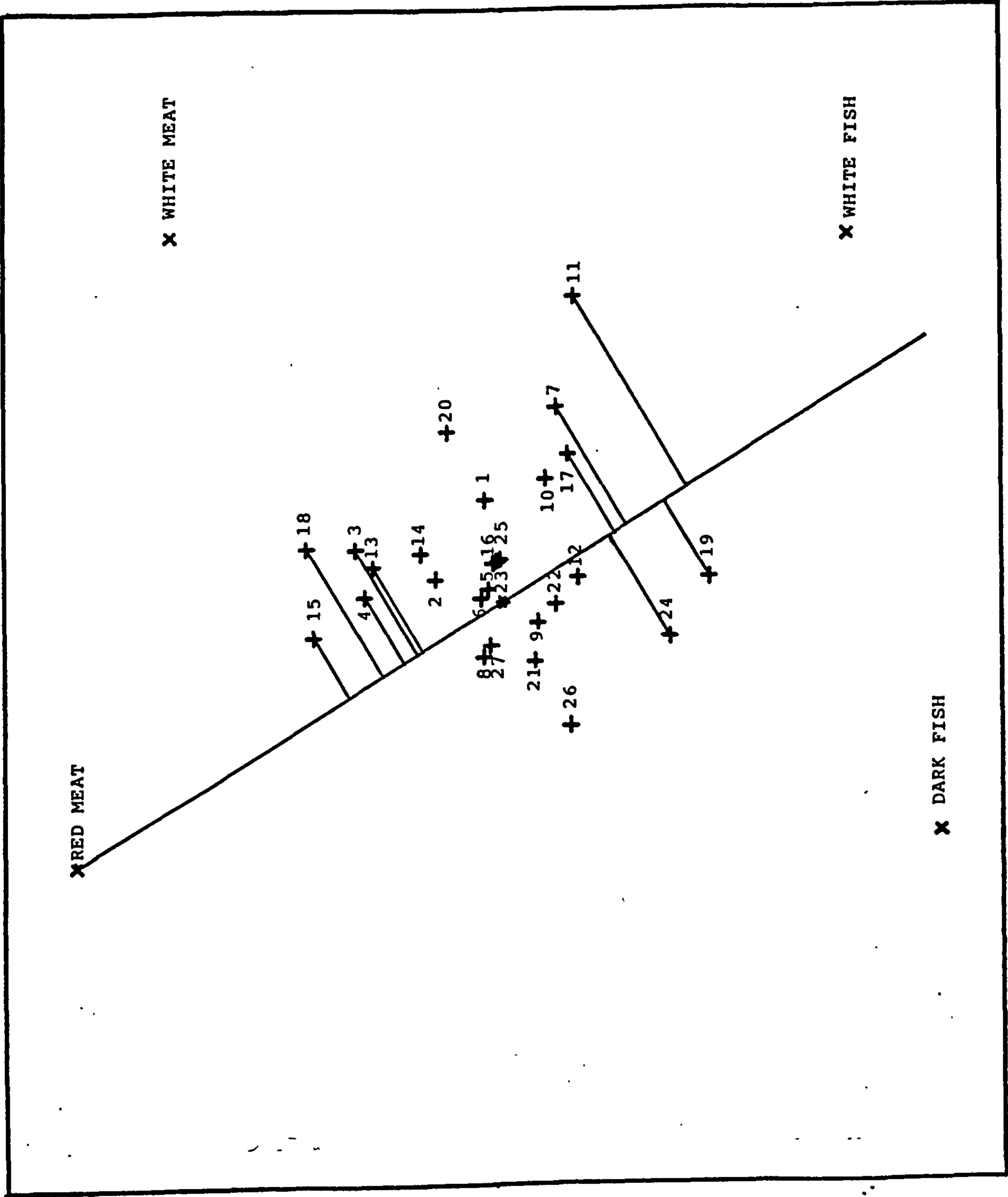
Popularity with men is more exclusive to red meat, while good meal for guests, good meal centre and childrens food are more exclusively perceptions of white meat.

The image of a slimming food, a healthy food, and suitability to a light supper are perceptions of white fish, while attitudes towards food being fiddly to eat and not going with the usual vegetables are perceptions of dark fish. In the light of this the next section goes on to examine statements associated with each of the four products.

7.3.1 RED MEAT

In Figure 7.4 a vector has been constructed passing through the subject point identified as red meat and the origin(*). Those statements which lie towards the top left hand of the figure are positively associated with the product. Those which lie towards the lower right hand corner are negatively associated with red meat (reversibility). It is possible to examine consumer perceptions of red meat by identifying those statements most strongly associated with red meat.

Figure 7.4: Attitudes Towards Red Meat⁴



⁴For goodness of fit see Appendix W:Figure W.1.

**STATEMENTS POSITIVELY
ASSOCIATED WITH RED MEAT**

- (15) popular with men*
- (18) good to give to guests
- (4) filling and substantial*
- (3) good main meal centre*
- (13) versatile

**STATEMENTS NEGATIVELY
ASSOCIATED WITH RED MEAT**

- (11) good food for slimming
- (19) fiddly to eat
- (7) healthy
- (17) best for a light supper
- (24) not go with usual vegetables

note: Statements marked with an asterisk [*] indicate statements where the agreement scores across all four products were significantly different, using analysis of variance (ANOVA).

Red meat is perceived to be more popular with men and suitable for guests. Red meat is significantly different from the other meats regarding its perceived popularity with men (exclusive to red meat), but not in terms of its suitability for guests. Both red and white meat are considered equally appropriate for guests. It satisfies the head of the household and those who are being entertained in the home.

It is regarded as filling and substantial (exclusive to red meat), a good food for a main meal and versatile. Red meat is rated significantly better than the other products as a main meal centre. This supports its central role in the meal system (as evidenced in the diary study and suggested by the qualitative research). It is certainly more acceptable than fish. This ranking is reflected in its rating as a filling and substantial food, again the scores are significantly different between the products.

In terms of versatility red meat is indistinguishable from white meat in its rating. Meat in general is regarded as being more versatile. This is probably a reflection of a perceived wider range of meat products available. The scores for red and white meat are not significantly different in relation to the suitability of these products for guests or their versatility.

The negative statements represent that set of attitudes which are inversely associated with red meat (reversibility). It is not regarded as a slimming food nor fiddly to eat. Red meat is perceived to be significantly different from the other products in its regard as a slimming food. Of all the products it is least appropriate for slimming, enhancing its image as a substantial food. These products are perceived to be significantly less fiddly to eat than the other products, improving overall acceptability.

Of all the products red meat is rated as the least healthy, perhaps a reflection of bad publicity in the press and the association of red meat with high fat diets. Healthiness appears in part to be related to

colour. Dark products are perceived to be less healthy overall.

It is not regarded as suitable for a light supper or not to go with the usual vegetables, features which favour its acceptability for main meals. Neither of the 'dark' products (red meat, dark fish) are regarded appropriate for light supper meals. Meats are rated significantly better than fish when it comes to combining with the usual vegetables.

Overall it appears that red meat is more readily acceptable than the other products and is more likely to be included in substantial meals and used in situations where food provisioning involves catering for guests. In such situations food takes on a 'strong' symbolic (and status) significance. These features favour the inclusion of red meat in main meals. What one cannot determine is whether this is because red meat possesses those features which make it more suitable to main meals or whether the characteristics of red meat have come to be accepted as main meal elements due to its usage in this meal. The centrality of red meat in the meal system is supported by the findings.

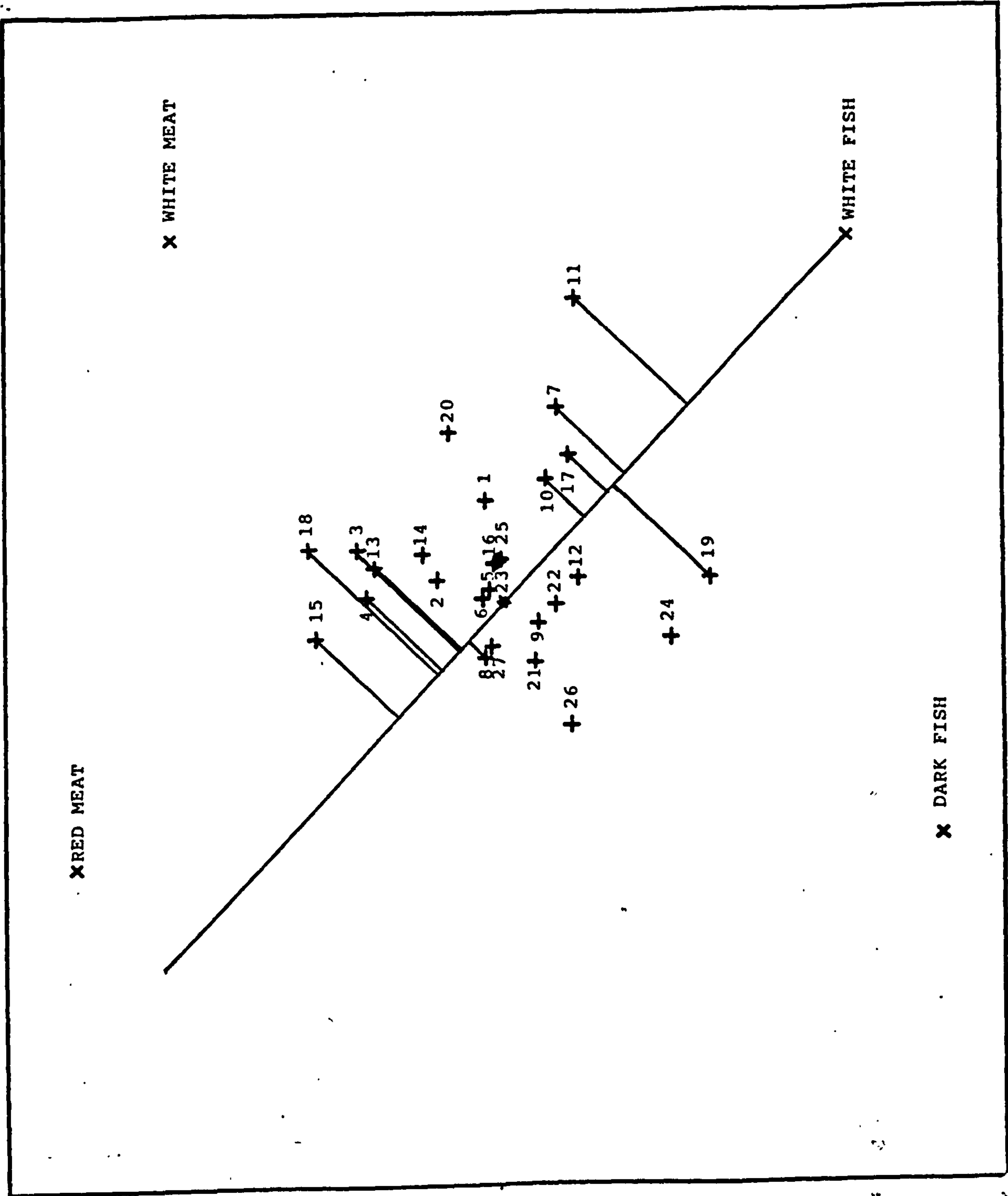
7.3.2 WHITE FISH

Figure 7.5 uses the same perceptual space as Figure 7.4 to construct a new vector which examines the perceived image of white fish. It is located to the lower right section of the perceptual space. As with red meat those statements most strongly associated with white fish in a positive direction lie closest to subject point.

STATEMENTS POSITIVELY ASSOCIATED WITH WHITE FISH	STATEMENTS NEGATIVELY ASSOCIATED WITH WHITE FISH
(11) good food for slimming*	(15) popular with men
(7) healthy*	(18) good to give to guests
(19) fiddly to eat	(4) filling and substantial
(17) best for a light supper*	(3) good main meal centre
(10) bland taste*	(13) versatile
	(8) fat/oil is off-putting

note: Statements marked with an asterisk [*] indicate statements where the agreement scores across all four products were significantly different, using analysis of variance (ANOVA).

Figure 7.5: Attitudes Towards White Fish⁵



⁵For goodness of fit see Appendix W:Figure W.1.

White fish is positively associated with those characteristics which are negatively associated with red meat. Except for being fiddly to eat the majority of attitudes strongly associated with white fish in a positive direction are characteristics of white fish (rather than characteristics of white products or fish products). It is regarded as being suited for slimming and a healthy food (more feminine?). White fish is perceived to be the most appropriate slimming food, accentuating its image of insubstantiality. The rating on this attribute is significantly different for white fish compared to the other products. It is regarded as a healthy food and obtains a significantly higher agreement rating on this dimension. Colour again appears to be an important feature with white products perceived to be more healthy than the dark products.

White fish, unlike red meat, is considered to be fiddly to eat and is suited to light meals (exclusive to white fish) rather than main meals, (substantiated by the negative associations of white fish with statements relating to its suitability as a main meal centre). It is considered to be more fiddly to eat than meat, but less fiddly to eat than dark fish. This may be a reflection of the wider availability of convenience fish products based almost exclusively on white fish. While the dark colour of the red meats appears to make them less appropriate for light suppers the colour of white fish and white meat deem these products more suitable to these meal occasions. The diary data shows fish (white fish) to be more widely used in light meals than chicken.

White fish is perceived to possess a bland taste (exclusive to white fish) and evokes significantly lower disagreement scores in relation to this statement compared to the other products. It is likely that colour influences the perception of a bland taste (yet white meat is not perceived to be bland). On the negative side white fish is not considered popular with men or good to give guests (how many foods do we serve guests which are fiddly to eat?). It is neither filling and substantial nor is it versatile. White fish is not perceived to be as unpopular with men as dark fish, but is still less popular with men than meat. This pattern is reflected in the suitability of these products to give to guests. Meat is rated as significantly more acceptable for guests.

All the products are rated as significantly different in their evaluation as filling and substantial foods. White fish is regarded as significantly less filling and substantial than the meats but more filling and substantial than dark fish. It is regarded as being significantly less versatile and less acceptable than meat as a main meal centre. However, it is still more highly rated on these attributes than dark fish. Overall white fish is not as appropriate as red meat for inclusion in main meals although it is regarded as healthy and suitable for light meals.

7.3.3 WHITE MEAT

Figure 7.6 examines the perceptions of white meat. Although white meat is considered good to give to guests it is not regarded as significantly different from red meat in this respect. Both products are equally acceptable to guests.

STATEMENTS POSITIVELY ASSOCIATED WITH WHITE MEAT	STATEMENTS NEGATIVELY ASSOCIATED WITH WHITE MEAT
(18) good to give to guests	(24) not go with usual vegetables
(11) good food for slimming*	(26) cans are good for snacks
(20) childrens food*	(19) fiddly to eat
(3) good main meal centre*	(21) knowledge when buying
(13) versatile	(9) raw product unpleasant
(7) healthy*	(22) preparation skills

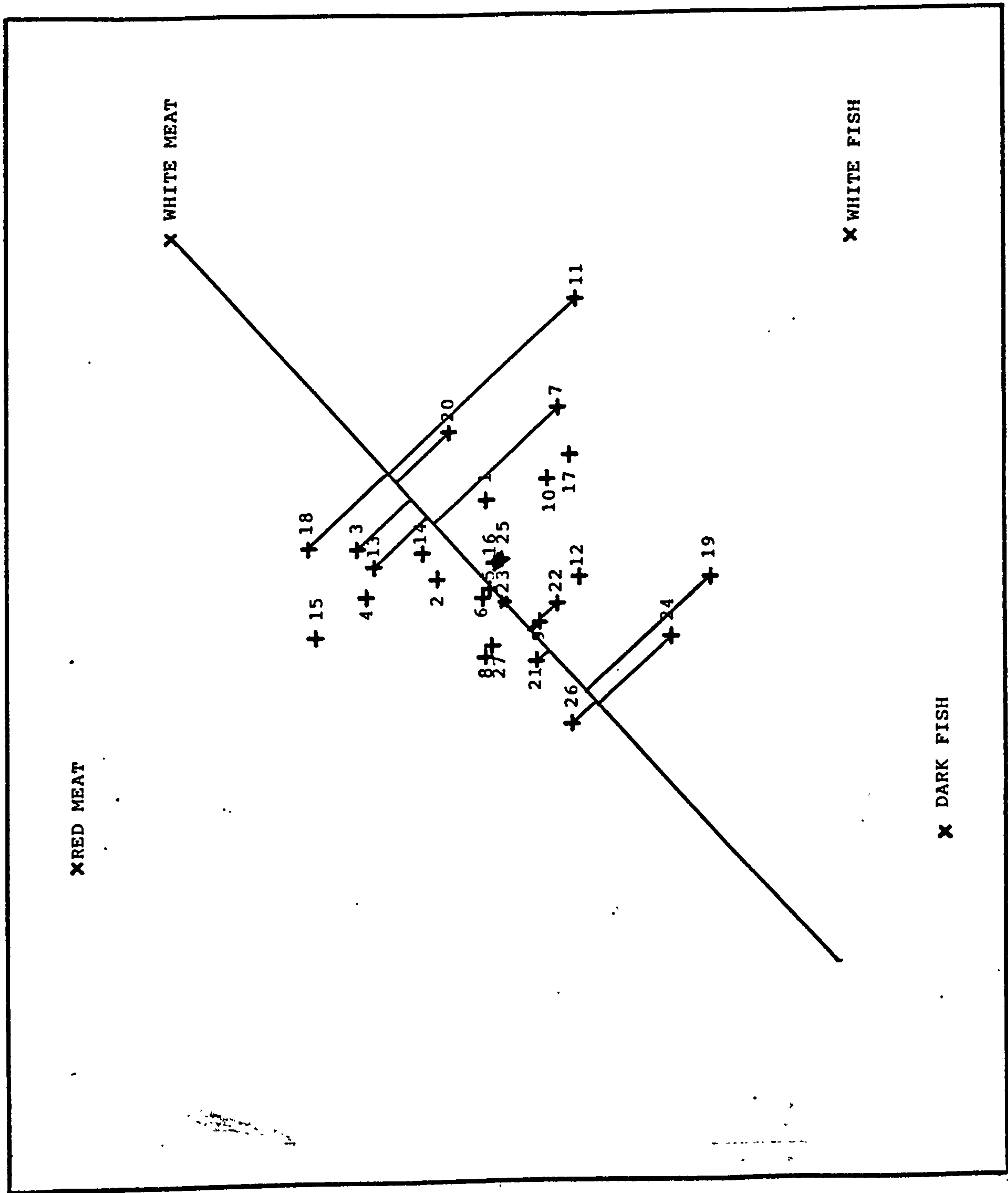
note: Statements marked with an asterisk [*] indicate statements where the agreement scores across all four products were significantly different, using analysis variance (ANOVA).

White meat and dark fish are located at diametrically opposed ends of the configuration. (Vectors for each imposed onto one diagram would illustrate this relationship).

White meat is regarded as suitable for slimming and as a childrens food (exclusive to white meat). On both of these attributes the agreement ratings are significantly different from the other products. White meat is not considered to be as suitable as white fish for slimming but significantly it is the most acceptable children's food out of the four products. It is strongly regarded as a main meal centre but this is equally true of red meat.

These products are more versatile than the fish products but equally as versatile as red meat. However in relation to their perception as healthy products white meat differs significantly from the other products. It is perceived to be healthier than red meat and dark fish, but not as healthy as white fish. One suspects that white meat possesses some of the qualities of red meat in its appropriateness for main meals (a hypothesis supported in related work), but also lays claim to some of the positive features of white fish with its association as a slimming food and its healthy image. It is interesting that the discriminatory attitude statement most exclusive to white meat relates to its perception as a children's food.

Figure 7.6: Attitudes Towards White Mear⁶



⁶For goodness of fit see Appendix W:Figure W.1.

It would appear that white meat does go with the usual vegetables as evidenced by the proximity of this statement to the negative end of the vector. In this respect it is not rated significantly different to red meat which elicited similar disagreement to the statement that it did 'not' combine well. The meats are more acceptable in terms of what vegetables can be served with them compared to the fish products.

Canned products are not thought to be good for snacks, perhaps because there are not many canned white meat products available. Its wider acceptability may be explained by the fact that it is not fiddly to eat (hence more suitable to children), and is not thought to involve special buying or preparation skills. White meat is considered significantly less fiddly to eat than the fish products but more fiddly than red meat. One of the advantages of white meat appears to be the lack of specialist buying knowledge required with these products. The rating for white meat on this attribute is significantly different from the other three products which were indistinguishable. This may reflect the greater proportion of ready prepared and convenience white meat products currently available.

Respondents appear to have more confidence in purchasing these products. The qualitative work gives some indication of possible reasons for this. It is likely that concerns with freshness play a more central role in the purchase of the other three products and the agreement scores reflect the greater degree of caution in this respect. Neither of the meats require special preparation skills distinguishing them from fish. This is reflected in the greater willingness to handle the raw product, and there is less aversion towards handling raw meat compared to raw fish as reflected in the significantly different levels of agreement on this statement.

The reaction to white meat is generally favourable. It is well regarded as a convenient and reasonably acceptable food. These perceived benefits may account, in part, for its meritorious rise in popularity over recent years.

7.3.4 DARK FISH

In Figure 7.7 a vector has been constructed to identify the characteristics most strongly associated with dark fish. Dark fish seems to have a highly restricted place in the meal system. Attributes positively associated with dark fish do not generally favour its acceptability. The strongest association with dark fish is the fact that it is regarded as being fiddly to eat. Dark fish differs significantly from all other products in this respect. This is obviously due to the association of dark

fish products with fine bones, typical of herring. Such associations add to the inconvenience of eating and reduce acceptability.

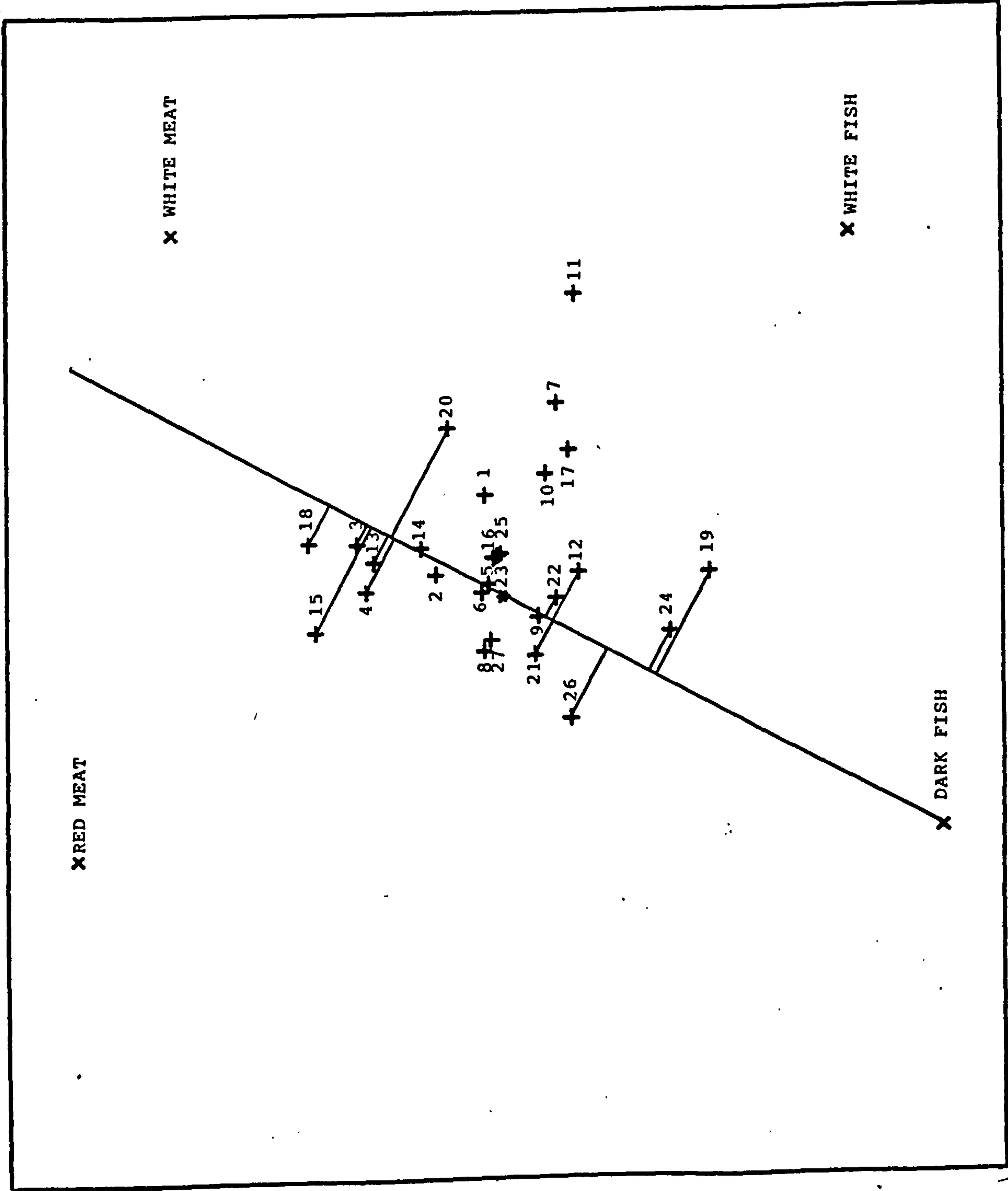
STATEMENTS POSITIVELY ASSOCIATED WITH DARK FISH	STATEMENTS NEGATIVELY ASSOCIATED WITH DARK FISH
(19) fiddly to eat*	(18) good to give to guests
(24) not go with usual vegetables	(3) good main meal centre
(26) cans are good for snacks	(15) popular with men
(12) boring	(13) versatile
(21) knowledge when buying	(20) more of a childrens food
(22) preparation skills	(4) filling and substantial

note: Statements marked with an asterisk [*] indicate statements where the agreement scores across all four products were significantly different, using analysis variance (ANOVA).

While there is disagreement that the meats and white fish do not go with the usual vegetables , the response is neutral for dark fish, suggesting a limited and restricted range of possible vegetable accompaniments. Of the attitudinal statements strongly associated with dark fish this is most exclusively associated with dark fish. One key to this restricted usage may be found in the positive association of canned fish products with snack meals. It was the only product to elicit agreement on this statement, illustrating an association of dark fish with canned products and restricted usage.

Dark fish, like white fish, is regarded as boring. While the fish products are indistinguishable from each other the meats are rated significantly less boring. Like white fish these products also require special knowledge in buying and preparation. Although white meat is the only product which is not perceived to require special buying skills, fish differs from the meats in terms of special preparation requirements. The qualitative research showed people to be less familiar with the preparation of fish compared to meat. In the case of dark fish these are negative features which are most strongly associated with the product.

Figure 7.7: Attitudes Towards Dark Fish⁷



⁷For goodness of fit see Appendix W:Figure W.1.

The features negatively associated with dark fish highlight its lack of general acceptability. It is the least acceptable to serve to guests and differs significantly from the other products in this respect. It is not as suitable for a main meal centre as other foods, perhaps because of the association with canned foods. Dark fish is the least acceptable to men and not considered to be a childrens food, (despite its association with strong flavours as revealed in the qualitative research).

White fish with its bland taste is more acceptable as a meal centre than dark fish. Despite the meaty flavours and textures of dark fish it is still not regarded as a main meal centre. It is less versatile, less filling and substantial. Considering the former, dark fish is rated as significantly less versatile than either white fish or the two meats. This again reflects the limited usage of these products which are confined to sandwich and salad meals, teas and lunches (Chapter 6). The fact that dark fish is regarded as the least filling and substantial is interesting given its rich flavours. The perception of these flavours as being too rich and the usage of small quantities is likely to explain this association. The perceived lack of substantiality is as much a feature of current usage as a reflection of inherent product features.

Dark fish does not feature very well as an acceptable food, being confined to a restricted place in the meal system. There seems little prospect for wider use in its current form although the situation may be improved by a move towards more snacking.

7.3.5 MEAT (General)

Meat is perceived to be versatile and an acceptable meal centre, confirming many of the previous findings in the qualitative and diary study. It is not regarded as being fiddly to eat in contrast to fish.

Meat scores significantly better than fish on the attitudinal statements as a filling and substantial food. It is not only perceived to be more versatile and convenient to make into a main meal, but combines well with the usual vegetables and is popular (with men and guests alike). Meat is almost universally acceptable.

7.3.6 FISH (General)

Fish is characterised as being fiddly to eat and not suited to main meals (this conflicts to some degree with the diary study). It is not perceived to be popular with men, suitable for guests, versatile or

filling and substantial.

In addition those areas where fish differs significantly from meat represent particular problems associated with the product and possible areas of attention. Respondents rated fish as being more boring than meats and requiring special skills in preparation. Obviously there is a need to change these negative attitudes either through education or the way in which the products are presented.

On the positive side fish is regarded as significantly healthier than meat and good for slimming.

7.4 DEMOGRAPHIC DIFFERENCES

The desk research revealed differences in fish consumption across a range of demographic variables (Chapter 3). This section examines attitudinal differences between specific demographic groups. Age, sex, age plus class and locational differences are considered. This offers some explanation of why variations in consumption levels exist between the different sub-samples of the survey population.

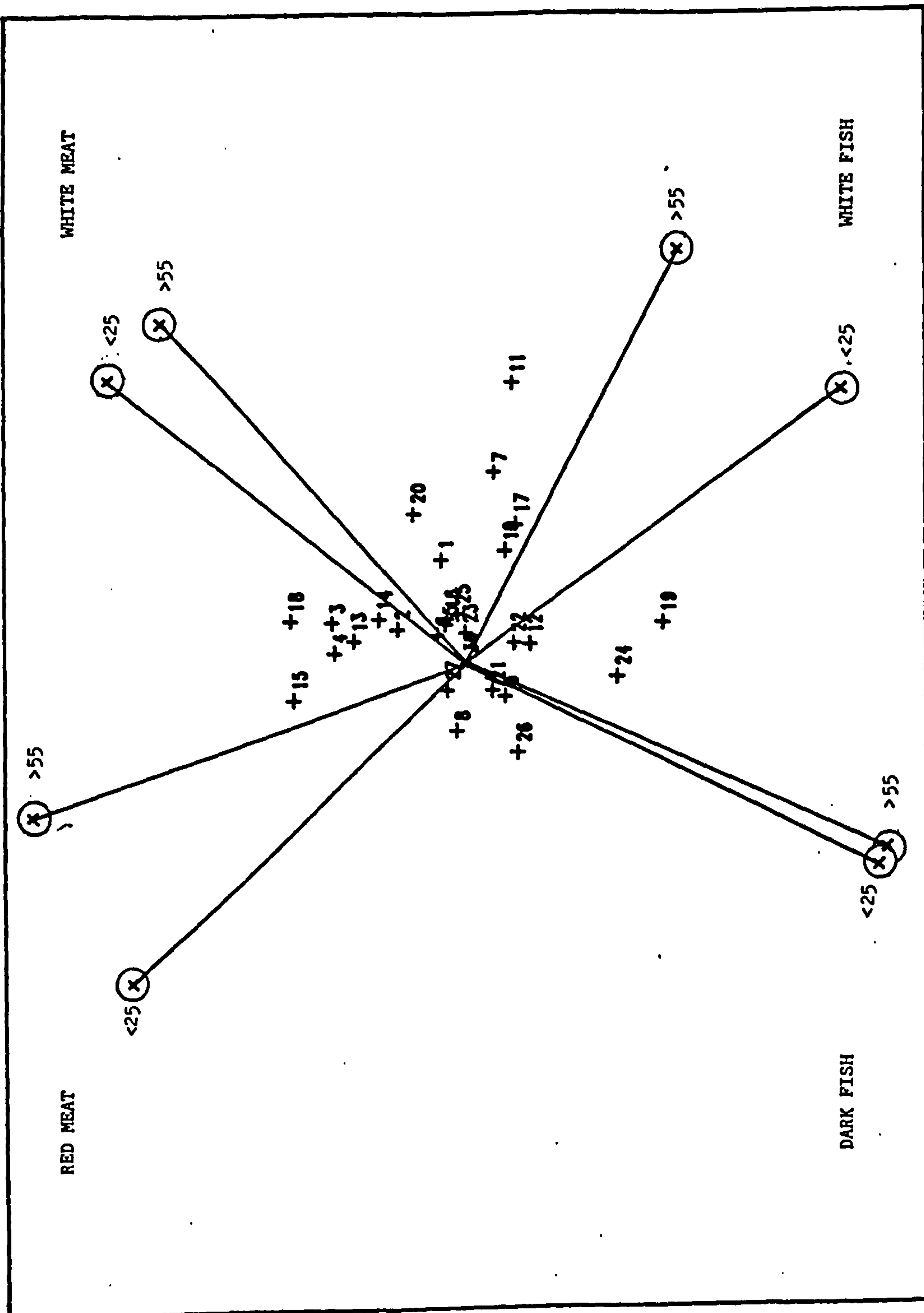
7.4.1 AGE DIFFERENCES

One of the most distinct differences in fish consumption and expenditure revealed in the National Food Survey (Chapter 3) occurred between old and young consumers. Differences in attitudes, are most likely to be the result of age differences, which will reflect 'life-course' differences (see Featherstone, 1987).

A comparison was made between older (>55) and younger (<25) survey respondents to determine if there was any difference in their attitudes towards the four products.

Figure 7.8 examines differences in the perceptions of the products with respect to the age of the respondents. These differences are indicated by the positioning of the subject points around the unit circle. The greater the distance between the subject points the greater the difference between the age groups. By constructing vectors to the subject points it is possible to rank the statements according to strength of association, (as in the previous section).

Figure 7.8: Differences in Attitudes by Age Groups⁸



⁸For goodness of fit see Appendix W:Figure W.2.

This difference is least marked in the case of dark fish and white meat, evidenced by the close proximity of the two subject points. With white fish and to a lesser degree red meat, differences in opinion exist between the age groups.

Under 25's and the older age groups are fairly consistent in their association of red meat with guests and a filling and substantial food (Appendix V; Figure V.1).

The main distinction between the groups relates to their regard for white fish as being fiddly to eat. The younger age group more strongly associate this feature with white fish. They are also less likely to use white fish for guests (Appendix V; Figure V.2).

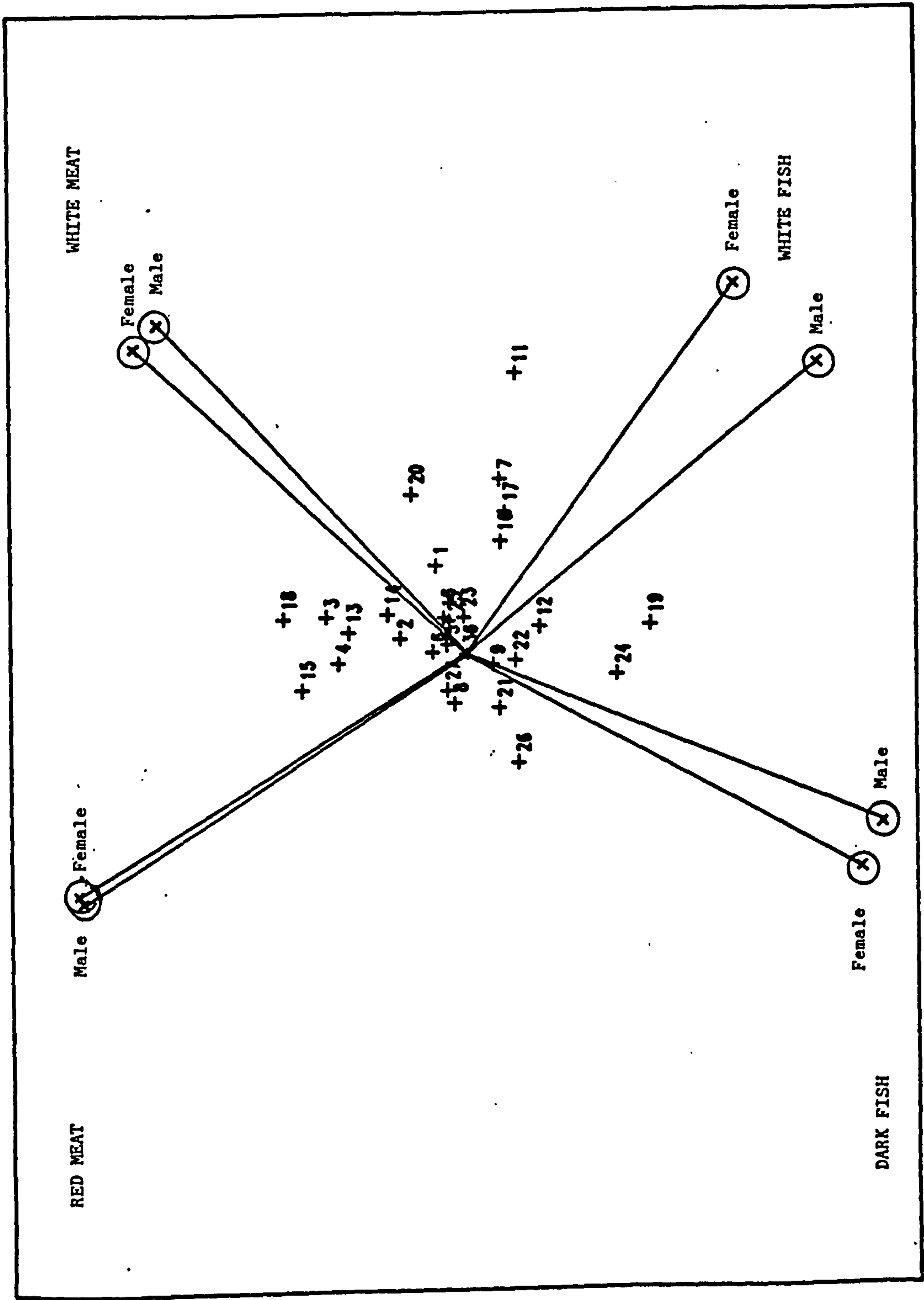
The over 55's in the survey find red meat and white fish more acceptable than the under 25's. The traditional role of red meat in the meal system is reflected in their regard for it as being more substantial and filling, not necessarily unhealthy and offering versatility. They are more prepared to accept white fish as being good value and find it appealing in the shop. They would be more willing to serve it to guests. The over 55's knowledge and skill in buying and preparing food is felt to be more important.

The under 25's are not so concerned with a preference for fresh products or so sure about evaluating freshness. They are less concerned about the healthiness of dark products and more likely to find fat/oil off putting in foods. They also dislike handling raw food much more than their elders. White meat is more acceptable to this group, it is regarded as filling and substantial and they find its taste very acceptable. They are less convinced by red meat and white fish, and generally find fish more fiddly to eat. The former are orientated towards traditional values, the latter towards convenience.

7.4.2 GENDER DIFFERENCES

Figure 7.9 gives an indication of the differences in perception between the sexes and those statements which they most strongly associate with the products. There is little difference in the perception of red meat or the association of particular statements with these products. There appear to be slight differences between the sexes in the case of white meat and dark fish. The widest divergence of opinion occurs in the case of white fish.

Figure 7.9: Differences in Attitudes by Gender⁹



⁹For goodness of fit see Appendix W:Figure W.3.

Women more strongly associate white fish with slimming and light meals. Men regard white fish as being fiddly to eat and not combining well with the usual vegetables. They associate these statements more exclusively with white fish as evidenced by the closeness of the stimulus points to the vector. Men regard white fish as more inappropriate for main meals, women see it as inappropriate for men (Appendix V; Figure V.3).

Women differ from men in their evaluation of both types of fish as 'good value for money', and 'good centre for a main meal'. They express a higher level of agreement with the statements compared to men. While they do not differ in their evaluation of red meat as a filling and substantial food they differ in their evaluations of fish and white meat. Females agree more strongly that fish and white meat are filling and substantial.

Women give higher agreement scores than the men in their reaction to the statement 'fresh products taste better than frozen' where red meat and white fish are concerned. With all the products women find it easier to tell if a product is fresh than men, not surprising given that most of them probably do the bulk of the shopping and are therefore directly involved in evaluating product freshness at the point of sale.

When it comes to whether the different types of food are healthy, men and women differ in their reaction to red meat and white fish. Men disagree less that red meat is healthy, and agree less that white fish is healthy. On this issue men appear less convinced that fish is healthier than meat, compared to the women. Women differ from men in their reaction to fat/oil in the products, and handling raw products. Women express much stronger agreement with the statement that fat and oil is an off-putting feature of red meats.

Men disagree less that dark fish is bland. Women favour white fish and white meats for slimming, and disagree more strongly than the men that red meat is good for slimming. Red meat is seen as less boring by the men than the women but they do not differ in their evaluation of the other foods.

Women regard white meat and fish as more versatile but meats more convenient to make into a meal. When it comes to suitability of the 'meats' for a light supper women and men differ in their reaction to red meat and white fish and it is the women who agree more strongly that fish is suitable for a light supper. Serving the foods to guests again elicits significant differences in opinion. Women agree more strongly that red meat, white meat and white fish are suitable for guests.

Women disagree more strongly than men that white meat is fiddly to eat and are less likely to serve dark fish to children. They agree more strongly than men with the statement that you "have to know about different types when buying" red meat, dark fish and white fish. This, of course arises from their role in food provisioning. Whilst both males and females express similar reactions to the need for special skills in preparation with fish, the men feel that more skill is required in preparing red meat and white meat than women. Perhaps they are not used to preparing these specific foods. Men disagree less than women that 'frozen product is better value than fresh' in the case of white meat and white fish. Women express more disagreement than men that the meats combine with the usual vegetables and agree more strongly with the statement that 'cans of this make good main meals' when it comes to red meat.

There is no evidence of any gender differences in relation to the four products with respect to the statements concerning appeal in the shop, popularity with men, suitability for snacks, the value of ready meals and the use of cans of the product for snack meals.

Women augment the traditional role of meat in the diet and see fish as less suitable to give to guests, less convenient to make into a main meal and more difficult to prepare. Although they tend to agree that it is healthier. Their reaction to the statements compared to men indicate that they are the ones who take on the responsibility of food acquisition and preparation; they know about freshness and preparation requirements. Men seem more at a loss in reacting to these statements, one suspects because the vast majority are not heavily involved in this process.

7.4.3 AGE AND SOCIAL CLASS DIFFERENCES

An examination of the relationship between class and age revealed a lack of independence between the variables. Many of the C1 social class are located in the younger age groups.

Due to this interaction between class and age it is difficult to draw out class differences. Age represents a more definitive measure than social class in this instance. The reliance on the National Readership Scheme which categorises students as C1 (lower middle class) is based primarily on occupation. A truer estimation of social class in retrospect may have involved recording parental occupation as the basis for students social grade. By removing C1's, the distinction between the classes is more dependable. Further subdivision of the sample into age groups allows one to examine the attitudes of specific age and class groups towards the four products.

Division of the sample into 2 age groups, 2 social groupings and 4 products, generates sixteen distinct groups. The division involved younger (<25) and older (>55) respondents, middle class (AB) and working class (C2DE). C1 respondents were excluded from this analysis due to the confounding of this variable with age.

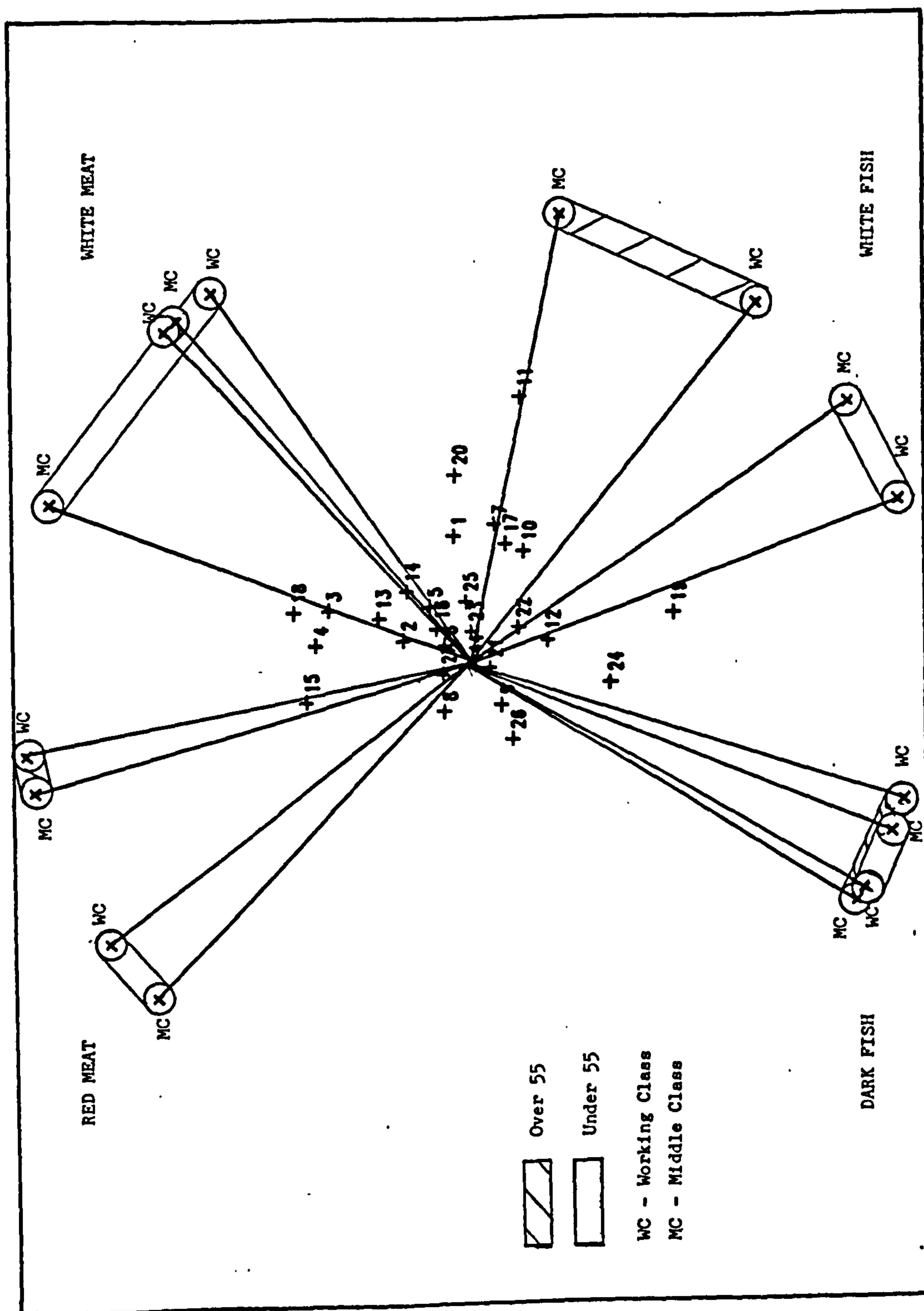
There is little difference between the older classes in their response to red meat, but the younger age groups reveal a spread of opinion across class (Figure 7.10). In the case of white meat the older group exhibit little difference across class. However, there is a wider difference of opinion between the working and middle classes among the younger age group. While the younger working class associate white meat with slimming, childrens food and offering good value, the young middle class regard it as good for guests, filling and substantial and a good centre for a main meal (Appendix V; Figure V.4).

With dark fish the difference in opinion is again not so marked, and appears between age groups rather than class.

With white fish the main difference in association occurs between classes in both age groups. The older working class do not regard white fish as popular with men, filling and substantial nor good to give to guests. They regard white fish as being fiddly to eat. The older middle class see white fish as unsuitable in cans for snacks, negatively associated with fat/oil and find the raw product unpleasant to handle. They positively associate white fish with childrens food. The younger middle class associate white fish with healthy eating. For the younger working class white fish does not go with the usual vegetables (Appendix V; Figure V.5). Both classes regard fish in very different ways.

The middle class seem more willing in their attitudes to serve fish as a meal centre and to guests and children. The younger middle class are also less likely to regard fish as fiddly to eat. The younger working class prefer the taste of fresh red meat to frozen, and in the older working class they find it easier to tell if white fish is fresh. This difference in freshness evaluation may be a function of experience. White meat for the working class is seen to be more convenient to make into a meal, compared to its evaluation by the middle classes. It seems that the middle classes are more likely to use fish in a wider variety of ways, and seem more open in their attitude towards fish.

Figure 7.10: Differences in Attitude by Age and Social Grade¹⁰



¹⁰For goodness of fit see Appendix W:Figure W.4.

7.4.4 LOCATION

The location variable is independent of class and age. There is a small degree of dependence in relation to sex. The northern sample contains a higher proportion of males, the southern a higher proportion of females.

Many of the differences in attitude between north and south relate to white fish. People in the north feel it is better value for money than those in the south. There is a tendency among the northerners to agree more strongly that red meat, dark fish and white fish make a good main meal centre. They also express a higher level of agreement with the statement that red meat and white fish are filling and substantial compared to southern respondents. With both types of fish the northern respondents express significantly higher agreement with the statement that fresh tastes better than frozen. Respondents in the south are more prepared to accept frozen meat products as offering better value for money and serve white fish to guests. The preference for fresh products in the north is reflected in the need for more knowledge when buying and special skills in white fish preparation.

The fact that the northern cities, Aberdeen, Glasgow, Newcastle and Liverpool are also coastal regions may result in some confounding of information. This is not necessarily a fault of the survey, rather a feature of the UK. Realistically most of the cities with the exception of Birmingham have good access to the coast. It is likely that historically these Northern regions had easier access to fresh fish, and this is being reflected in the current attitudes. Today London has good supplies of fresh fish if not better than particular northern towns in the sample.

7.5 SUMMARY OF SURVEY FINDINGS

Meat and fish are very different products not only in terms of their intrinsic product features but the ways in which they are used. The attitudinal survey highlights these major differences and supports many of the qualitative findings.

White fish differs in most respects to red meat. The survey reflects the opinion of the group discussants who regarded fish as less filling and substantial than meat. White fish scores well as a healthy food which is associated with slimming and one suspects as a consequence of that it is perceived to be suited to lighter meals (a finding supported by the qualitative work, but not confirmed in the diary study). Such attitudes are likely to restrict the use of fish in other types of

meal.

While white fish possesses these favourable benefits and respondents regard it as a healthy food, it lacks the general acceptability of the meat products. It is almost as if white fish and red meat are at opposite ends of the choice spectrum.

The need for special cooking and preparation skills reported to hinder the use of fish in the qualitative research seems to be more applicable to dark as opposed to white fish (where this did not feature as a major concern). One suspects that the extra skill and knowledge required with dark fish related back to the problems of fine bones in these products.

Dark fish appears to be the least acceptable of all the products, it is fiddly to eat, does not go with the usual vegetables and generally requires more effort. Certainly these products are not considered appropriate for 'main' meals and all the previous research confirms this.

Dark fish seem confined to lighter meals and lack the inherent features or the status to carry them into main meals. It is strongly associated with canned goods but despite these negative features the diary study suggests that there may be an increasing role for such products given their current level of use and limited time spent cooking and preparing food.

White meat seems to draw on the strengths of both red meat and white fish. It possesses the healthy image of fish but is considered generally acceptable as a meal centre, for guests and children. One can begin to understand why these products have been so successful in the market place with increasing demand for acceptable healthy foods.

Red meat is perceived to be a substantial main meal centre and it seems to set the standards for main meals. Substantiality, good main meal centre, general acceptability, versatility are all features strongly associated with red meat. If strength lies in its general acceptability, it does lack the healthy image of fish and white meat but then health is only one of many concerns, food must be good to think as well as good to eat. The attitude towards meat confirms its central role in the meal system supporting the group discussion and the diary findings.

Interestingly it is women in the survey who appear to reinforce the centrality of red meat and appear more responsive to health issues and general concerns about food provisioning. As food providers for

the family they are more likely to be catering for a range of tastes and subject to those constraints in taste. While fish may be regarded as healthier this may be insufficient to warrant a change in behaviour. As the groups revealed healthy eating may be interpreted as eating low fat products or trimming the fat off cuts of meat rather than switching to fish just because it is believed to be healthier. This in itself involves a more radical change of behaviour.

Younger respondents in the survey appear more convenience orientated and health conscious. They are less concerned with freshness than older respondents, find fish fiddly to eat and as a group they may offer a new potential market if fish is presented in a convenient form. Given the strong representation of younger respondents in the survey this seems an important consideration for the future development of new products.

The survey highlights the prominence of meat in our meal system and its association with main meals reinforces attitudes and expectations with respect to what form a main meal should take and what foods are acceptable. Fish differs from meat with respect to most of these 'evaluators', and even dark and white fish are perceived to be very different.

White fish is generally more acceptable than dark fish, it is for example regarded as better value, healthier, better for slimming and more suitable for light suppers. Although the differences are not so marked on several other aspects it does score better in terms of its versatility, convenience, and popularity with men adding to its overall acceptability. Dark fish is very much the poor companion to white fish.

Meats seem generally more acceptable than fish products, and any marketing initiative needs to be aware of the perceived role of fish in the meal system, and indeed difference in attitude towards the two main types of fish outlined above. Fish products cannot simply be marketed as healthy alternatives, they need to be presented as appropriate substitutes targeted at specific meal occasions or represented in a form which suggests insubstantiality, general acceptability, and versatility.

CONCLUSIONS

INTRODUCTION

Consumer reaction to fish can only be understood in the context of general beliefs about food choice and in relation to the central role which meat plays in our culture, shaping and conditioning consumer expectations. Food habits are dynamic and in the UK are undoubtedly undergoing a period of change. There is no single identifiable reason for low consumption of fish but some light can be thrown on the changes in demand by identifying and examining the complex interaction between various factors which shape food choice.

First, fish is seen as having a limited place in the meals eaten by UK consumers. Although the use of fish and fish products can be clearly located in this meal system, this lack of widespread acceptability reflects problems with the product at both symbolic (fish as a light insubstantial feminine food, associated with invalids, slimming and the diet conscious) and practical (fear of bones, aversions to smell etc) levels. It is this symbolic interpretation which reflects the standard way of thinking about and classifying fish as a foodstuff. It conveys general perceptions of the product and meanings associated with its use in the British culture.

Second, this limited acceptance is reflected in the way fish 'fits into' the whole process of food provisioning. The actual physical consumption of food is only part of the overall process of 'provisioning' and what is consumed is affected by the TOTAL process. The investigation of food habits needs to extend into all aspects of food provisioning from acquisition through preparation, cooking, eating, and disposal and to examine the inherent practical problems of fish as a foodstuff. More importantly, it highlights the importance of food storage, preparation and cooking concerns to the consumer and their relevance to food provisioning and food use. These are aspects which are often subsumed in general measures of acceptability which focus primarily on the consumption (eating) stage in the overall process.

Third, the current reaction to fish as a healthy foodstuff reflects an increased concern with 'body culture' and new styles of eating are a response to broader social and economic changes. While these changes are occurring at the periphery of our food system, however many of our food norms and

mores remain intact.

The reason for adopting an anthropological type approach is to attempt to uncover as unobtrusively as possible the meaning which underlies this behaviour, and the interrelationship between the various influences. This approach enables one to relate consumer acceptance or rejection of fish to the overall process and to distinguish reasons for using different types of fish and fish product. The meal test, the food diary and survey facilitated the investigation and interpretation of the meaning behind this usage, as well as revealing the importance of the context of usage. The research attempted to move beyond the nutritional concerns which historically have been the focus of many studies into food choice. The consumer is concerned with much more than nutrition ; with the need to provide acceptable foods in the correct combinations, in the correct form, cooked and served in the correct manner (depending on the occasion and the guests). Many of the rules of acceptability which we apply are never questioned but are part of the acculturation process within which food provisioning is one aspect.

FISH THE UNNATURAL SYMBOL

FISH IS NOT MEAT and to eat meat is 'normal'. That is not to say that eating fish is 'abnormal', but rather that in our society it is not as normal as eating meat. In many ways the food ethos of our culture is symbolised by meat. 'Traditional' British cuisine is characterised by the 'Sunday roast', and main meals are commonly structured around 'meat and two veg'. Meat dishes are used to identify regional and national cuisines. Many classic national and regional dishes are meat based - for example, Scottish haggis, Irish stew, Lancashire hot pot. Fish is not so strongly associated with the UK cuisine and the general attitude towards fish is "why eat it when meat is available?"

Preferences for particular foods are shaped by our 'access ' to particular foods. Acceptance of any new foods must be accommodated within our existing food classification system, which categorises and decides rules of usage and combination according to qualities such as - meat or fish? fresh or frozen? convenient or inconvenient, formal or informal?

Further to this, acceptance may depend on how the food is prepared and presented, a function of the occasion in which it is used. Culture shapes our experiences with available foods into preferences for specific forms of a food be it wheat in the form of bread, beef in the form of prime steak, or fish in the form of fish fingers.

Levi Strauss (1970) suggests that man's primary distinguishing feature is the way in which he transforms his food through the medium of cooking. This process of 'elabore', he asserts, makes the move from nature and the animal to culture and the man. Modern man further distinguishes himself from primitive man by the way in which his food is acquired. Hunting is no longer necessary to obtain food supplies, and is confined instead to a sporting activity. Only "primitive" societies need to hunt for food. Fish is literally the only food in our modern society which is still acquired by on hunting. In the case of hunting the relationship between man (culture) and animal (nature) is more balanced. Today food production has become domesticated and contrasts with the hunting practises of primitive man. In our current production system man exercises control over nature through intensive farming methods. Despite advances in catching technology we lack the the same degree of control over the availability of fish. Man cannot guarantee fish supplies in the same way as he can guarantee meat supplies by control over its production. This inability to guarantee supply makes it more difficult for fish to take a central role in the UK cuisine. For historical reasons, meat is more highly valued, more ubiquitous, more readily available and more accessible in the UK. Fish is not as widely available as meat, and recent legislation to prevent over fishing of particular species is creating further supply problems. Meat is the symbol of man's control over nature.

Availability creates familiarity and we are undoubtedly more familiar with meat on our plate than fish. This familiarity stems directly from the wider availability of meat. Although meat supplies were more restricted in the past it was the upper echelons of society who had primary access to choicer cuts of meat, while the poor ate salted herring. Meat has come to set the standards for acceptance or rejection of other foods as the rules of acceptability have developed around meat.

THE SYMBOLIC DISTINCTIONS ARE AS IMPORTANT AS THE PHYSICAL DISTINCTIONS
For most UK consumers meat is 'masculine', fish is 'feminine'. These images are reflected in general usage. The physical characteristics of meat, its dark blood red colours, chewy and masticulative textures, strong rich flavours, symbolise 'proper and normal' food which is generally acceptable to all, but most appropriate for men. Despite the wide variety of species, most fish is perceived to be physically very different to meat, with its idealised, pure white colour, delicate textures and light bland flavours. It is less generally acceptable and considered more appropriate for women and children. (Symbolically it reflects the position, power and role of women and children in our society).

In the system of humoral medicine foods associated with water tend to be classified as cold and fish

is no exception. Fish being 'cold, wet and moist' is classified as feminine, in contrast meat which is 'hot and dry' is classified as masculine. The image of a cold, raw, colourless food contrasts with the hot, blood red image of meat. This classification as a 'cold food' corresponds with its use for those who are ill, not only is it easy to digest but its cooling properties are likely to counter the heat of a fever. Fish is perceived as inferior to meat physically and symbolically although exceptions do exist, for example the meaty textures and richer flavours of tuna and salmon.

The idea of 'meatless days' (which by default became 'fish days') may seem alien to many people today and doubtless created problems for a large proportion of the population who were undernourished at the best of times. However, this influence is still apparent today in the mildly religious ceremony of fish on Friday, and reminds us of the importance of taking account of the historical influence on food choice. The religious mores about fasting and penance may no longer be so pertinent but the food diary revealed a high incidence of fish on Friday. The association of fish with non-meat days and restraint from meat eating ('the pleasures of the flesh') juxtaposes meat and fish, bestowing more status on the forbidden meat. This abstinence from meat is much more of an individual decision today. The polarised image of meat and fish is reflected in general attitudes towards these foods as identified in the survey exercise.

Fish is perceived to be inherently 'good for you', even if not generally acceptable (almost in the same way that liver is perceived to be good for you even if no one appears to like liver). The intrinsic benefits of eating fish are more likely to appeal to the INNER-DIRECTED INDIVIDUAL dependent on their own inner values and standards to guide their behaviour, rather than the values of others around them (see Riessman et al 1950). The additional effort involved in using fish has a direct payoff for the individual, as opposed to the group. Using fish is often about catering for individual 'tastes', and inner-directedness. Providing meat is about other-directedness, catering for the needs of others. Positive aspects of eating meat relate to the group; meat is food for sharing, it is generally accepted, suited to those meals which need to be substantial and involve the family. The general trend in eating habits appears to be away from an other- to an inner-directedness (Sennett 1976) as individuals are concerned with personal health and nutrition, less concerned with activities which involve sociation groups, or in private settings including catering, in the UK.

The suitability of meat or fish for guests is also a question of the status attached to these foods; meat is generally perceived to be of higher status than most types of fish, and therefore more appropriate for offering to others, especially guests. However, fish cannot be treated generically in this respect

and status varies across species and whether fish is fresh (highest status), frozen or canned (lowest status). It is these lower status products which are more convenient and more suited to usage in, for example, snacks, 'convenient' meals, etc.

While the healthy image makes fish more acceptable to particular individuals, notably those concerned with eating healthy foods, or those on a diet, it has a restricted or more peripheral form of use in the meal patterns of most households. Its strength lies in inherent product characteristics, but increasing consumption demands that it is accepted by a wider section of the population. New patterns of eating which involve eating alone are more likely to include processed fish as individuals take the opportunity to eat foods which they like without having to cater for the needs of others. This shift towards an informal society, decentralised authority and individual enterprise (see Naisbitt 1982) is facilitating inner-directedness.

The fact that fish is not generally seen as a substitute for meat and not used extensively in main or important meals means that it can more readily fit into this role as a health food. Eating healthily means learning new rules, using 'scientific' means of evaluation. We are currently being 'educated' about healthy eating by government bodies and health authorities based on recommendations from the well publicised NACNE and COMA committees. This healthy eating advice is sometimes difficult to reconcile in the light of existing convention, and beliefs about proper foods (the meat and two veg. model!)

Meat is regarded as less healthy than fish. In the light of world food shortages it is inefficient to produce, and for some 'meat is murder' but it nevertheless remains necessary. Fish may be healthy, evoke little debate on the efficiency of its 'production', and too removed from our everyday experience to be considered as 'unethical and inhumane', but it is not necessary nutritionally, socially or culturally. Most individuals, it seems, can eat and entertain without using fish, the same could not be said of meat. Fish is not central to the UK cuisine. It remains marginalised, regarded simply as a change from meat, a way of providing variety in the diet. This is partly a function of its limited supply, our unfamiliarity with many of the species available and the processed forms in which the majority of products are available. Its inherent qualities and the ways in which it is used in the food system results in a foodstuff which is regarded as inferior to meat in a food system which demands 'filling, substantial' foods. Meat takes the central role, and fish remains secondary.

To attempt to present fish as a direct substitute for meat is futile given the current expectations

about 'proper food' and the role meat plays in shaping these expectations. Any decision to use fish is therefore more likely to involve a digression from normal eating patterns, and reflect individual preferences. This image of fish as an insubstantial and low status food renders it less appropriate to serve to others, especially men. It is much more likely to be eaten at meal occasions where other participants are not present. If others are present different foods often have to be prepared for these participants. A full understanding required further investigation into the ways in which fish is currently used and the implicit meanings underlying its use in the UK cuisine.

FROM SEA TO PLATE

The status afforded to fish not only reflects the symbolic meanings attached to its use and inherent product characteristics, but also the ways in which the food is acquired, prepared, cooked, served, consumed and disposed of - in essence; how it is used. A consideration of the use of fish highlights the importance of considering the type of product used (fresh, frozen, canned), the need for preparation skills or further preparation, how it is to be cooked, how it is served (hot or cold), with other foods or on its own, and at what type of meal occasion. These factors interact to reveal a complex set of unspoken rules which determine what type of fish products are more appropriate for specific types of meal. The diary study helped to reveal the importance of these factors and showed the use of fish to be more extensive than earlier qualitative research had suggested. However more importantly it revealed the use of specific types of fish product in specific types of meal. The nature of the meal occasion and those present determines the appropriateness and acceptability of particular product forms and also reveals a food system designed around meat.

THE IMPORTANCE OF AVAILABILITY CANNOT BE IGNORED and the limited use of fish undoubtedly reflects the historical problems with irregular supply and seasonal variation in the species landed. Although today total fish supplies are sufficient to satisfy consumer demand there is a shortage of the more popular demersal species, notably cod and haddock. The 'innate' preference for demersal species which currently exists in the UK reflects and has been shaped by limited exposure to other species and wider availability of processed products based on demersal species. Somewhat ironically the proliferation of new products has encouraged overall consumption but conditioned consumers to expect to find white fish in these products. These new preferences have limited consumer acceptability to a narrow range of species. The manufacturers have sealed their own fate

and, with a high dependence on several species, are currently facing supply problems. They are increasingly dependent on imported cod to satisfy the consumers taste preferences which they helped to create. Problems with guaranteeing supply and rising costs may eventually force them to rethink their strategies.

The issue of unfamiliarity with fish creates problems at the acquisition stage and this is reflected in consumer uncertainty about how to evaluate freshness. Freshness, which is important in meats, appears to be even more important in the case of fresh 'wet' fish. Most of the other foods we currently use do not require the skills of freshness evaluation which fish demands. This is partly a recognition of the poor keeping qualities of fresh fish and partly a belief that fish has to be used immediately in order to retain the inherent product qualities. Freshness suggests 'light' tastes and flakey moist textures. The means of evaluating freshness involves examining the whole fish - its skin, its eyes, its smell-of-the-sea. Content to forget the origins of our steak this is not so easy with fresh fish and the animal associations remain firmly fixed in the consumers mind. At this stage it is still animal as opposed to food, and the purchaser of the whole fresh product is responsible for transforming the animal into acceptable food - a contrast to many of the meats which we currently use.

On a practical level fresh fish is undoubtedly more risky at each stage of the food provisioning exercise and there is greater chance of things going wrong, but the high risk brings high reward. There is almost a form of 'culinary competence' required to carry out this transformation. Nowadays these skills tend only to be found among the older generation or some younger housewives. There has been a general process of "deskilling" in the kitchen as a result of the availability of new technology for cooking and food preparation and also a greater willingness on the part of housewives and consumers to use time saving foods, as more time is spent on both work and leisure pursuits by adults. Values about food and food provisioning has changed as a result of this. As a consequence, manufacturers nowadays take on more responsibility for processing.

Possession of this 'culinary competence' does have its advantages in the respect that cooking skill not only confers status on the the host who is responsible for this transformation, but it also confers status on the fresh product which demands more time and effort to prepare. It serves as a 'social marker' for the host. Certain kinds of fresh fish may be more likely therefore to be included in the special meal when entertaining. The extra effort required in using fresh fish marks the importance of the occasion. Only when the occasion demands it does fresh fish become worth the extra effort. In

contrast to this image much fish is purchased frozen, the need for 'culinary competence' is negated and fish becomes a secondary food.

OUR DISINCLINATION TO DEAL WITH RAW FLESH IS REFLECTED IN ATTITUDES TOWARDS UNCOOKED FISH and much of the fish used is in the form of products which require no further cooking. Uncooked foods are not 'proper foods'. 'Proper foods' require 'proper' cooking methods which are based on meat products. Meat can be classified as well done, medium or rare but never uncooked. Fish is either cooked or uncooked. Witness the revulsion at the idea of eating raw fish, something only associated with other cultures eg. Japan. In the UK such behaviour is generally considered repulsive, yet exceptions do exist, we eat rollmop herring, oysters, and crab-sticks (Japanese surimi!) which are uncooked and raw.

Food is transformed by the way in which it is cooked and there is a lot of evidence, in the case of fish, to support Levi Strauss' ideas on cooking. Roasting which is the highest form of cooking is quite simply inappropriate. Fish with its more delicate textures requires shorter cooking times, yet acceptable food must be 'properly' cooked which demands longer cooking times. Fish is baked but seldom 'roasted' and symbolically can never attain the status of meat in its role as a sacrificial food. In the ancient Greek ritual, when meat is roasted and offered to the gods in sacrifice, the gods consume the smoke, men consume the meat, and this was believed to symbolize and celebrate both the community of Gods and men, and also the relationships between the different types of men.

The main types of cooking method used for fish convey a relatively low status image (despite the products nutritional qualities). Frying which is most commonly associated with fish products in the UK (as evidenced in the diary study) is undeniably considered to be an unpleasant way to cook. It is associated with fish and chips, working class, and low status food. Boiling, the other method of cooking fish is associated with invalids and poor health. Each of these associations serve to lower the status of fish relative to meat and limit its acceptability. However, the cooking method alone is insufficient to explain food status. Poaching for example is considered relatively high status. One also needs to take account of the type of fish used and the degree of processing, an issue discussed later.

SERVED HOT OR COLD there is some synergy between cooking food and how it is served. Cooked food is more likely to be served hot if used in a more important meal. In contrast, cooked food served cold is more likely to be found in a secondary meal. The idea of food being 'hot and filling' relates to

our obsession with substantiality in main meals as the most important food event of the day. Much of the fish used in the food diary was served cold and regarded as more appropriate for light meals such as lunch or tea. Fish served in the main meals tended to be served hot as opposed to cold. Reheating, as is the case with many of the processed fish products, is treated with some contempt despite the obvious convenience and no evidence of nutritional loss. Tuna, for example, was frequently used in the diary households but seldom reheated. Meat can be reheated but fish, it seems, cannot. Meat leftovers are acceptable, fish leftovers are not.

Some of the major objections to fish are manifest at the eating stage and revolve around inherent product features which necessitate more caution at the table. The presence of bones, or the potential threat of swallowing a bone, demands more time and skill on the part of the eater. The consumption of the whole animal for some is repulsive and fish heads are commonly removed before serving. In addition many fish products lack the textures associated with meat which reinforces the general perception of fish as a less substantial food.

The rituals involved in sharing meat and fish are very different. Carving, which takes a central role in the distribution of meat, has little part to play in distributing fish. The common belief that fish cannot be carved and served in the same manner as meat or chicken further restricts its use. Essentially one 'cut' of meat provides for the meal; its distribution, who gets served first, who gets the best cut, who gets the largest portion, all reflect the status of those present at the meal. With fish each person gets their own individual fish, the flesh is seldom carved from one large fish for distribution. (Everyone gets a whole fish). The order of serving is still significant, but although some fish has traditionally been associated with royalty - sturgeon, and aristocracy - salmon, fish is not used in quite the same way as meat to mark social rank and status. Simply providing more fish, or a different type of fish is inappropriate, impractical and unsubtle.

The implication is a need to consider all these factors in the consumers decision to use a specific food or more specifically a particular type of fish. Each of the elements can be examined in isolation, but that fails to give a complete picture in the same way that an examination of cooking methods alone fails to explain choice. The preferences for hot cooked meals containing meat is part of our cultural adaptation to the food supplies available in the UK and reflects climatic, geographic, economic and social structures.

Basically we are trying to accommodate fish in a meal system which is centred on meat. Using fish

requires us to rethink food provisioning right from acquisition through to consumption. It demands some deviation from the 'normal pattern' of behaviour. No wonder it is only regarded by many as an occasional change from meat, except perhaps by those who have already chosen to deviate from the 'normal' patterns (vegetarians, slimmers, healthy eaters, 'time famine' victims).

SOCIAL CHANGE AND NEW OPPORTUNITIES

Many changes in eating habits are a consequence of changes in the UK economic and social structure. The increase in the number of working women and, as a consequence the number of dual income households, has brought with it a corresponding increase in the standard of living for particular sections of society. Less time is being spent in the home, less time is being spent in the kitchen preparing and cooking food. With higher incomes, households can invest in kitchen technology and 'afford' to pay for added value products, both of which create time for the individual. The general trend towards smaller household units is manifest in the changing nature of food consumption in these households with a move away from formal eating, towards increased demand for convenience and more eating alone. In these households the 'meal' is being redefined.

New patterns of shopping and a move towards one-stop shopping at supermarket outlets have implications for the types of food bought and the need for long shelf life. These are all aspects of convenience which have taken on an increasingly significant role. The move towards more convenience foods has changed the nature of the shopping experience and the nature of the information provided has placed different demands on the shopper. Information is now largely controlled by the manufacturer, and the degree of processing by the manufacturer has rendered the traditional means of evaluating foods inappropriate. Labels with nutritional information and sell-by dates have superseded the old evaluators in the move away from independents towards superstores and prepacked foods.

Most attempts to encourage fish consumption have focused on the fresh product and educating the consumer on how to acquire, prepare, cook and serve fish (witness the proliferation of recipe leaflets). Such campaigns are simply preaching to the converted and offer little incentive to those not currently using fish.

Removal of the negative features of fish has increased consumption, but also transformed the product into something very different from the fresh whole wet fish which appeals to a different sector of the

market. The problem seems to be that manufacturers assumed that the old associations would remain with the convenience elements incorporated. The time and skill requirements, the 'culinary competence' required for fresh fish can never apply to frozen products. The preferred taste of fresh fish is as much a feature of the additional effort required, in the same way that home cooking is always better. In this respect frozen fish can never be fresh but changing lifestyles offer new opportunities for frozen fish and ideas about 'proper' foods are changing.

'TIME FAMINES' HAVE CREATED NEW STYLES OF EATING. Time is a precious commodity and unlike their elders the young housewife, with more independence and financial freedom, is more interested in freeing time to spend with the family. Less time is available and values have changed as individuals are interested in creating time for leisure rather than devoting precious time to food provisioning. This brings with it a desire for convenient products to reduce the time devoted to food provisioning, foods which the household can now afford due to the increase in income coming into the home. This new generation of younger housewives do not consider fresh fish worth the extra effort for everyday meals, although the special occasions offer an opportunity to use it, where entertaining and culinary competence still go hand in hand. The consequence is the restriction of fresh fish to special occasion meals and the use of convenience fish products in secondary meals. Processed fish really begins to come into its own in meals where it offers health and nutrition in situations where filling and substantial meals are not required. The decreased social emphasis permits a wider range of foods to be included and caters for individual 'tastes'. The move towards convenient fish products may have progressed so far that a return to the fresh product with its additional demands on the housewife is currently impracticable, and quite frankly unattractive. A major problem seems to be the attempt to market these convenience products as something which can compete with meat, or even something that can compete with fresh fish as the centrepiece of the main meal. Fish, as we have already seen, cannot compete at a physical, psychological or cultural level. It is more readily accepted in less important meals, or peripheral food events where there is room for experimentation with convenient and exotic foods. Fish is in one sense exotic, not because it comes from a foreign culture, but because like these other foods, it is unfamiliar, strange, curious, and offers variety, a deviation from the normal. Recall that many of the groups favourably disposed to fish are already marginalised by their eating habits.

The 'time famine' may not hold much hope for fresh fish but offers new opportunities for convenient fish products which provide cooking and preparation advantages over the fresh products, and are

healthier than meat based products. They are more readily available, easy to acquire and prepare, cooking instructions are accessible to all and in general, as with many other processed products, no special skills or knowledge are required, no need for this 'culinary competence'. Their restricted use is the compensation paid for this convenience. Of course the same could be said of processed meat products but then people are more familiar with meat in all forms and compared to fish, it is equally convenient to acquire, prepare and is more resilient to a range of cooking methods even if it takes longer to cook.

The diary study revealed a surprisingly widespread use of processed fish products suggesting it is more convenient than initially suspected. Many of the fish products used in the food diary study required no further preparation or cooking, and in this respect were very convenient. The use of more convenient products reflects the 'time famine' and suggests that opportunities do exist for processed fish products. The image of 'fish' as inconvenient is partly a reflection of the consumer's perception of 'fish' as fresh rather than processed (not 'proper' fish). It is conceptualised as fresh and used as frozen. Meat is conceptualised as fresh and used as fresh. In addition meat is more commonly used in main meals, fish in light meals. This all adds up to an image of fish which ignores many of its positive features (chapter 5, section 5.3) with respect to changing patterns of eating. It is in fact much more convenient than generally believed, an issue currently being stressed in the Sea Fish Industry Authority advertising campaigns.

New patterns of eating are emerging to accommodate these social changes but it is unlikely that meat will be displaced as the 'natural symbol' (Fiddes 1990). Too much of our social order and cultural food heritage is tied up in the imagery. Despite its healthy image it is unlikely that fish will ever take the place of meat. Health is only one of many aspects of food choice. Fish remains a limited resource with supply problems. Chicken offers producers efficient and effective means of production over which they have some control and food distributors and retailers with the regular supplies and profit margins they require.

THE CONSUMER'S PERSPECTIVE

Meal structures, which appear to be the most important influence on food choice and food acceptability, are a function of the interaction between (1) the type of food, (2) the degree of processing and (3) the cooking method. Each of these factors is a function of the meal system and the rules of food provisioning. Figure 8.1 shows how these factors interact to determine meal

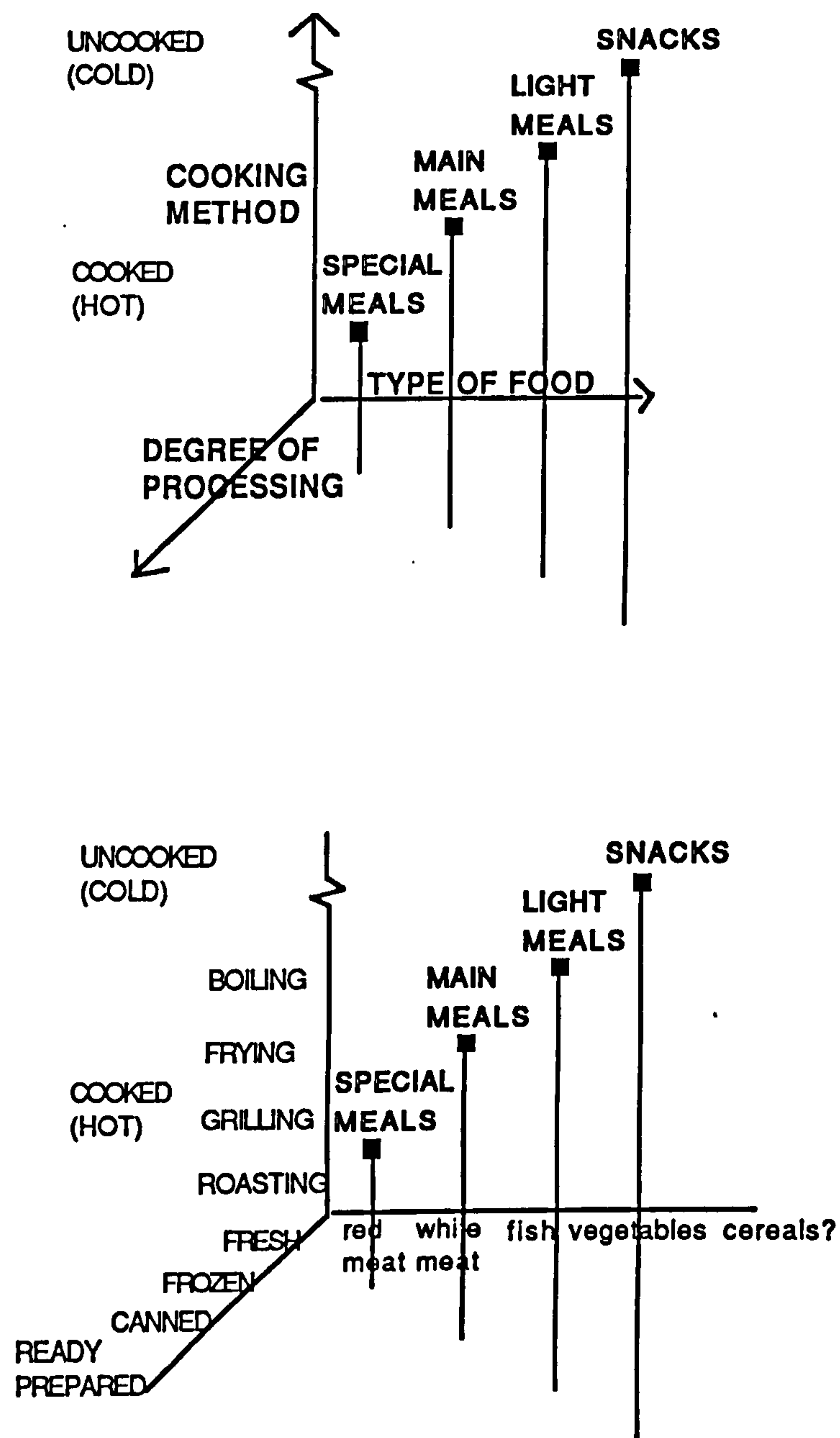
appropriateness. As one moves from the centre towards the periphery of the diagram each of the meals carries less social significance, becomes less formal and more flexible in the type of foods which can be included, and are more receptive to processed and to uncooked foods. Alternatively as one moves in toward the centre the social significance of the meal is heightened. It becomes more formal, is more likely to occur outside the home, and is less flexible in terms of the type of products accepted. The 'type of food' dimension relates to general food categories, as opposed to specific products or brands. It reflects general perceptions of these food groups. These perceptions often depend heavily on 'symbolic' as opposed to utilitarian features, but are none-the-less important. This food dimension shows little variation in terms of nutritional value but the social status attached to each of the foods reflects - the revered position of meat, the lesser position of fish and the almost inanimate position of vegetables.

Meat is positioned at the centre to emphasise its central role in the UK cuisine and the extent to which it dominates our food system. Fish in contrast is much less central and considered of lower status. Vegetables, considered to be a less serious food are located on the periphery. The increased exposure to vegetarianism is changing the general perceptions of vegetables as food. Meat eaters do not regard vegetables as 'proper' food. They tend to be regarded as trimmings in contrast to meat, and less frequently fish, which are both used as the centrepiece. At the other end of the spectrum some vegetarians do regard fish as 'proper' food and perhaps for convenience some classify it as 'non-meat'.

This 'food type' dimension is possibly the most difficult to construct due to the variation within the food categories, a feature which the degree of processing dimension attempts to capture, and the fact that many of the foods are combined in each meal. It would be possible to construct individual product dimensions consisting of particular species of fish or cuts of meat to reflect some of the within group variation. One could envisage a 'fish' dimension, with game or high status fish at the centre followed by demersal (cod and haddock) species, then the pelagic fish (herring, mackerel, sardines).

The 'degree of processing' dimension reflects the extent to which food has been processed into a more convenient form. This transformation of the food impacts on its acceptability and as one moves out from the centre along this dimension, the food is more likely to be found in light meals and snacks. Freshness in foods is still valued very highly and this is reflected in the use of fresh foods in important meals. Convenience is appealing in those less formal events but inappropriate for special

Figure 8.1 Meal Appropriateness in the UK Food System



and main meals. However this is the area which holds most promise for the future.

The cooking dimension, which draws on the work of Levi-Strauss (1970), is the final dimension, and it reflects the higher status attributed to cooked as opposed to uncooked foods, roast as opposed to boiled foods and hot as opposed to cold foods. This dimension incorporates the hot/cold distinction between foods emphasising its important contribution to acceptability.

As one moves out from the centre of the diagram the stigma attached to the meal occasion is reduced as reflected in the type of food used, its form, and method of cooking (and serving). The interesting issue is that it is easier for meat to be accepted as part of peripheral meals than it is for fish (or vegetables) to be accepted at more central meals. As these 'peripheral' meals become an increasingly important proportion of total meals consumed, as new styles of eating emerge, and meal occasions become less formalised, so the occasion favours the consumption of processed fish products. The mistake is in assuming that the processed products can penetrate to the centre of the food system which is based on a complex array of factors which extend beyond 'convenience'.

These factors interact with and are determined by the meal occasion. The model attempts to include each of the factors which influence food choice but it illustrates the complexity of trying to incorporate each of the different elements when one approaches the problem of food choice from a 'product perspective' as opposed to a 'meal perspective'. Often the decision for the consumer is not initially what food will I buy, but what meal do I have to buy food for? who's likely to be there and therefore which foods are appropriate? The product form and cooking method then begin to determine whether a product is acceptable. The depiction of each of these different elements and the relative position of food groups reflects general perceptions of meat, fish, chicken and vegetables.

As the food diary shows, fresh 'wet' fish products, grilled or baked, are still the most appropriate for the special meal. Fresh fillets and occasionally frozen products grilled, or more commonly fried, are more appropriate for main meals. Canned products served cold or convenient products served hot are used for light meals.

FURTHER RESEARCH

Much work remains to be done, the focus of this research has been on fish but there does exist a need to

identify more clearly meal structures and patterns overall, and more closely relate these to food acceptance across a broad range of products. With hindsight it would have been useful to include all meals, rather than confine the diary study to light and main meals, given the increase in 'snacking'. Since the Douglas and Nicod (1974) work there seems to have been little done in this area, further analysis on the diary study with some 'programming' expertise can perhaps bring us up to date and improve our understanding of meal structure. The problem is not insurmountable.

The project has concentrated on in-house consumption. Catering and out-of-home consumption offers scope for investigations (and represents some fifty per cent of UK volume sales).

THE FUTURE

Food does more than sustain and nourish, it offers security through familiarity, hence the importance of meat. Consumers are more familiar with acquiring, preparing, cooking and serving meat, which is reflected in the expectations of how to prepare and cook food. Red meat goes unchallenged as the centre-piece of the meal. The low demand for fish in the past can be directly related to its limited supply and restricted place in more formal meals. The successful promotion of fish requires an understanding of the appropriateness of fish and fish products to specific meals and how fish 'fits' into our current food system. This is essentially the basis of social order and meaning. But, the nature of meal occasions and the rules of acceptability are changing. Time use in the home is reflecting wider social change, manifest in the increased number of working women, dual income households and the new found ability to pay for added value convenience products. New technology is also freeing time in the kitchen and it is these changes which we need to be aware of. As major food events become less formalised, new opportunities arise for convenient fish products. Success in creating consumer interest in new products or reviving interest in pelagic species is more likely to occur at the margins of food choice, in secondary meals, rather than at the centre of the plate. This is where the rules of acceptability are more relaxed, where 'symbolic nourishment' is less important and where fish could, at last, not only be 'good to eat' but also 'good to think'. This is the place to catch the consumer.

APPENDIX A

NATIONAL FOOD SURVEY FISH CLASSIFICATION

FISH	DESCRIPTION
<u>Fresh</u>	
Fish, white filleted, fresh	e.g., cod, haddock, whiting, plaice, skate, sole and other flat fish, hake, coley, conger eel, red mullet, ling, saithe.
Fish, white, unfilleted, fresh	
Fish, herrings, filleted, fresh	includes frozen.
Fish, herrings, unfilleted,	includes frozen fresh.
Fish, fat, fresh, other than herrings	e.g., mackerel, sprats, salmon, trout, eel, roe (includes frozen).
<u>Processed and Shell</u>	
Fish, white, processed	i.e., smoked, dried or salted, e.g. haddock, cod, etc. (includes frozen).
Fish, fat, processed, filleted	i.e., smoked, dried or salted, e.g., kippers, bloaters, soured or pickled herrings, smoked mackerel, smoked salmon, anchovies, smoked roe (includes frozen).
Fish, fat, processed, unfilleted	
Fish, shell	e.g., cockles, crabs, oysters, prawns, scampi, shrimps, whelks, winkles, (weight recorded without shells), fresh, prepared or frozen (but <u>not</u> canned or bottled - see other canned or bottled fish).
<u>Prepared (including Fish Products)</u>	
Fish, cooked	fried fish, fried roe, cooked or jellied eels, scampi "fish" as in "fish and chips" (<u>not</u> frozen).
Salmon, canned	
Other canned or bottled fish	e.g., sardines, pilchards, mackerel, herrings, brisling, shellfish, roes, anchovies, sild, tuna
Fish products, <u>not</u> frozen	e.g., fish cakes, fish pastes, ready-meals (e.g., "Vesta") (but <u>not</u> "fish and chips" - see salmon, canned and frozen convenience fish products).

FISH**DESCRIPTION**

Frozen (including Fish Products)

Fish, white, uncooked, frozen

e.g., frozen cod, haddock, hake, plaice, lemon sole, (includes uncooked fish coated with breadcrumbs, but not fish fingers etc. - see frozen convenience fish products).

Frozen convenience fish

Frozen fish fingers etc., fish cakes, cod fries, cod-in-sauce, fish and chips etc.

APPENDIX B

FISH CONSUMPTION IN THE UK: SUPPLEMENTARY TABLES (SOURCE NES)

Table B1: Yearly Average Real Prices for Fish 1977-1986*

FISH	YEAR									
	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Fresh	.62	.65	.61	.58	.54	.51	.53	.55	.57	.60
Processed	.86	.90	.94	.87	.81	.81	.85	.85	.88	.83
Prepared	.78	.79	.93	.85	.79	.79	.81	.84	.89	.86
Frozen	.78	.79	.78	.70	.62	.61	.62	.61	.61	.64
All Fish	.80	.82	.81	.74	.69	.67	.70	.71	.75	.74
Retail Price Index base 1977	100	108	122	144	161	175	183	192	204	210

* expressed as average yearly price - retail price index

Table B2: Fish Consumption 1977-1986 (oz per person/week)

FISH	YEAR									
	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
White filleted fresh	0.79	0.91	0.92	0.92	0.99	0.86	0.86	0.78	0.83	0.89
White unfilleted fresh	0.38	0.27	0.23	0.21	0.19	0.22	0.24	0.27	0.17	0.15
Herring filleted fresh	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.01
Herring unfilleted fresh	0.04	0.03	0.02	0.03	0.03	0.02	0.05	0.04	0.03	0.03
Fat fresh other than Herring	0.14	0.13	0.18	0.02	0.15	0.17	0.14	0.17	0.17	0.21
White uncooked frozen	0.40	0.45	0.45	0.55	0.56	0.60	0.58	0.54	0.62	0.61
Frozen convenience fish products	0.80	0.73	0.81	0.85	0.86	1.05	0.97	1.02	1.05	1.03
White processed	0.19	0.19	0.24	0.23	0.23	0.23	0.21	0.24	0.23	0.24
Fat processed filleted	0.11	0.10	0.12	0.13	0.15	0.12	0.13	0.12	0.15	0.16
Fat processed unfilleted	0.07	0.05	0.06	0.06	0.03	0.02	0.05	0.03	0.01	0.01
Shellfish	0.07	0.09	0.09	0.11	0.09	0.12	0.13	0.13	0.15	0.17
Cooked fish	0.50	0.64	0.75	0.74	0.79	0.82	0.84	0.70	0.60	0.63
Canned salmon	0.14	0.16	0.16	0.23	0.25	0.16	0.27	0.24	0.19	0.26
Other canned or boiled fish	0.42	0.35	0.38	0.41	0.44	0.47	0.50	0.46	0.52	0.58
Fish products not frozen	0.11	0.14	0.15	0.14	0.14	0.14	0.15	0.15	0.15	0.16
TOTAL	4.13	3.96	3.88	4.80	4.92	5.14	5.14	4.89	4.86	5.13

Table B3: Yearly Average Expenditure on Fish and Meat (Expressed as a percentage of Total Food Expenditure)

YEAR	FISH	MEAT
1977	4.0	31.1
1978	4.2	32.0
1979	4.3	32.1
1980	4.5	32.0
1981	4.5	31.2
1982	4.5	31.6
1983	4.8	30.5
1984	4.6	29.7
1985	4.9	29.8
1986	5.1	28.8

Table B4: Household Consumption of Fish by Region 1986 (oz/person/week)

FISH	REGION									
	All H/holds	North	York Humber	Nth West	East Mids	West Mids	Sth West	S.East/E. Anglia	Wales	Scot
Fresh	1.29	1.09	1.27	1.41	0.95	1.24	1.01	1.15	1.53	2.24
Processed & Shell	0.58	0.63	0.39	0.55	0.42	0.35	0.61	0.72	0.48	0.59
Prepared	1.63	2.24	2.16	1.54	2.03	1.58	1.54	1.60	1.34	0.94
Frozen	1.64	1.84	1.62	1.53	1.52	1.76	1.76	1.68	2.02	1.24
All Fish	5.16	5.79	5.45	5.02	4.93	4.93	4.91	5.16	5.36	5.00

Table B5: Household Consumption of Fish by Income Group 1986 (oz/person/week)

FISH	GROSS WEEKLY INCOME OF HEAD OF HOUSEHOLD							
	Households with one or more earners				Households with-out an earner		OAP	All H/holds
	A	B	C	D	E1	E2		
Fresh fish	1.32	0.92	1.02	1.06	2.59	1.60	2.89	1.29
Processed & Shell	0.65	0.54	0.53	0.37	1.31	0.60	0.75	0.58
Prepared	1.43	1.54	1.75	1.42	1.63	1.51	2.10	1.63
Frozen	1.32	1.57	1.63	1.55	2.35	1.76	2.14	1.64

Table B6: Consumption of Fish by Household Composition 1986 (oz/person/week)

FISH	HOUSEHOLD SIZE						
	Adults Children	1 0	0	1	2	3	4+
Fresh		2.51	2.38	0.85	0.67	0.40	0.30
Processed & Shell		0.95	0.87	0.47	0.35	0.38	0.28
Prepared		2.31	2.10	1.64	1.25	1.13	0.96
Frozen		2.26	1.90	1.31	1.50	1.63	1.53
Total Fish		8.03	7.25	4.27	3.79	3.54	3.09

Table B7: Household Fish Expenditure According to Age of Housewife 1986 (expenditure expressed as a percentage of average expenditure for households)

FISH	AGE OF HOUSEWIFE						
	<25	25-34	35-44	45-54	55-64	65-74	75+
Fresh	29%	41%	71%	110%	200%	223%	232%
Procesed	48%	77%	83%	122%	178%	160%	144%
Prepared	99%	80%	94%	115%	123%	99%	123%
Frozen	117%	86%	90%	98%	120%	131%	105%
All fish	82%	70%	86%	109%	148%	148%	147%

APPENDIX C

DETAILS OF GROUP DISCUSSIONS RECRUITED

VENUE	DATE	GROUP PROFILE
Group 1 Newcastle	08-10-86	3 frequent fish users* 3 infrequent fish users 3 ABC1 3 C2DE 2 <30 2 31-50 2 >51
Group 2 Newcastle	09-10-86	3 frequent fish users 3 infrequent fish users 3 ABC1 3 C2DE 6 <45
Group 3 Newcastle	15-10-86	6 infrequent fish users 4 female 2 male** 3 ABC1 3 C2DE 2 >30 3 31-50 1 >50
Group 4 Newcastle	16-10-86	3 frequent fish users 3 infrequent fish users 3 ABC1 3 C2DE 6 <45
Group 5 Newcastle (student group)***	21-10-86	4 frequent fish users 2 infrequent fish users 6 female 4 BC1 2 C2 6 <25
Group 6 Birmingham	06-11-86	3 frequent fish users 3 infrequent fish users 3 BC1 3 C2D 2 <30 2 31-45 2 >46
Group 7 Birmingham	06-11-86	3 frequent fish users 3 infrequent fish users 3 BC1 3 C2DE 2 <30 2 31-45 2 >46 3 working 3 housewives**

VENUE	DATE	GROUP PROFILE			
Group 8 London	13-11-86	6 frequent fish users			
		3 BC1	3 C2DE		
		2 <30	2 31-45	2 >46	
Group 9 London	13-11-86	6 frequent fish users			
		3 BC1	3 C2DE		
		2 <30	2 31-45	2 >46	
Group 10 Edinburgh	24-11-86	3 frequent fish users			
		3 infrequent fish users			
		3 BC1	3 C2DE		
		2 <30	2 31-45	2 >46	
Group 11 Edinburgh	24-11-86	3 frequent fish users			
		3 infrequent fish users			
		3 BC1	3 C2DE		
		2 <30	2 31-45	2 >46	

* fish users included people who are buying or eating fish and fish products.

** unless explicitly stated all groups were composed of housewives

*** all groups were professionally recruited apart from the student group

APPENDIX D

EXAMPLE OF RECRUITMENT QUESTIONNAIRE AND QUOTA CONTROL FOR GROUP DISCUSSIONS

DATE:.....

TIME:.....

Good morning/afternoon. I work for NEWCASTLE UNIVERSITY RESEARCH and I wonder if you would help me with a market research survey?

SECTION I

Q.A. Firstly, have you ever attended a market research group discussion or an individual interview, at your's/someone else's home or any other venue?

Yes ☐ - go to Q.B No ☐ - go to SECTION II

Q.B. How many group discussions or individual interviews have you ever attended?

(WRITE IN)..... - all go to Q.C.

Q.C. How long ago was the last group discussion, or individual interview, you attended?

(WRITE IN)..... - if over a year ago - go to Q.D, otherwise close

Q.D. Have you ever attended an interview or discussion on any of these subjects?
(READ OUT)

- | | | |
|---|---------------|--------------------------|
| 1 | Eating out | <input type="checkbox"/> |
| 2 | Meals | <input type="checkbox"/> |
| 3 | Healthy food | <input type="checkbox"/> |
| 4 | Fish | <input type="checkbox"/> |
| 5 | Meat | <input type="checkbox"/> |
| 6 | None of these | <input type="checkbox"/> |

- if 4) mentioned - close, otherwise go to SECTION II

SECTION II

Q.1. Which, if any, of these do you buy nowadays?
(SHOW CARD A)

- | | | | |
|--------------------------------------|--------------------------|----|-------------|
| 1.Beef (fresh, frozen, or canned) | <input type="checkbox"/> | } | |
| 2.Pork (fresh, frozen, or canned) | <input type="checkbox"/> | }} | - go to Q.2 |
| 3.Chicken (fresh, frozen, or canned) | <input type="checkbox"/> | } | |
| 4.Fish (fresh, frozen, or canned) | <input type="checkbox"/> | } | |

Q.2. How often do you buy beef?
(SHOW CARD B) - [Dummy question - ask but do **NOT** record]

How often do you buy fish?
(SHOW CARD B)

- | | | |
|-----------------------------------|--------------------------|----------------------------|
| At least once a fortnight or more | <input type="checkbox"/> | recruit half group via Q.4 |
| At least once a month | <input type="checkbox"/> | |
| At least once every 2 month | <input type="checkbox"/> | recruit half group via Q.4 |
| At least every 3 - 5 months | <input type="checkbox"/> | |
| At least every 12 months | <input type="checkbox"/> | - close |

Q.3. Are you married or single?

Married ☐ - go to Q.4. Single ☐ - Close

Q.4. Are you working?
(READ OUT)

- | | | |
|-------------|--------------------------|-------------------------------|
| Full time | <input type="checkbox"/> | Close |
| Part time | <input type="checkbox"/> | |
| Non working | <input type="checkbox"/> | recruit group via SECTION III |
| Housewife | <input type="checkbox"/> | |

SECTION III

And now may I just check a few personal details for our records

Q.i. Are you, or any member of your family, employed in?

1. Press, Publishing, TV, Radio

☐

}
2. MR/Advertising/Marketing

☐

}

}

close
3. Manufacture or sale of food

☐

}
4. Supermarket company

☐

}
5. None of these

☐

- go to Q.ii.

Q.ii. What is the occupation of the head of the household?
(WRITE IN & PROBE IF NECESSARY, RECORDING SOCIAL CLASS BELOW)

.....

Q.iii. May I ask your age (WRITE IN AND RECORD BELOW)

Social Class:..... Age:.....

☐

☐

☐

☐

☐

☐

☐

☐

A

B

C1

C2

D

E

Under 30

31-45

Name:..... Telephone Number:.....

Address:.....

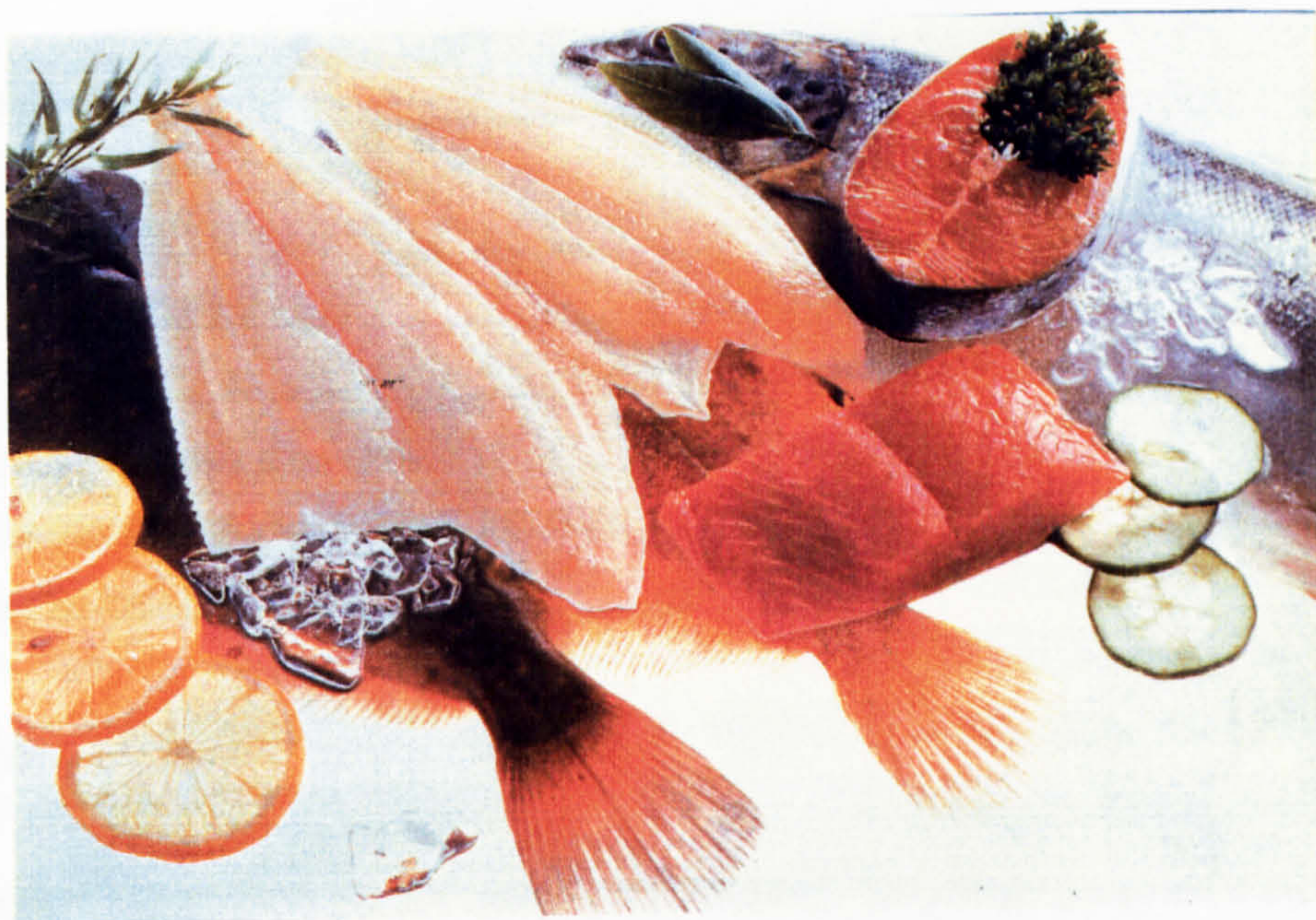
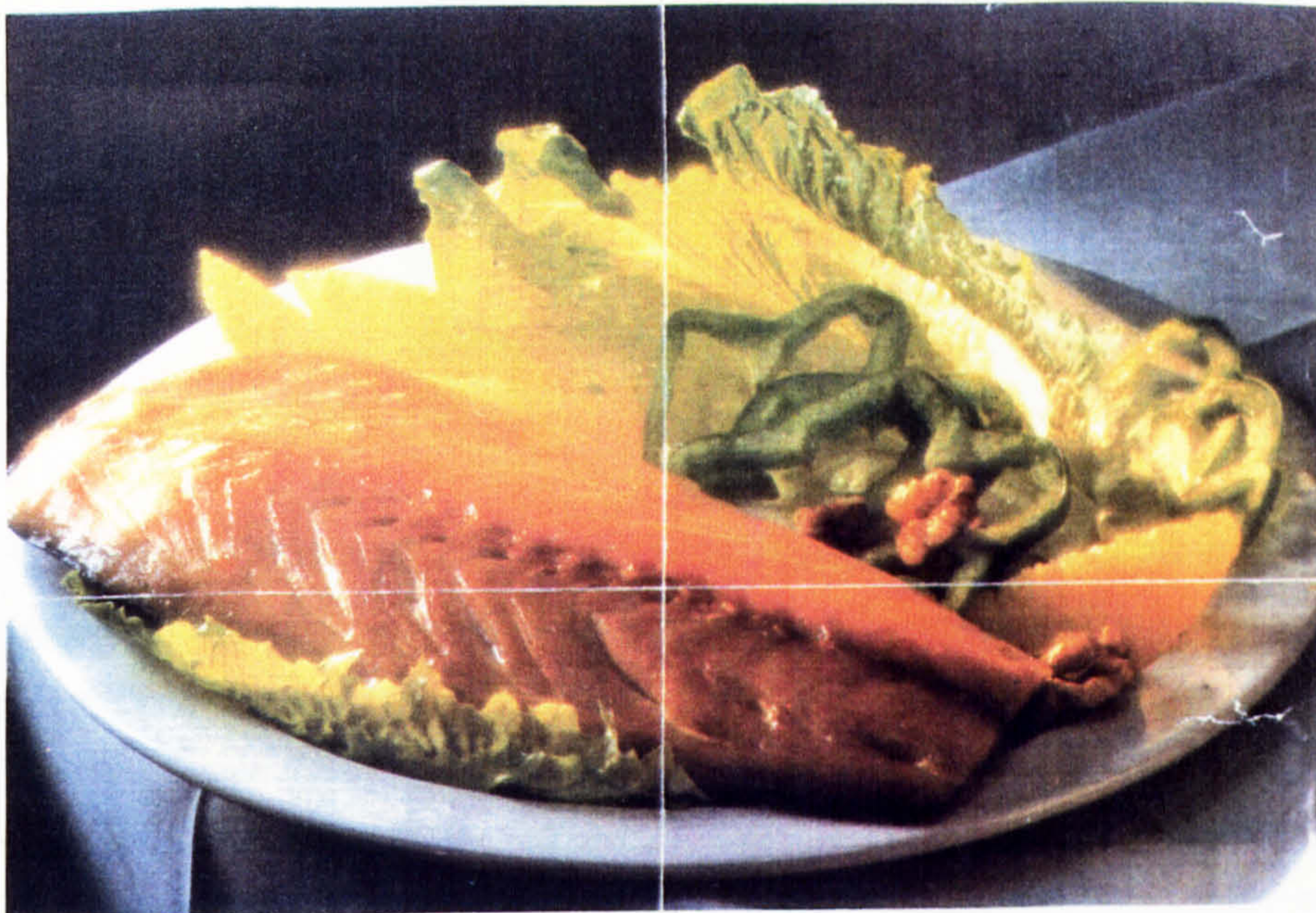
.....

..... Postcode:.....

(FULL ADDRESS AND TELEPHONE NUMBER IN CAPITAL LETTERS)

APPENDIX E

PICTURE ASSOCIATION



APPENDIX F

SENTENCE COMPLETION

A short 'pen and pencil' test was administered in the focus groups. Respondents had to answer six open ended questions about fish. The idea was to permit free, unprompted response in order to reveal the range of response across all the groups. Given the nature of the group discussions and the focus on fish the approach is not truly spontaneous, but it serves to reveal stronger or more prevalent beliefs. A total of fifty one responses were recorded. These were subsequently coded and analysed on the computer using the SPSSX package.

The questions were:-

1. My FAVOURITE type of fish is.....?
2. I would buy MORE fish if.....?
3. The BEST thing about fish is.....?
4. The WORST thing about fish is.....?
5. The meal that fish is MOST SUITABLE for is.....?
6. Fish is NOT SUITABLE for.....?

The Sample

Of the sample 39% were over 46, 34% under 30, and 27% 31-45. The younger groups are, if anything, over represented. However, considering that they represent future consumers their responses are essential. A slightly higher proportion of the sample came from the lower socio economic groups (56%) compared to the higher socio economic groups (44%). 54% were classified as frequent fish eaters ie. eat fish at least once every two months, 46% as infrequent fish eaters ie. those who eat fish less than once every two months (Table F1) (in this respect the definition of 'frequency' differs from that used in the food diary study).

Table E1: The Sample

	FREQUENT 54 %	INFREQUENT 46 %
<30	46.7 %	53.3 %
31-45	50.0%	50.0%
>46	58.8 %	41.2 %
ABC1	36.4 %	63.6 %
C2DE	67.9 %	32.1 %

A higher proportion of the frequent fish users are older respondents (60%). Younger respondents appear to use fish less frequently, 53% are classified as infrequent fish users. A higher proportion of frequent users are C2DE's (68%) as opposed to ABC1's (36%).

Results

My favourite type of fish is:-

A total of nineteen different species and products were volunteered in response to this question, Table F2 covers the most popular species across age, social grade and frequency of use. The most popular type of fish volunteered was cod (24%), followed by haddock (14%), and lemon sole (10%) (a higher percentage of respondents in the >46 age group (31.3%) expressed a preference for cod and haddock compared to the sample overall). Of ABC1 respondents 29% cite cod as their favourite type of fish, 17.9% of C2DE respondents cite haddock as their favourite fish. There is little difference between the frequent and infrequent fish users regarding any preferences for haddock but the latter seem to prefer cod. Younger consumers, and infrequent users express a preference for lemon sole. Tuna seems to appeal to both frequent and infrequent users. Other fish species which were mentioned included the following-

Coley	Salmon	Whitebait
Mackerel	Smoked Cod	Trout
Rock Turbot	Smoked Haddock	Fish Fingers
Rock Salmon	Seafood	

Table F2: Favourite Type of Fish*

REPLIES	AGE GROUP				SOCIAL GRADE		FREQ. OF USE	
	A 11	<30	31-45	>46	ABC1	C2DE	FREQ.	INFREQ
	%							
Cod	24	26.7	16.7	31.3	28.6	21.4	22.2	27.3
Haddock	14	13.3	16.7	18.8	9.5	17.9	14.8	12.6
Lemon Sole	10	13.3	-	6.3	9.5	7.1	-	18.2
Prawns	4	-	10.0	-	4.8	3.6	3.7	4.5
Plaice	4	6.7	-	6.3	4.8	3.6	7.4	-
Scampi	4	-	8.3	6.3	9.5	-	-	9.1
Skate	4	-	-	6.3	4.8	3.6	7.4	-
Tuna	41	3.3	-	-	4.8	3.6	3.7	4.5
All Fish	4	-	-	12.5	-	7.1	7.4	-

* Table F2 only examines the most popular species, and column totals therefore do not add up to 100.

Fish fingers are the only processed product mentioned by the respondents. Regarding these other species (mentioned by one or two respondents) trout was mentioned by all age groups and C2DE respondents. The infrequent users mentioned products like salmon,lemon sole,scampi smoked haddock (those more upmarket products usually reserved for special occasions, or eating out).

I would buy fish if:-

The problems of catering for a family feature prominently in response to this question, 29% cite this as the main reason for not buying more fish (Table F3). Other replies made reference to the problems of availability (8%) and price (8%), while some felt they already bought a lot of fish (8%). This issue of the family disliking fish posed more of a problem for the ABC1 consumers and the infrequent users, 41% of the infrequent users cited this as the main objection. Childrens' dislike of fish prevented some younger respondents and frequent users from buying more fish. Some of the respondents would buy more fish if it was cheaper and it is predominantly the frequent fish users who feel that improved availability of fish would increase the amount of fish they buy, not the infrequent users. Under thirties expressed their concern with a lack of available information, as did the C2DE'S and infrequent users. This suggests that the higher social groups either possess or have easier access to this information. Younger respondents feel they have insufficient knowledge about cooking and serving fish, they also feel fish is inconvenient to clean and eat. This does not appear to be a problem for the older respondents, some who feel that they already buy enough fish.

Table F3: Would Buy More Fish if

REPLIES	AGE GROUP				SOCIAL GRADE		FREQ. OF USE	
	All %	<30	31-45	>46	ABC1	C2DE	FREQ.	INFREQ.
Family Liked It	29.2	13.3	33.1	21.4	38.1	19.5	16.0	41.1
More Widely Available	8.2	6.7	8.3	7.1	9.5	7.7	16.0	-
Cheaper	8.2	6.7	8.3	14.4	4.8	11.5	12.0	4.5
IDo	8.2	-	16.7	14.4	4.8	11.5	12.0	4.5
Children Liked It	6.3	6.7	16.7	-	9.5	3.8	12.0	-
Knew More About It	6.3	13.3	-	7.1	4.8	7.7	8.0	4.5
(Cooking)								
More Filling	4.2	-	8.3	7.1	-	7.7	-	9.2
More Appetising	4.2	-	-	14.3	4.8	3.8	4.0	4.5
More Convenient to Eat	4.2	6.7	-	-	-	7.7	-	9.2
More Information	4.2	13.3	-	-	9.5	-	4.0	4.5
Available								
No Would Not	4.2	13.3	-	-	4.8	3.8	4.0	4.5
Knew More About it	4.2	13.3	-	-	-	7.7	4.0	4.5
(Serving)								
Husband Liked It	2.1	-	-	7.1	4.8	-	-	4.5
More Convenient to Cook	2.1	6.7	-	-	4.8	-	4.0	-
Feeling Adventurous	2.1	-	8.3	-	-	3.8	-	4.5
Diet	2.1	-	-	7.1	-	3.8	4.0	-
TOTAL	100	100	100	100	100	100	100	100

The best thing about fish is:-

The best thing about fish was, 'taste' (18%), 'nutrition' (18%), 'healthy' (18%) and the fact that fish was quick to cook/prepare (18%) (Table F4). Older respondents felt that one of the best things about fish was the taste (38%), as did frequent fish users (26%) and C2DEs' (22%). Infrequent users and those respondents aged between thirty one and forty five regard fish as a nutritious and healthy food. Younger, infrequent fish users and ABC1's felt that one of the best things about fish was the speed of cooking and preparation. Older respondents felt fish was good as a light meal. Other responses such as fish making a good change and being convenient were confined to older respondents and the ABC1's. It was frequent users who cited freshness and versatility as being the best thing about fish.

Table F4: Best Thing About Fish Is

REPLIES	AGE GROUP				SOCIAL GRADE		FREQ. OF USE	
	All %	<30	31-45	>46	ABC1	C2DE	FREQ.	INFREQ.
Taste/Flavour	18.4	6.7	18.2	37.4	14.2	22.3	26.0	9.5
Nutritious	18.4	13.2	27.3	18.7	19.0	14.8	14.8	19.0
Healthy	18.4	20.0	27.3	6.3	23.8	14.8	18.5	19.0
Quick to Cook/Prepare	18.4	20.0	18.2	6.3	23.8	14.8	11.1	28.5
Light Meal	8.2	6.7	-	18.7	-	14.8	11.1	4.8
Cheap	6.2	20.0	-	-	-	11.1	11.1	-
Makes a Good Change	2.0	-	-	6.3	4.8	-	-	4.8
Convenient	2.0	-	-	6.3	4.8	-	-	4.8
Versatile	2.0	-	-	-	-	3.7	3.7	-
Fresh	2.0	-	9.0	-	4.8	-	3.7	-
Diet/Less Fat	2.0	6.7	-	-	-	3.7	-	4.8
Don't Buy It	2.0	6.7	-	-	4.8	-	-	4.8
TOTAL	100	100	100	100	100	100	100	100

The worst thing about fish is:

The worst thing about fish is smell (36% of responses) and bones (32%) (Table F5). Middle age groups (31-45) felt smell was the worst feature of fish (58%), as did frequent users (48%). Younger respondents felt bones to be the worst feature, (53% of their replies). Infrequent and ABC1s' felt that fish was tasteless. For 6% of those over forty six fish had no faults, even 5% of infrequent users agreed.

Table F5: The Worst Thing About Fish Is

REPLIES	AGE GROUP				SOCIAL GRADE		FREQ. OF USE	
	All %	<30	31-45	>46	ABC1	C2DE	FREQ.	INFREQ
Smell	36.0	13.3	58.3	37.5	38.1	35.7	48.1	22.8
Bones	32.0	53.3	8.3	31.3	28.6	32.1	22.3	41.0
Tasteless	8.0	6.7	8.3	12.5	19.0	-	-	18.2
Preparation	6.0	6.7	16.7	-	9.5	3.6	7.4	4.5
Need to Clean	6.0	6.7	-	6.2	-	10.7	11.1	-
High Price	4.0	-	-	6.2	-	7.1	3.7	4.5
Insubstantial	2.0	6.7	-	-	4.8	-	-	4.5
Messy	2.0	6.6	-	-	-	3.6	3.7	-
Oily	2.0	-	8.3	-	-	3.6	-	4.5
No Faults	2.0	-	-	6.3	-	3.6	3.7	-
TOTAL	100	100	100	100	100	100	100	100

Fish is most suitable for:-

Fish was considered to be most appropriate for dinner or evening meals by 37% of respondents, mainly in the 31-45 age group (Table F6). This does not dispute the idea of fish being regarded as insubstantial, but shows that a reasonable percentage of respondents would consider fish for a main meal (how they would regard this meal in the light of their expectations and the appropriateness of fish to the occasion is another matter). 22% considered fish to be most appropriate for lunch. Older respondents felt fish was appropriate for high tea (19%), whereas younger respondents (27%) felt fish was appropriate for specific dishes. 14% of the infrequent users said fish was most suitable as a starter. For the younger respondents fish seems to be seen as appropriate for more specific types of use for special meals, in contrast to the older respondents. Those who regard fish as appropriate for a restaurant meal are the infrequent users, the <30s, and the higher social classes.

Table F6: Fish is Most Suitable For

REPLIES	AGE GROUP				SOCIAL GRADE		FREQ. OF USE	
	All %	<30	31-45	>46	ABC1	C2DE	FREQ.	INFREQ.
Dinner/Evening Meal	36.8	26.7	54.5	31.2	35.0	39.3	37.1	38.0
Lunch	22.4	13.3	18.2	31.2	20.0	21.4	25.9	14.3
High Tea	12.3	13.3	9.1	8.8	15.0	10.7	11.1	14.3
Main Meal	10.2	6.7	9.1	6.3	10.0	10.7	18.5	-
Specific Dish	8.2	26.7	-	-	5.0	10.7	7.4	9.5
Starter	6.1	-	9.1	12.5	10.0	3.6	-	14.3
Snack	2.0	6.6	-	-	-	3.6	-	4.8
Restaurant Meal	2.0	6.7	-	-	5.0	-	-	4.8
TOTAL	100	100	100	100	100	100	100	100

Fish is not suitable for:-

Some respondents felt fish was not suitable for breakfast (21%), or a main or filling meal (15%) (Table F7). A higher proportion of infrequent users cited this reason. There was general agreement that fish was not suitable for children (15%) especially among the under thirties. The infrequent fish users and some of the older respondents felt fish was not suitable for those who did not eat fish? (which actually tells us very little). Appropriateness appears to be related to particular meals, particular groups or even specific dishes for frequent fish users it is suitable any time. Young respondents reply in terms of specific dishes when considering the appropriateness of fish.

Table F7: Fish is Not Suitable For

REPLIES	AGE GROUP				SOCIAL GRADE		FREQ. OF USE	
	All %	<30	31-45	>46	ABC1	C2DE	FREQ.	INFREQ.
Breakfast	20.7	-	33.3	18.7	22.7	20.0	16.7	26.1
Main/Filling Meal	14.6	14.4	8.3	18.7	13.6	12.0	4.2	21.7
Children	14.6	21.4	8.3	18.7	13.6	16.0	16.7	13.0
Casserole/Stew	12.5	28.6	8.3	6.3	13.6	12.0	12.5	13.0
Suitable Anytime	12.5	7.1	25.2	6.3	4.5	20.0	25.0	-
Sunday Lunch	8.3	21.4	-	6.3	9.1	8.0	12.5	4.4
Non-Fish Eaters	6.3	-	8.3	12.4	9.1	4.0	-	13.0
Late Evening Meal	6.3	-	8.3	6.3	13.7	-	8.3	4.4
Dinner Parties	4.2	7.1	-	6.3	-	8.0	4.2	4.4
TOTAL	100	100	100	100	100	100	100	100

APPENDIX G

FOOD DIARY

Department of Agricultural and Food Marketing
University of Newcastle upon Tyne

MEALS AND THE FOODS WE EAT
1987

WEEK []

PERIOD BEGINNING (date)
HOUSEHOLD NUMBER.....
REGION.....

<p>THIS DIARY IS COMPLETELY <u>CONFIDENTIAL</u></p> <p>All information will be treated in strictest confidence and no reference made to any specific individual or household in any published work.</p>

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AVAILABLE**

**Variable print
quality**

MEALS AND THE FOOD'S WE EAT

1. This survey is part of a large scale study to investigate the way in which we organise our eating, in terms of meals, and the type of foods we eat in those meals. It is sponsored by the Ministry of Agriculture, Fisheries and Food.
2. Please record all purchases of meat and fish made each day. We would like you to indicate where the food was bought e.g. Presto's supermarket, Davidsons Butchers shop etc. In giving a description of the food please include as much detail as possible about the meat or fish purchased e.g. chops may be beef, lamb or pork, were the chops fresh, frozen, chilled? Brand names may be extremely helpful e.g. were the sardines John West or Princes, was the pork-pie from Malls?

An example is given, we realise that you may not buy as many meat or fish items when you shop, nor the same items. The example simply covers as many examples of different foods as we can, so that you are clear about the details required.

ONLY RECORD MEAT AND FISH PURCHASES. DO NOT RECORD NON FOOD ITEMS OR FOODS WHICH ARE NOT COVERED BY MEAT AND FISH CATEGORIES.

EXAMPLE SHEET

FOOD PURCHASED SATUR..... DAY

(EXCLUDE MEAT AND FISH BOUGHT FOR PETS)

PLACE OF PURCHASE	DESCRIPTION OF FOOD Please describe in full giving BRAND where applicable One line per item	COST £ p	PLEASE LEAVE BLANK
PRESTO SUPERMARKET CONGATE NEWCASTLE	BEEF - FIZING STEAKS - FRESH 1lb	1-20	
	PORK CHOPS (ON THE BONE) FROZEN 1lb (x 4)	2-20	
	DANISH BACON - SMOKED - LOOSE 1lb	1-28	
	ENGLISH HAM, JOINT, UNCOOKED 2lb	2-70	
	LAMB, LEG, UNCOOKED 3lb	4-30	
	PORK SAUSAGES, UNCOOKED, 'WALLS' 1lb	-89p	
	CO-OP FROZEN COD STEAKS (x2)	86p	
	CO-OP TANDORI STYLE CHICKEN - COOKED - (x 2) BREAST	1-10	
	BEEF SAUSAGES, FROZEN - 'WALLS' 1lb	-89p	
	SPAM, TINNED 'PLUM ROSE'	-47p	
BOATIN FISHMONGERS GREEN MKT NEWCASTLE	SARDINES - TINNED, WHOLE 'JOHN WEST'	-27p	
	COD - FILLETED, UNCOOKED 1lb	1-52	
	HACKEREL, SMOKED - FILLETED 1/2lb	-46p	
BULLS DUTCHER WESTGATE RD NEWCASTLE	KEBABS (BEEF, LAMB) (x4)	1-99	

HOW TO FILL IN YOUR DIARY - In the food diary we are interested in the sorts of foods you eat and prepare in your home over the period of a week, no matter how simple or elaborate. Each diary and each household is of interest in our study. It is advisable to fill in the diary after each shopping visit (to record the meat and fish bought); and after each meal (to record the food eaten) when the information is fresh in your mind. It might therefore be advisable to place the diary in a prominent position in the kitchen where you cook.

TYPE OF MEAL - Here we want you to record the name of the meal, what you call it, dinner, lunch, supper, etc. and the time at which the meal started. Record only main meals or light meals.

WHAT FOOD WAS SERVED - In this section we would like you to record what food was served at this particular meal, with one line per item. If different household members ate different foods, e.g. pork chops for your husband, beefburgers for the children, then record all the different foods which were served. A good description of the food is useful.

HOW THE FOOD WAS BOUGHT - Here simply record the form in which the food was bought by ticking the appropriate box for each item. If it was 'take away' food or in any 'other' form then record below the column where indicated.

HOW THE FOOD WAS PREPARED - Record the form in which the food was prepared by ticking the appropriate box for each item. If it was prepared in any other way than those listed, record how it was prepared below the column, after ticking the 'other' box.

TIME TO PREPARE, COOK AND CONSUME - In these columns, we would like you to estimate how long it took you to firstly prepare, cook, and then consume each food item you have used. We want you to give as accurate an answer as possible, but there is no need to time each operation by the clock.

HOT/COLD - In this section simply tick whether the food item was served hot or cold.

WHO ATE THE FOOD - It may often happen that different members of the household will eat different food items, all of which will be recorded as being served. In order to get some idea of who eats what, it is necessary to tick the appropriate column to show who ate what food, e.g. children may prefer different foods to the adults, or there may not be enough of one food to go around etc.

NUMBER OF COURSES - In this section, if you could indicate the number of course's in the meal, e.g. 1, 2, 3, 4, 5 etc. at the bottom of the page in the appropriate box. Often there may not be more than one course, but if there is, then draw a horizontal line on the table separating the items which belong to the different courses e.g. maybe soup for the first course, casserole for second, and ice cream for the third course, which would require you to draw two lines (an example is given).

DAY OF THE WEEK - Then if you could record the day of the week on which you had the food and whether you think it was a MAIN MEAL or a LIGHT MEAL.

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick [✓] the form which the food was bought i.e. fresh, frozen etc., how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Cook and record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

TYPE OF MEAL AND TIME MEAL STARTED	WHAT FOOD WAS SERVED		TYPE OF FOOD BOUGHT										HOW WAS FOOD PREPARED										TIME TO SERVED (MINUTES)				WHO ATE THE FOOD • (RECORD NUMBER)						
	Homemade	Homemade then frozen	Fresh	Frozen	Chilled	Canned/bottled	Dried	Take-away	Other	Heated oven/hob	Fried	Grilled/toasted	Boiled	Steamed	Roasted	Microwaved	Ready prepared	Other	Prepare (approx)	Cook (approx)	Consume (approx)	Hot	Cold	Self	Husband, Father/Partner	Daughters	Sons	Other family members	Friends you live with	Lodgers	Guests		
e.g. Breakfast Lunch Supper Tea Snack etc.			✓							✓										15	30		✓	✓	✓	✓						2	
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**TEXT BOUND
INTO
THE SPINE**

FOOD PURCHASED DAY

(EXCLUDE MEAT AND FISH BOUGHT FOR PETS)

PLACE OF PURCHASE	DESCRIPTION OF FOOD Please describe in full giving BRAND where applicable One line per item	COST £ p	PLE LEA BLA

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick [✓] the form which the food was bought i.e. fresh, frozen etc., how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

[illegible]

Please specify:

MAIN MEAL []

LIGHT MEAL []

Number of Courses:

22

[illegible]

1

Number of Courses:

1. The first part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a cursive script, and the addresses are listed below them.

DAY:

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

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TYPE OF MEAL AND TIME MEAL STARTED	WHAT FOOD WAS SERVED	TYPE OF FOOD BOUGHT		HOW WAS FOOD PREPARED										TIME TO SERVED (MINUTES)	FOOD SERVED	WHO ATE THE FOOD * (RECORD NUMBER)																	
		Homemade then frozen	Fresh	Frozen	Chilled	Canned/bottled	Dried	Take-away	Other	Heated oven/hob	Cooked in oven	Fried	Grilled/toasted			Boiled	Steamed	Roasted	Microwaved	Ready prepared	Other	Prepare (approx)	Cook (approx)	Consume (approx)	Hot	Cold	Self	Husband/father/partner	Daughters	Sons	Other family members	Friends you live with	Lodgers
e.g. Breakfast Lunch Supper Tea Snack etc.																																	

Please specify: MAIN MEAL [] LIGHT MEAL []

..... Number of Courses:

DATE: TIME:

FOOD PURCHASED

..... DAY

(EXCLUDE MEAT AND FISH BOUGHT FOR PETS)

PLACE OF PURCHASE	DESCRIPTION OF FOOD Please describe in full giving BRAND where applicable One line per item	COST £ p	PLUS LEAS BLAN

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[illegible]

Please specify:

MAIN MEAL []

Number of Courses:

LIGHT MEAL []

the proposed

DAY:

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick [✓] the form which the food was brought i.e. fresh, frozen etc., how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

Please specify:

.....		MAIN MEAL []
.....		LIGHT MEAL []
		Number of Courses:

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TYPE OF MEAL AND TIME MEAL STARTED	WHAT FOOD WAS SERVED	TYPE OF FOOD BOUGHT		HOW WAS FOOD PREPARED										TIME TO SERVED (MINUTES)	FOOD SERVED	WHO ATE THE FOOD * (RECORD NUMBER)																	
		Homemade	Homemade then frozen	Frozen	Chilled	Canned/bottled	Dried	Take-away	Other	Heated oven/hob	Cooked in oven	Fried	Crisped/Torsted			Boiled	Steamed	Roasted	Microwaved	Ready prepared	Other	Prepare (approx)	Cook (approx)	Consume (approx)	Hot	Cold	Self	Husband/Father/Partner	Daughters	Sons	Other family members	Friends you live with	Lodgers
B. fast																																	
Lunch																																	
Supper																																	
Tea																																	
Snack																																	
etc.																																	

Please specify: MAIN MEAL []

..... LIGHT MEAL []

Number of Courses:

DAY:

FOOD PURCHASED DAY

(EXCLUDE MEAT AND FISH BOUGHT FOR PETS)

PLACE OF PURCHASE	DESCRIPTION OF FOOD Please describe in full giving BRAND where applicable One line per item	COST £ p	PLEASE LEAVE BLANK

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick [✓] the form which the food was bought i.e. fresh, frozen etc., how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

TYPE OF MEAL AND TIME MEAL STARTED	WHAT FOOD WAS SERVED	TYPE OF FOOD BOUGHT		HOW WAS FOOD PREPARED										TIME TO SERVED (MINUTES)		FOOD SERVED	WHO ATE THE FOOD * (RECORD NUMBER)																
		Homemade then frozen	Fresh	Frozen	Chilled	Canned/bottled	Dried	Take-away	Other	Heated oven/hob	Cooked in oven	Fried	Grilled/toasted	Boiled	Steamed		Roasted	Microwaved	Ready prepared	Other	Prepare (approx)	Cook (approx)	Consume (approx)	Hot	Cold	Self	Husband/Father/Partner	Daughters	Sons	Other family members	Friends you live with	Lodgers	Guests
e.g. Breakfast Lunch Supper Tea Snack etc.																																	

Please specify: MAIN MEAL [] LIGHT MEAL []
..... Number of Courses:
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Please specify:

.....	┌───┐ └───┘	MAIN MEAL []
.....	├───┤ └───┘	LIGHT MEAL []
Number of Courses:		

11. Answered the mail? 3/24/44

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

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[illegible]

Please specify:

MAIN MEAL []

Number of Courses:

LIGHT MEAL []

(EXCLUDE MEAT AND FISH BOUGHT FOR PETS)

PLACE OF PURCHASE	DESCRIPTION OF FOOD Please describe in full giving BRAND where applicable One line per item	COST £ p	PLEASE LEAVE BLANK

I'LL PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

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[illegible]

Please specify:

MAIN MEAL []

LIGHT MEAL (1)

Number of Courses:

Why ordered the meal?

DAY:

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

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[illegible]

Please specify:

MAIN MEAL []

Number of Courses:

LIGHT MEAL []

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

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TYPE OF MEAL AND TIME MEAL STARTED	WHAT FOOD WAS SERVED	TYPE OF FOOD BOUGHT		HOW WAS FOOD PREPARED										TIME TO SERVED (MINUTES)		FOOD SERVED	WHO ATE THE FOOD * (RECORD NUMBER)																
		Homemade	Homemade then frozen	Fresh	Frozen	Chilled	Canned/bottled	Dried	Take-away	Other	Heated oven/hob	Cooked in oven	Fried	Grilled/Toasted	Boiled		Steamed	Roasted	Microwaved	Ready prepared	Other	Prepare (approx)	Cook (approx)	Consume (approx)	Hot	Cold	Self	Husband/Father/Partner	Daughters	Sons	Other family members	Friends you live with	Lodgers
e.g. B/fast Lunch Supper Tea Snack etc.																																	

Please specify: MAIN MEAL []
..... LIGHT MEAL []
Number of Courses:

DAY:

FOOD PURCHASED DAY

(EXCLUDE MEAT AND FISH BOUGHT FOR PETS)

PLACE OF PURCHASE	DESCRIPTION OF FOOD Please describe in full giving BRAND where applicable One line per item	COST £ p	PLEASE LEAVE BLANK

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

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[illegible]

Please specify:

MAIN MEAL ()

Number of Courses:

LIGHT MEAL ()

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick (✓) the form which the food was bought i.e. fresh, frozen etc., how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

[illegible]

Please specify:

MAIN MEAL []

LIGHT MEAL ()

Number of Courses:

day,

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick (✓) the form which the food was bought i.e. fresh, frozen etc., how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

[illegible]

FOOD PURCHASED DAY

(EXCLUDE MEAT AND FISH BOUGHT FOR PETS)

PLACE OF PURCHASE	DESCRIPTION OF FOOD Please describe in full giving BRAND where applicable One line per item	COST £ P	PLEASE LEAVE BLANK

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick [✓] the form which the food was bought i.e. fresh, frozen etc.. how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

[illegible]

Please specify:

MAIN MEAL []

Number of Courses:

LIGHT MEAL ()

DAY:

הנהגתו של השר לא תהיה כרוכה באחריות

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick [✓] the form which the food was bought i.e. fresh, frozen etc., how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

[illegible]

Please specify:

MAIN MEAL []

Number of Courses:

LIGHT MEAL []

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick [✓] the form which the food was bought i.e. fresh, frozen etc., how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

[illegible]

Please specify:

MAIN MEAL []

Number of Courses:

LIGHT MEAL []

Who prepared the meal?

DAY:

DAY:

FOOD PURCHASED DAY

(EXCLUDE MEAT AND FISH BOUGHT FOR PETS)

PLACE OF PURCHASE	DESCRIPTION OF FOOD Please describe in full giving BRAND where applicable One line per item	COST \$ P	PLEASE LEAVE BLANK

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick [✓] the form which the food was brought i.e. fresh, frozen etc., how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

[illegible]

Please specify:

MAIN MEAL []

Number of Courses:

LIGHT MEAL []

NAV.

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick [✓] the form which the food was bought i.e. fresh, frozen etc., how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

Please specify:	MAIN MEAL []
	LIGHT MEAL []
		Number of Courses:	
Who prepared the meal?			DAY.

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick (✓) the form which the food was bought i.e. fresh, frozen etc., how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

[illegible]

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick [✓] the form which the food was bought i.e. fresh, frozen etc., how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

TYPE OF MEAL AND TIME MEAL STARTED	WHAT FOOD WAS SERVED	TYPE OF FOOD BOUGHT		HOW WAS FOOD PREPARED										TIME TO SERVED (MINUTES)		FOOD SERVED	WHO ATE THE FOOD • (RECORD NUMBER)																
		Homemade	Homemade then frozen	Fresh	Frozen	Chilled	Canned/bottled	Dried	Take-away	Other	Heated oven/hob	Cooked in oven	Fried	Grilled/Toasted	Boiled		Steamed	Roasted	Microwaved	Ready prepared	Other	Prepare (approx)	Cook (approx)	Consume (approx)	Hot	Cold	Self	Husband/Father/Partner	Daughters	Sons	Other family members	Friends you live with	Lodgers
e.g. Breakfast Lunch Supper Tea Snack etc.																																	

Please specify:

MAIN MEAL []

LIGHT MEAL []

Number of Courses:

DAY:

Who prepared the meal?

MEALS AND THE FOOD WE EAT

BLOCK CAPITALS PLEASE

HAVE YOU OR ANY MEMBER OF YOUR HOUSEHOLD PREVIOUSLY BEEN INVOLVED IN MARKET RESEARCH
[PLEASE CIRCLE RESPONSE]

- 1 Yes
- 2 No
- 3 Don't Know

1. POSTCODE

2. AT WHAT AGE DID YOU STOP RECEIVING FULL TIME SCHOOL EDUCATION [PLEASE CIRCLE RESPONSE]

- 1 14 years or under
- 2 15 years
- 3 16 years
- 4 17 years
- 5 18 years
- 6 19 years
- 7 20 years
- 8 Over 20 years

DO YOU HAVE ANY OF THE FOLLOWING QUALIFICATIONS [PLEASE TICK]

- University Degree or above []
- Professional-Institute Qualification []
- Higher National Certificate or Diploma []
- Teachers Training Certificate []
- G.C.E. 'A' Levels []
- Intermediate Qualifications []
- Full Industrial Apprenticeship []
- G.C.E. 'O' Levels, C.S.E. and Secretarial []
- Ordinary National Certificate or Diploma []
- Other Qualifications []
- No Qualifications []

3. DETAILS OF HOUSEHOLD MEMBERS - PLEASE RECORD INFORMATION ABOUT ALL HOUSEHOLD MEMBERS
(INCLUDING LODGERS), OR MEMBERS OF YOUR FAMILY STILL LIVING AT HOME.

BLANK	RELATION TO HOUSEWIFE	SEX	AGE	OCCUPATIONAL STATUS	OCCUPATION - Full Description	INDUSTRY in detail
	Self.....					
					
					
					
					
					
					
					

4. PLEASE INDICATE TOTAL YEARLY GROSS INCOME OF YOUR HOUSEHOLD (INCLUDING SOCIAL SECURITY
BENEFITS AND CONTRIBUTIONS FROM HOUSEHOLD WAGE EARNERS), BY CIRCLING ONE OF THE FOLLOWING.

- 1 Less than £3,000
- 2 £3,000 - £5,999
- 3 £6,000 - £8,999
- 4 £9,000 - £11,999
- 5 £12,000 - £14,999
- 6 £15,000 - £17,999
- 7 £18,000 - 20,999
- 8 Over £21,000

5. OWNERSHIP OF DWELLING

- 1 Unfurnished, council
- 2 Unfurnished, other rental
- 3 Furnished, rented
- 4 Rent free
- 5 Owns outright
- 6 Owns with mortgage

6. CAN YOU PLEASE TELL ME HOW MUCH YOU SPENT ON FOOD FOR YOUR HOUSEHOLD LAST WEEK
(ONLY INCLUDE SPENDING ON FOOD EATEN AT HOME).

7. DO ANY PEOPLE IN YOUR HOUSEHOLD FOLLOW A SPECIAL DIET

- 1 Yes [GO TO Q. 8]
- 2 No [GO TO Q. 9]

E P

8. WHO FOLLOWS THE DIET? AND FOR WHAT REASON? (PLEASE CIRCLE RESPONSE)

.....	1 Religious Practices	6 Kidney disease
	2 Diabetic/coeliac	7 Heart disease
	3 Ulcers	8 Weight control
	4 Vegetarians	9 Allergy
	5 Blood pressure	10 Other reasons
.....	1 Religious practices	6 Kidney disease
	2 Diabetic/coeliac	7 Heart disease
	3 Ulcers	8 Weight control
	4 Vegetarians	9 Allergy
	5 Blood pressure	10 Other reasons

9. DO YOU HAVE A Kitchen with table/place for eating and a separate room with dining table Yes [] No []
[IF YES GO TO Q. 10]

Kitchen with no eating space and a separate room with a table Yes [] No []
[IF YES GO TO Q. 10]

Kitchen with table/place for eating and no separate room with dining table Yes [] No []
[IF YES GO TO Q. 11]

10. [TICK APPROPRIATE RESPONSE]

10. When do you use the separate room with dining table for eating

11. When do you use the kitchen/
diner for eating

12. When do you eat in front of television, or in the lounge (as opposed to in the separate room with the table)

ONLY ON SPECIAL OCCASIONS	ONLY ON SUNDAY	2/3 WEEK	EVERY DAY	OTHER (PLEASE SPECIFY)

13. DO YOU HAVE USE OF A CAR [PLEASE CIRCLE RESPONSE]

1	Yes
2	No

14. IF YOU OR ANY OF YOUR HOUSEHOLD EAT MEALS AWAY FROM HOME, AT LUNCHTIMES PLEASE RECORD HOW
MANY TIMES PER WEEK THEY EAT OUT IN THE FOLLOWING PLACES:-

[illegible]

APPENDIX H

QUESTIONNAIRE AND INTERVIEWER INSTRUCTIONS FOR ATTITUDINAL SURVEY

INTERVIEWEE NUMBER:..... AREA:.....

I am working for and this survey is part of a national study which is interested in attitudes towards meat and fish. I would like to ask you some questions on cooking, preparing and eating these foods. Everything you say is totally confidential.

SECTION 1

1. Do you eat any of the following?	Yes	No
(Circle response)		
Meat	1	2
Fish	1	2
Poultry	1	2

[IF NO FOR ALL ABOVE THANK RESPONDENT AND CLOSE THE INTERVIEW]

2. May I ask your age?				
(Record age)	(Record sex)	M	F
		(Circle response)		

3. Are you	
(Circle response)	
Married	1
Single	2
Separated/Divorced/Widowed	3

4. How many people do you have <u>living</u> at home? (Record numbers of people in each group)	Adults
	Age 5
	6 - 15
	16 - 18

5. What is your present occupation?
(Probe for full job description or previous occupation if unemployed)
.....

6. What is your spouses occupation?
(Probe for full job description or previous occupation if unemployed)

.....

7. Do you

(Circle response)	(a)	own your home	1
	(b)	rent (private)	2
	(c)	rent (council)	3

8. Do you own or have the use of a car?

(Circle response)	(a)	Yes	1
	(b)	No	2

9. Do you tend to have the main meal

(Circle response)	(a)	at midday	1
	(b)	in the evening	2
	(c)	neither of these	3

SECTION 2 - INSTRUCTIONS

I am going to read out some of the things people have said to us about red meat, white meat, dark fish and white fish. Please tell me how much you agree or disagree with each statement in relation to each of these foods [SHOW CARD]. Pick your answer from this card and read out the corresponding score.

READ/SHOW EXAMPLE

e.g. take the statement 'a filling and substantial food'

If you agree very strongly with the statement that red meat, for example, is a filling and substantial food you would award it a score of 7; if you agree strongly 6; if you agree slightly 5; if you neither agree nor disagree 4; if you disagree slightly 3; if you disagree strongly 2; if you disagree very strongly 1.

Even if you have rarely or never eaten the food in question please give us your opinion since we are interested in your evaluation of different food items. Remember - read out the score.

ENSURE THAT THE RESPONDENT UNDERSTANDS THE SCORING SYSTEM.
OBTAIN AN AGREEMENT SCORE FOR ALL THE FOODS ACROSS ALL THE
STATEMENTS - NO MISSING VALUES]

SECTION 2 continued

	RED MEAT	WHITE MEAT	DARK FISH	WHITE FISH
Is good value for money	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Looks appealing in the shop	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Good centre for a main meal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A filling and substantial food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The fresh product tastes better than the frozen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy to tell if it is fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A really healthy food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fat/oil is off putting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw product is unpleasant to handle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bland taste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A good food for slimming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rather boring food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A versatile food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Convenient to make into a meal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Popular with men	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Best for snacks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Best for a light supper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Makes a good meal to give to guests	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fiddly to eat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More of a childrens food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You have to now about different types when buying	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Requires special skill in preparation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen product is better value than fresh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does not go with the usual vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ready meals containing this product are generally good value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cans of this are good for snacks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cans of this make good main meals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

[THANK THE RESPONDENT FOR THEIR TIME AND END THE INTERVIEW]

APPENDIX I

SHOW CARD FOR AGREE/DISAGREE SCALES IN ATTITUDINAL SURVEY

7	AGREE VERY STRONGLY
6	AGREE STRONGLY
5	AGREE SLIGHTLY
4	NEITHER AGREE NOR DISAGREE
3	DISAGREE SLIGHTLY
2	DISAGREE STRONGLY
1	DISAGREE VERY STRONGLY

APPENDIX J

CIRCULAR SENT TO COLLEGES INTERESTED IN PARTICIPATING IN FISH SURVEY

The Department of Agricultural and Food Marketing at Newcastle University in conjunction with Torry Research Station, Aberdeen, is involved in a research project, sponsored by the Ministry of Agriculture, Fisheries and Food, which is investigating the 'Influence of Behavioural Variables on the Consumption of Fish and Fish Products'. The research, which is also contributing to a PhD Thesis, has involved a series of group discussions throughout the UK, and a localised but relatively large scale 'food diary' study. This information has provided a wealth of understanding in terms of product usage and the perceived role of fish in the current UK meal system. However, the hypotheses which have emerged from the qualitative work now require some form of quantification, which necessitates consumer research throughout the UK, and this is where we should be grateful for your help. I understand that Torry's Assistant Director, Dr Kevin Whittle, has already spoken to you about this over the telephone. Torry have widely established links with many of the UK colleges as part of their programme of sensory research. This next stage of the work provides an excellent opportunity to strengthen these links and encourage further college participation.

The aims are to test a series of hypotheses which have been generated from the group discussions and related work, and measure the level of agreement with a series of attitudinal statements relating to usage and suitability of fish and fish products in our current meal system. In order to carry this out, we are requesting the help of your college.

Due to the national character of the information required, a standardised questionnaire format is essential for administration across all of the areas; therefore, we would not be asking for your input in terms of questionnaire design. We would provide the college with 250-300 questionnaires for administration, preferably around mid-end November. Prior to this, it is our intention, following further discussion with the individual colleges, to give the participating students an informal introduction to the background of the research and some insight into the findings to date. All of the students involved would thus be briefed on the format of the questionnaire, to resolve any ambiguities which may exist, and familiarise them with the rules and code of conduct of the Market

Research Society. Each student would be provided with a quota control card and instructed how to recruit the sample.

This project offers the college an opportunity to participate in a project of national significance and would allow the students to gain valuable practical market research experience. The college staff would have access to the data for their own research and teaching purposes, and receive a full copy of the final report relating to the national findings. We hope you find this proposal attractive and look forward to your participation.

Colleges Participating in Survey

North London Polytechnic

Liverpool Polytechnic

Newcastle upon Tyne Polytechnic

Robert Gordon Institute of Technology, Aberdeen

Bath College of Higher Education

Birmingham College of Food

Queens College, Glasgow

APPENDIX K

INTRODUCTORY LETTER FOR STUDENT INTERVIEWERS

Interviewers name

I am a student at who are conducting this survey into attitudes towards meat and fish, on behalf of the Department of Agricultural Economics and Food Marketing at Newcastle University. Complete confidentiality is ensured, and any information will be used solely for the purpose of this project.

Organisation

Department of Agricultural Economics and Food Marketing
The University
Newcastle upon Tyne
NE1 7RU

Tel: (091) 232 8511 Ext 2926

APPENDIX L

CHI-SQUARED TEST OF SIGNIFICANCE

In the analysis chi square is used to determine if a relationship exists between two or more variables, the initially assumed null hypothesis being that there is no relationship between the variables and that they are statistically independent. It is possible to use chi square analysis to compare several sets of frequencies simultaneously. In this case the data is expressed as a contingency table.

Expected frequencies for each compartment in the contingency table are computed using the following formula:

$$fe_i = \left(\frac{c_i r_i}{N} \right)$$

where c_i = column total
 r_i = row total
 N = total number of valid cases

The expected cell frequencies are then compared with the actual values found in the contingency table, and the chi square value is calculated using the following formula:

$$\chi^2 = \sum_{i=1}^n \frac{(o_i - e_i)^2}{e_i}$$

where: χ^2 = chi squared
 o_i = observed frequency in each cell
 e_i = expected frequency in each cell

The larger the discrepancies between expected and actual frequencies, the larger is the value of chi squared. To test whether the frequency is significantly different from the null hypothesis it is necessary to obtain the critical value of χ^2 for the given probability level (α). Critical values of χ^2 can be obtained from statistical tables, however, it is necessary to know the appropriate number of degrees of freedom. These are calculated from:

$$\text{degrees of freedom} = (r - 1) (c - 1)$$

where: r = number of rows in the contingency table
 c = number of columns in the contingency table

If the calculated value of χ^2 is greater than the critical value indicated in the statistical tables, the null hypothesis can be rejected and a relationship between the variables is assumed. Values of χ^2 below the critical value indicate the absence of any relationship.

The test assumes variables are measured at the nominal level, information regarding the order of or distances between the categories is ignored. Large deviations suggest a systematic relationship between variables. However, sample and table size influence the χ^2 statistic. With large samples even miniscule deviations can generate statistically significant χ^2 , while small samples are more likely to contain a disproportionate number of atypical cases.

In the diary study all chi square operations were computed using the cross-tabulation procedure (CROSSTABS), available at the University of Newcastle upon Tyne Computing Centre as part of the SPSSx program (SPSSx Documentation). A cross-tabulation produces a table that the distribution of two or more variables that have a limited number of distinct values, cross-tabulation is commonly used in social sciences and is the chief component of contingency table analysis. Chi square is one of the statistics provided in cross-tabulation procedure.

The SPSSx significance score represents the probability of obtaining a χ^2 value as large as the value computed or larger with that number of degrees of freedom (also computed by SPSSx). Thus a significance of 0.0000 i.e. less than 1 in 10,000 represents a very large chi square. However these results need to be interpreted in the light of table sizes and the number of cells with low counts. For many of the tables regrouping categories e.g. breakfast and supper in order to overcome this problem would be statistically advisable but meaningless and difficult to interpret.

APPENDIX M

OWNERSHIP OF KITCHEN UTENSILS

Possession of kitchen utensils covered major items, small electrical and non-electrical equipment.

Households participating in the diary study possessed an average of ten items.

Table M1: Ownership of major equipment

Major equipment	% of respondents owning
Grill	71.6
Refrigerator	56.9
Gas oven	54.9
Oven (with timer)	53.9
Fridge/freezer	49.0
Electric oven	43.1
Freezer	43.1
Gas hob	42.2
Microwave oven	40.2
Cooker hood/extractor fan	35.3
Electric hob	23.5
Dishwasher	4.9
Aga-style cooker	1.0

Table M2: Ownership of small electrical equipment

small electrical equipment	% of respondents owning
Toaster	73.5
Toasted sandwich maker	59.8
Mincer/grinder/grater	44.1
Liquidiser	39.2
Deep fat fryer	33.3
Frying pan/multi-cooker	32.4
Food processor	24.5
Casserole/slow cooker	24.5

These items represent relatively expensive purchases, but are not regarded as essential major equipment. In general ownership of the small-electric items is less than is the case for major equipment. There is high ownership of toasters (75%), and toasted sandwich makers (60%).

Table M3: Ownership of non-electrical equipment

non-electrical equipment	% of respondents owning
Chip pan	67.6
Food scales	63.7
Pressure cooker	49.0
Balloon/rotary whisk	44.1
Wok	35.3
Food chopper	24.5

APPENDIX N

FOOD DIARY SUPPLEMENTARY TABLES

Table N1: Number of Courses in light and main meal

NUMBER OF COURSES	MEAL TYPE	
	Light (% items)	Main (% items)
1	76.3	29.5
2	22.9	64.5
3	0.8	6.1
4	-	0.3
TOTAL	100	100

SPSSx significance=0.0000

Table N2: Cooking times for food items served in light and main meals

COOKING TIMES	MEAL TYPE	
	Light (% items)	Main (% items)
0	74.6	45.6
1-10	21.6	26.2
11-20	2.3	14.7
>20	1.5	13.5
TOTAL	100	100

SPSSx significance=0.000

Table N3: Preparation times for food served in light and main meals

PREPARATION TIMES	MEAL TYPE	
	Light (% items)	Main (% items)
0	47.3	55.2
1-4	25.2	27.1
5-10	19.5	14.6
11-20	5.7	2.6
>20	2.3	0.5
TOTAL	100	100

SPSSx significance=0.0000

Table N4: Mode of fish purchase associated with different fish meals

MEAL NAME	MODE OF PURCHASE					TOTAL
	H'made	Fresh	Frozen	Canned	T'Away	
All Meals	2.1	24.3	37.1	24.1	12.4	100
Lunch	1.3	17.4	29.5	36.4	15.4	100
Dinner	4.1	33.1	47.9	9.1	5.8	100
Supper	2.6	15.4	23.2	15.4	43.6	100
Breakfast	-	50.0	50.0	-	-	100
Other	-	33.3	33.3	33.3	-	100

SPSSx significance=0.000

Table N5: Methods of cooking fish associated with different fish meals

MEAL NAME	METHOD OF COOKING						
	Heated/ Roasted %	Fried %	Grilled %	Boiled/ Steamed %	Micro- waved %	Ready prep %	Other %
All meals	10.4	31.0	15.5	6.2	5.4	26.0	5.3
Lunch	8.9	17.6	19.4	8.2	2.4	34.6	8.9
Dinner	18.3	43.1	13.8	5.5	8.3	10.1	0.9
Tea	5.6	38.8	14.4	5.6	3.3	26.7	5.6
Supper	3.6	21.4	10.7	3.6	3.6	50.0	7.1
Breakfast	-	-	-	-	100	-	-
Other	-	-	-	-	50.0	50.0	-

SPSSx significance=0.0000

Table N6: Mode of purchase by type of fish

(%)	Demersal	Fish Fingers	Tuna	Pelagic	Shell Fish	Salmon	Processed	Pate
All fish	41.6	17.7	12.4	8.8	7.6	6.2	3.1	2.6
Frozen	35.5	41.9	-	2.6	14.2	0.6	5.2	-
Fresh	71.6	3.9	1.0	11.8	1.0	4.9	2.9	2.9
Canned	2.0	1.0	47.5	19.8	3.0	18.8	-	7.9
Takeaway	82.0	-	5.8	1.8	9.4	-	-	-
Homemade	11.2	44.4	-	-	11.1	11.1	22.2	-

SPSSx significance=0.0000

Table N7: Preparation time for different products

PRODUCT	PREPARATION TIME (mins)					TOTAL
	0	1-4	5-10	11-20	>20	
All Fish	48.6	23.9	19.5	6.8	1.2	100
Demersal	51.7	25.6	18.2	3.4	1.1	100
Fish Fingers	56.8	31.1	8.1	2.7	1.3	100
Tuna	28.3	26.4	22.6	20.8	1.9	100
Pelagic	39.5	26.3	26.3	7.9	-	100
Shellfish	67.6	14.7	11.8	5.9	-	100
Salmon	23.1	15.4	46.1	15.4	-	100
Processed	69.2	7.7	7.7	7.7	7.7	100
Pate	50.0	-	50.0	-	-	100

SPSSx significance=0.0000

Table N8: Cooking times for different products

PRODUCT	COOKING TIME (mins)				TOTAL
	0	1-10	11-20	>20	
All fish	43.8	32.2	18.4	5.6	100
Demersal	29.0	32.3	29.0	9.7	100
Fish Fingers	8.1	71.6	20.3	-	100
Tuna	96.2	1.9	1.9	-	100
Pelagic	55.3	34.1	5.3	5.3	100
Shellfish	64.7	26.5	2.9	5.9	100
Salmon	84.7	3.8	7.7	3.8	100
Processed	15.3	23.1	46.2	15.4	100
Pate	100.0	-	-	-	100

SPSSx significance=0.000

APPENDIX O

STRUCTURE OF FISH MEALS

This illustrates the basic forms of fish meals and is complemented by Appendix P.

Main Meals

Fish	Staple	Trimmings
Cod	Chips, Bread	
Cod	Chips	Peas, Parsley sauce
Cod	Chips	Mushy peas, Curry sauce
Cod	Potatoes	Parsley sauce
Cod	Potatoes	Cabbage
Cod	Potatoes	Baked beans
Cod	Potatoes	Peas, Carrots, Onions, Mushrooms
Cod	Potatoes	Onion rings
Cod	Potatoes	Salad
Cod	Rice	Salad
Cod steak		Salad
Cod (Mushroom sauce)	Rice	Peas
Cod (Butter sauce)		Cauliflower, Brussel sprouts
Fish	Chips	
Fish pie		Peas
Fish	Potatoes	Peas, Corn
Fish	Potatoes	Corn
Fish burgers	Chips	Peas
Fish cakes		Peas, Carrots
Fish fingers	Chips	
Fish fingers		Salad
Fish fingers	Croquettes	Peas
Haddock bake		
Haddock	Potatoes	Mushrooms, Tomatoes, Beans in Cheese sauce
Haddock	Potatoes	Carrots, Onions
Haddock	Potatoes	Carrots, Cauliflower
Haddock	Chips	Salad
Lemon sole (Casserole)		
Lemon sole	Potatoes	Sweetcorn
Ling	Chips	
Mackerel (Smoked)	Bread	
Plaice	Chips	Peas
Plaice	Chips	Peas, Mushrooms
Plaice	Potatoes	Cauliflower cheese
Plaice	Potatoes	Green beans, 'sauce'
Plaice	Potatoes	Carrots, peas, Tartare sauce
Prawn Cocktail		
Prawn Curry	Rice	
Rock Turbot	Potatoes	Caulifloer, Peas, 'sauce'
Sardines	Toast	Tomato, Lettuce
Scampi	Chips	Salad
Skate	Potatoes	Peas, Onions
Tuna		Cucumber
<u>Light Meals</u>		

Fish	Staple	Trimmings
Cod Mornay		
Cod		French beans, Tomato
Crab sticks	Bread (sandwich)	
Crab paste	Bread (sandwich)	
Fish cakes	Bread	
Fish cakes	Spaghetti	
Fish fingers	Bread	
Fish fingers	Chips	
Fish fingers	Chips, Spaghetti hoops	
Fish fingers		Salad (+ sausages)
Fish fingers	Potato waffles	Peas
Fish fingers	Potato waffles	Baked beans
Haddock (smoked)	Bread	
Herring	Bread	
Herring	Potatoes	Peas, Onions
Mackerel		Tomato
Ocean pie		
Plaice		Tomato, Lettuce
Prawn	Bread (sandwich)	
Prawn		Salad
Salmon	Bread (sandwich)	
Salmon	Chips, Bread	Salad
Salmon Pate	Bread (sandwich)	
Tuna	Bread (sandwich)	

APPENDIX P

FOODS USED IN DIFFERENT TYPES OF FISH MEALS

This shows all those foods which were served with the 425 fish items across 406 fish meals. It gives some indication of those foods most commonly associated with fish and their location in different types of meal.

CROSSTABULATION OF FOOD BY MEAL CATEGORY

FOOD	MEAL CATEGORY					
	Lunch	Dinner	Tea	Supper	Breakfast	Other
Cereal	2	2	4	1	1	
Bread	63	27	40	14	2	1
Sandwiches and Rolls	30	1	21	9		
Cakes and Biscuits	59	29	65	3		
Sweet Puddings	12	24	30	2		
Milk Pudding	3	6	1			
Pasta	3	5	5			
Grans/Flour		2	1			
Rice	1	5	7	3		
Cheese	20	11	9	1		
Cheese dishes		1				
Youghurt	13	7	3	1		
Custard	2	13	3			
Cream/Milk	24	20	32	7		
Eggs	6	11	14	1	2	
Pizza/Quiche	2		3			
Fats and Oils		1				
Meat	30	29	22	9	2	
Game/Fowl	1	5	5	1		
Pork	2	1				
Lamb and Mutton		6	2			
Fish	150	124	106	40	2	3
Greens	49	79	41	6		
Salad and Salad Vegetables	68	58	61	9	1	
Beans	9	16	14			
Potatoes	68	106	57	24		
Root Vegetables	23	44	18	2		
Other Vegetables	6	12	7			
Fruit	36	49	18	3	1	
Sugar and Jam	2	3	6		1	
Sweets and Crisps	19	1	2	1		

FOOD	MEAL CATEGORY					
	Lunch	Dinner	Tea	Supper	Breakfast	Other
Tea and Coffee	99	85	72	22	2	1
Lemonade and Squash	17	6	8	3		
Fruit Juice	5	10	3	1	2	
Beer/Lager etc.	1		2			
Wine	1	1		3		
Spirits		1				
Sauces	12	12	3			
Soups	11	3	3	2		
Misc	3	1	2			
Nuts	2	1	2	1		
Yorkshire Puddings		1				
COLUMN TOTAL	854	819	692	169	16	5

Number of missing observations = 2

APPENDIX Q

SELECTED EXAMPLES OF FISH MEALS RECORDED IN FOOD DIARY STUDY

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick (✓) the form which the food was bought i.e. fresh, frozen etc., how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

[illegible]

Please specify:

MAIN MEAL ☒

Number of Courses: 2

LIGHT MEAL ()

Who prepared the meal?
 Day: Friday 12th

DAY: Friday 12th

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick (✓) the form which the food was bought i.e. fresh, frozen etc.. how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

[illegible]

Please specify:

MAIN MEAL 19

Number of Courses:

LIGHT MEAL ()

Who prepared the meal? **Kocher**

DAY: TUESDAY

Who prepared the meal? Homer...

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick (✓) the form which the food was bought i.e. fresh, frozen etc., how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

TYPE OF MEAL AND TIME MEAL STARTED	WHAT FOOD WAS SERVED	TYPE OF FOOD BOUGHT										HOW WAS FOOD PREPARED										TIME TO SERVED (MINUTES)			FOOD SERVED	WHO ATE THE FOOD (RECORD NUMBER)							
		Homemade	Homemade then frozen	Fresh	Frozen	Chilled	Canned/bottled	Dried	Take-away	Other	Heated oven/hob	Cooked in oven	Fried	Grilled/toasted	Boiled	Steamed	Roasted	Microaved	Ready prepared	Other	Prepare (approx)	Cook (approx)	Consume (approx)	Hot		Cold	Self	Husband/father/partner	Daughters	Sons	Other family members	Friends you live with	Others
e.g. Breakfast Lunch Supper Tea Snack etc.	Tomato Soup	✓																		✓	1	5	✓		✓								
	Smoked Mackerel		✓										✓								3	10	✓		✓								
	BREAD		✓																														
	COFFEE																				2	5	✓		✓								
	FRUIT CAKE.				✓																				✓								
	butter		✓																						✓								
	Soup INGREDIENTS.																																
	TOMATOES		✓																														
ONIONS		✓																															
POTATOES.		✓																															
	VEG + MEAT STOCK																																

Please specify: MAIN MEAL (✓)

LIGHT MEAL ()

Who prepared the meal? SELF Number of Courses: 3

DAY: 22/02/2017

Pressure Cooker
Handwritten: Pressure Cooker

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick (✓) the form which the food was bought i.e. fresh, frozen etc., how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

[illegible]

Please specify:

MAIN MEAL []

Number of Courses:

LIGHT MEAL (1)

Who prepared the meal? Shop days Bought

DAY:
PUN:

PLEASE USE A NEW PAGE FOR EACH MEAL AND/OR SNACK

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick (✓) the form which the food was bought i.e. fresh, frozen etc., how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

[illegible]

Please specify:

MAIN MEAL []

Number of Courses:1.....

LIGHT MEAL

Who prepared the meal? ...McTHER (SELF)....

DAY: ...TUESDAY...

Please specify:

.....

.....

Who prepared the meal?

Number of Courses:
DAY: Sunday

MAIN MEAL []

LIGHT MEAL [X]

Please complete the following table by recording the type of meal eaten/prepared and the time at which the meal started. Then give a detailed description of the food served, one line per item. We would also like you to tick (✓) the form which the food was brought i.e. fresh, frozen etc.. how the food was prepared i.e. heated etc. Next record the time it took to prepare, cook and consume the food. Tick whether it was served hot or cold, and then who ate the food. Record the number of courses served. Record the day (below main table), whether it was a main meal or a light meal and who was mainly responsible for preparing the meal. If several people were involved record this information. Finally, please draw a line between the different courses where more than one course was served.

[illegible]

Please specify:

MAIN MEAL []

Number of Courses:1.....

LIGHT MEAL

Who prepared the meal? *SGZ*

DAY: HOW:

APPENDIX R

ANALYSIS OF VARIANCE

Analysis of variance is a procedure which is used to decide whether observed differences amongst two or more sample means can be attributed to chance, or whether there are real differences among the means of the population samples. The procedure expresses a measure of total variation within a set of data as a sum of squares. This variation can be attributed to actual variation between samples, or as a result of chance. The first refers to 'treatment of sum of squares' (SS(Tr)), the second to 'error sum of squares' (SSE), and the total variation is referred to as 'total sum of squares' (SST).

The first step in the procedure is to set up the null hypothesis (H_0) that treatment means are equal, against the alternative hypothesis (H_1) that the treatment means are not equal, i.e.

$$H_0: \mu_1 = \mu_2 = \dots \mu_k$$

$$H_1: \mu_1 \neq \mu_2 \neq \dots \mu_k$$

For one-way analysis of variance compute total, treatment (or between) and error (or within) sum of squares (SST, SS(Tr), SSE) as follows:

$$SST = \sum_{i=1}^k \sum_{j=1}^n (x_{ij} - \bar{x}_{..})^2$$

$$SST(Tr) = n \cdot \sum_{i=1}^k (\bar{x}_{i.} - \bar{x}_{..})^2$$

$$SSE = \sum_{i=1}^k \sum_{j=1}^n (x_{ij} - \bar{x}_{i.})^2$$

$$SST = SST(Tr) + SSE$$

Where: k = number of samples
 n = total number of observations
 x_{ij} = the j th observation of the i th sample
 $\bar{x}_{..}$ = the grand mean
 $\bar{x}_{i.}$ = mean of the i th sample

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F
Treatment (between)	k - 1	SS(Tr)	$Ms(Tr) = \frac{SS(Tr)}{k - 1}$	$\frac{Ms(Tr)}{MSE}$
Error (within)	k(n - 1)	SSE	$MSE = \frac{SSE}{k(n - 1)}$	
TOTAL	kn - 1	SST		

To test the null hypothesis it is necessary to compare SS(Tr) with SSE using the F statistic i.e.

$$F = \frac{\text{estimation of } \sigma^2 \text{ based on variation among the } x\text{'s}}{\text{estimation of } \sigma^2 \text{ based on variation within the samples}}$$

The number of independent deviations from the mean on which the sum of squares is based is referred to as the number of degrees of freedom. The means of k samples, of size n, have k - 1 degrees of freedom for the numerator (estimation of σ^2 based on variation within the x's) and k (n - 1) degrees of freedom for the denominator estimation of σ^2 based on variation within the samples). The mean squares are then calculated i.e.

$$MS(Tr) = \frac{SS(Tr)}{k - 1}$$

$$MSE = \frac{SSE}{k(n - 1)}$$

On the basis of this the F statistic is calculated. The procedure is summarised in Figure R1

If the MS(Tr) is much larger than the MSE, then the null hypothesis should be rejected. This decision is based on a comparison between the actual F statistic and a critical F value. This critical F value is estimated for different levels of significance (α) and k - 1 (df_1), k(n - 1) (df_2) degrees of freedom obtained from the F distribution. If the actual value is greater than the critical value at F_α , the null hypothesis is rejected.

The reliability of the sample mean \bar{x}_i as an estimate of the population mean μ depends on the size of the sample n and the size of the population standard deviation σ . It is possible to construct a confidence interval for μ , with a stated degree of confidence, with end points referred to as confidence limits, i.e.

$$\bar{x}_i - z_{\alpha/2} \cdot \sigma/\sqrt{n} < \mu < \bar{x}_i + z_{\alpha/2} \cdot \sigma/\sqrt{n}$$

where: \bar{x}_i = sample mean
 $z_{\alpha/2}$ = stated confidence level
 σ = standard deviation
 n = sample size
 μ = population mean (with large samples (>30) \bar{x} is assumed to equal the population mean)

One way analysis of variance and 95% confidence intervals were computed using MINITABS. Using the F statistic and 95% confidence intervals it was possible to determine if the difference between products was greater than the difference between peoples evaluation of the products (i.e. within sample differences).

Figure R1

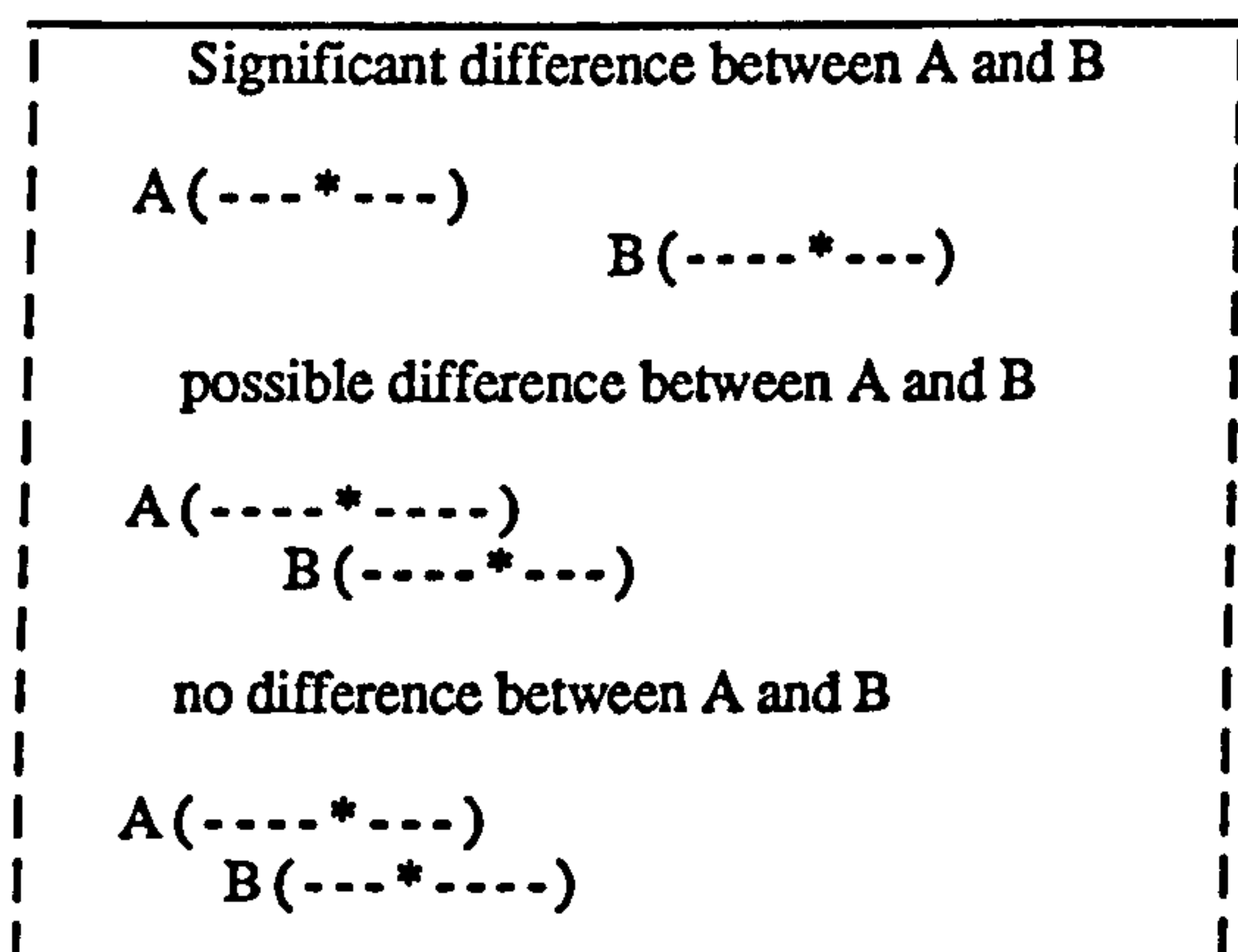


Figure R1 summarises the principle used to determine differences between the products, the asterisk represents the mean score for A (or B), the dotted line the deviation on that mean score across the sample.

APPENDIX S

MDPREF

"MDPREF (MultiDimensional PREference Scaling) provides internal analysis of two way data of either a set or period comparison matrices or a rectangular row of conditional matrix by means of a vector model using linear transformation of the data" (MDS(x) User Manual S.1).

It requires subjects to make preference or similar judgements about a set of stimuli (objects). Using this data the programme can position these stimuli in a Euclidean space, representing each subject by a vector directed towards the subjects highest region of preference. Projection of stimuli onto this line, in the case of perfect fit, correlates perfectly with the subjects preference scores. The order of projections of stimuli points on the vector represents the subjects order of preference.

The procedure is illustrated with reference to the data for twenty seven scales (stimuli) and four products (subjects) (Figure S1).

It is necessary to specify data type. In this case DATATYPE (4) refers to scores with the highest score representing the highest preference with DATATYPE (3) the highest score is the least preferred. DATATYPE (1) and (2) refer to rank data, in the former the first stimulus is most preferred i.e. high to low ranking, in the latter the first stimulus is least preferred i.e. low to high ranking.

Centering allows one to remove the differences due to actual values used by subjects, (in a rating exercise) by subtracting the row or column means (CENT (1) and CENT (2) respectively). Normalising allows one to remove the effect of differences in the range or spread of scores by dividing each row by its standard deviation (NORM (1)). NORM (2) performs the same operation in column elements.

FIGURE S1

M D S (X) PROGRAMS

**AN INTEGRATED SERIES OF MULTIDIMENSIONAL SCALING PROGRAMS WITH A COMMON
COMMAND LANGUAGE**

PROGRAMS AND SUPPORTING DOCUMENTATION ARE DISTRIBUTED FROM **OTHER ENQUIRIES SHOULD
BE ADDRESSED TO**

**MDS(X) PROJECT,
PROGRAM LIBRARY UNIT,
UNIVERSITY OF EDINBURGH,
18 BUCCLEUCH PLACE,
EDINBURGH EH8 9LN
U.K.**

**MDS(X) PROJECT,
SOCIOLOGICAL RESEARCH UNIT,
UNIVERSITY COLLEGE
P.O. BOX 78,
CARDIFF CF1 1XL
U.K.**

**USERS ARE EXPECTED TO CITE THE PROGRAM ORIGINATOR AND THE MDS(X) SERIES WHEN
PUBLISHING RESULTS**

1. RUN NAME	MDPREF ON FISH ATTITUDES SURVEY
2. TASK NAME	AVERAGE SCORES ON 27 SCALES FOR 4 PRODUCT GROUPS
3. COMMENT	*****
4. COMMENT	THE ANALYSIS USED AVERAGE SCORES FOR ALL STATEMENTS
5. COMMENT	*****
6. N OF SUBJECTS	4 (<i>products</i>)
7. N OF STIMULI	27 (<i>statements</i>)
8. DIMENSIONS	2
9. INPUT FORMAT	(27F6.3)
10. PARAMETERS	DATA TYPE (4), CENT (2)
11. COMMENT	
12. COMMENT	
13. COMMENT	DATA IS 4 BY 27 MATRIX OF AVERAGE SCORES FOR ALL STATEMENTS
14. COMMENT	27 SCALES 4 PRODUCT GROUPS RED/WHITE MEAT DARK/WHITE FISH
15. COMMENT	
16. COMMENT	
17. READ MATRIX	
18. PLOT	JOINT, SHEPARD, RESIDUALS
19. PRINT	CORRELATION, FINAL, FIRST, RESIDUALS
20. COMPUTE	

The plot options JOINT, SHEPARD, RESIDUALS refer to the following:

- JOINT
- plots both $n(n-1)/2$ plots of subject vectors and $n(n-1)/2$ plots of stimulus in chosen dimensionalities.
- SHEPARD
- plots first score against second score. Indicates the 'fit' of the model to the data
- RESIDUALS
- histogram of residual values.

The print option used were CORRELATIONS, FINAL, FIRST, RESIDUALS which refer to:

- CORRELATIONS - prints the correlation for each subject between the data and stimulus projection
- FINAL - prints stimulus matrix followed by subject matrix after it has been modified i.e normalised or central. Means and standard deviations of subjects are printed
- FIRST - prints the input matrix which has often been modified through centering and/or normalising
- RESIDUALS - this is the first score matrix minus the second score matrix.

COMPUTATION (based on Carroll, J.D. "Non-Parametric Multidimensional Analysis of Paired Comparisons Data". Bell Telephone Labs. 1964).

Given N subjects and P stimuli we have N matrices of order P.

$$D_i = \{d_{jk}^i\} \quad \begin{array}{l} i = 1, 2, \dots, N \\ j, k = 1, 2, \dots, N \end{array}$$

$$\begin{array}{lcl} \text{where: } d_{jk}^i & = & +1 \text{ if individual } i \text{ judges } j > k \\ & = & -1 \text{ if individual } i \text{ judges } j < k \\ & = & +0 \text{ if individual } i \text{ judges } j = k \\ & = & -0 \text{ if no response} \end{array}$$

Further, assume two solution matrices

$$X = \{X_{ia}\} \quad \begin{array}{l} i = 1, 2, \dots, N \\ a = 1, 2, \dots, r \end{array}$$

a configuration of N subject vectors is an r dimensional space and

$$Y = \{Y_{ja}\} \quad \begin{array}{l} j = 1, 2, \dots, p \\ a = 1, 2, \dots, r \end{array}$$

a configuration of p stimulus points in r dimensional space. We then define the first score matrix, S (Nxp)

$$S = \{S_{ij}\} = X \cdot Y^1$$

where

$$s_{ij} = x \cdot y^1$$

We further define

$$d_{jk}^i = S_{ij} - S_{ik}$$

as the difference between the preference of j over k for subject i.

Given these we define a criterion of agreement between data and a given configuration

$$C = \sum_i W_i \frac{(\sum_k d_{jk}^i \delta_{jk}^i)^2}{\sum_{j=k} (\delta_{jk}^i)^2}$$

where W_i is the optional weight assigned by subject i. This may be maximised by defining a matrix S^* whose general entry

$$S_{ij}^* = \sqrt{W_i} \hat{A} (d_{jk}^i - d_{kj}^i)$$

and factoring such that

$$S^* = U B V_r$$

From these factors we derive

$$U_r B_r V_r$$

Where U_r and V_r are the matrices given by the first r columns of U and V respectively, B_r is a diagonal matrix of order r (i.e. the first r rows and columns of B).

The solution matrices X and Y are then given by

$$X = U_r B_r$$

$$Y = V_r$$

This factorisation is carried out by means of the Eckart-Young (1936) procedure.

The matrix U is a matrix with eigenvectors of $S S^T$ as its columns and the matrix V has as columns eigenvectors of $S^T S$. B is the diagonal matrix of corresponding eigenvalues. If the eigenvalues are ordered according to magnitude (and the columns are ordered according to magnitude (and the columns of U and V permuted correspondingly), then X and Y is the matrix of rank r yielding the best least squares approximation to S^* . Carroll (1964) proves that the criterion C is indeed maximised by factorisation of the S^* matrix.

APPENDIX T

ATTITUDE STATEMENTS USED IN SURVEY

1. Is good value for money
2. Looks appealing in the shop
3. Good centre for a main meal
4. A filling and substantial food
5. The fresh product tastes better than the frozen
6. Easy to tell if it is fresh
7. A really healthy food
8. Fat/oil is off putting
9. Raw product is unpleasant to handle
10. Bland taste
11. A good food for slimming
12. Rather boring food
13. A versatile food
14. Convenient to make into a meal
15. Popular with men
16. Best for snacks
17. Best for a light supper
18. Makes a good meal to give to guests
19. Fiddly to eat
20. More of a childrens food
21. You have to know about different types when buying
22. Requires special skill in preparation
23. Frozen product is better value than the fresh
24. Does not go with the usual vegetables
25. Ready meals containing this product are generally good value
26. Cans of this are good for snacks
27. Cans of this make good main meals

APPENDIX U

MEAN SCORES ON STATEMENTS USED IN ATTITUDE SURVEY

<u>Statements</u> <u>(900)</u>		<u>Mean Scores Across Sample</u>			
		Red Meat	White Meat	Dark Fish	White Fish
1	Is good value for money	4.6	5.4	3.6	5.0
2	Looks appealing in the shop	4.7	4.4	3.8	4.4
3	Good centre for a main meal	6.0	5.9	4.3	5.1
4	A filling and substantial food	6.0	5.8	4.5	4.9
5	The fresh product tastes better than the frozen	5.5	5.4	5.3	5.6
6	Easy to tell if its fresh	5.1	4.9	4.7	5.1
7	A really healthy food	4.2	5.6	4.8	5.9
8	Fat/oil is off putting	4.9	4.6	4.8	4.4
9	Raw product is unpleasant to handle	4.1	4.0	4.4	4.3
10	Bland taste	2.7	3.4	3.1	3.9
11	A good food for slimming	3.1	5.3	4.0	5.7
12	Rather boring food	2.7	3.0	3.5	3.5
13	A versatile food	5.8	5.6	4.3	5.9
14	Convenient to make into a meal	5.5	5.6	4.6	5.1
15	Popular with men	6.3	5.4	4.0	4.5
16	best for snacks	3.6	4.5	4.0	3.5
17	Best for a light supper	2.9	4.3	3.9	4.3
18	Makes a good meal to give to guests	6.1	6.0	3.9	4.8
19	Fiddly to eat	2.6	3.1	4.8	4.6
20	More of a childrens food	3.3	4.4	2.8	3.8
21	You have to know about different types when buying	5.3	4.5	5.3	5.4
22	Requires special skill in preparation	4.2	4.2	4.7	4.8
23	Frozen product is better value than fresh	3.2	3.5	3.2	3.5
24	Does not go with the usual vegetables	2.2	2.3	4.1	3.5
25	Ready meals containing this product are generally good value	3.6	3.8	3.5	3.9
26	Cans of this are good for snacks	3.9	3.8	5.1	3.5
27	Cans of this make good main meals	3.5	3.3	3.5	3.0

APPENDIX V

ATTITUDE SURVEY: SUPPLEMENTARY FIGURES

Table V1: Attitudes towards red meat by age group

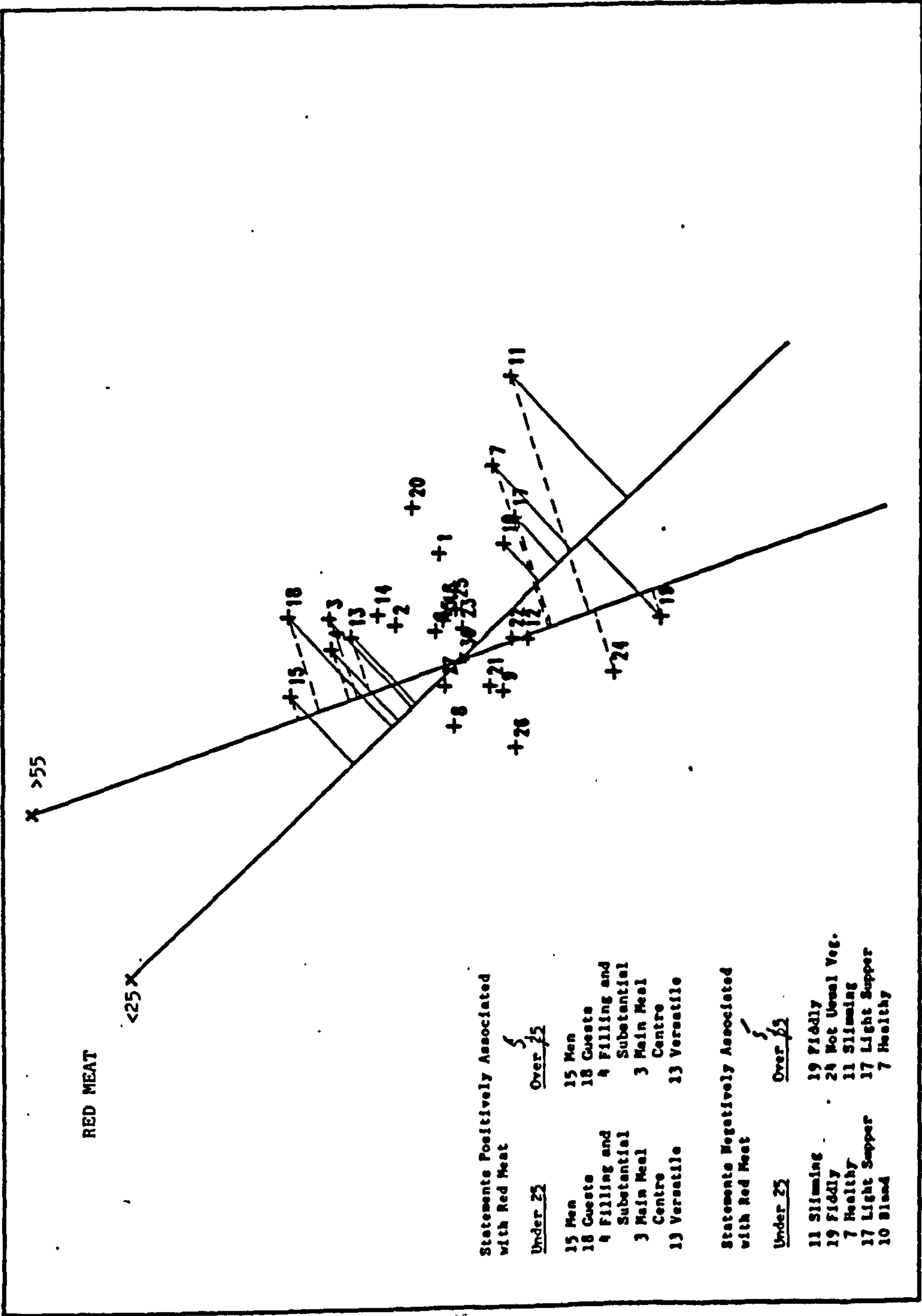


Table V2: Attitudes towards white fish by age group

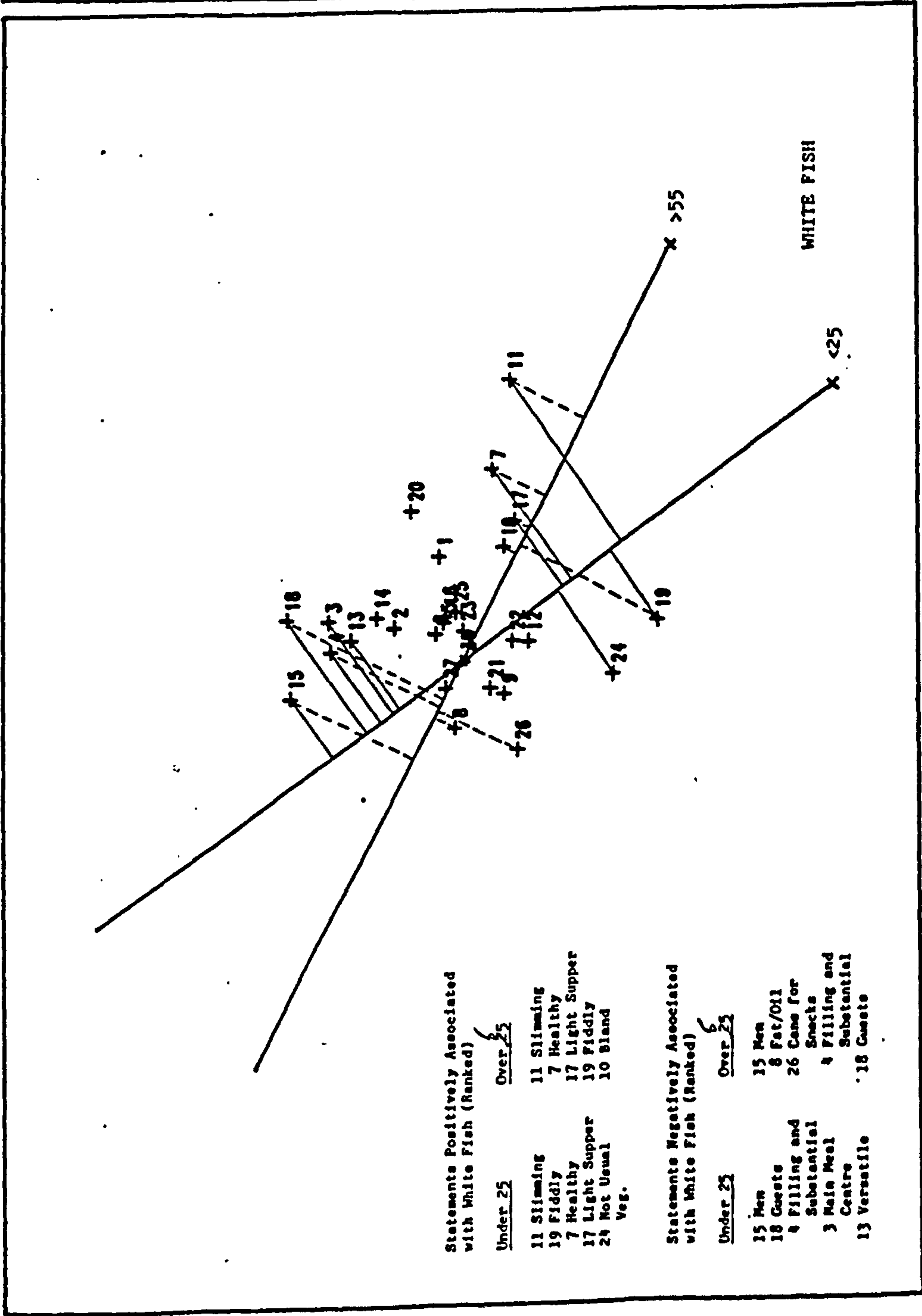


Table V3: Attitudes towards white fish by gender

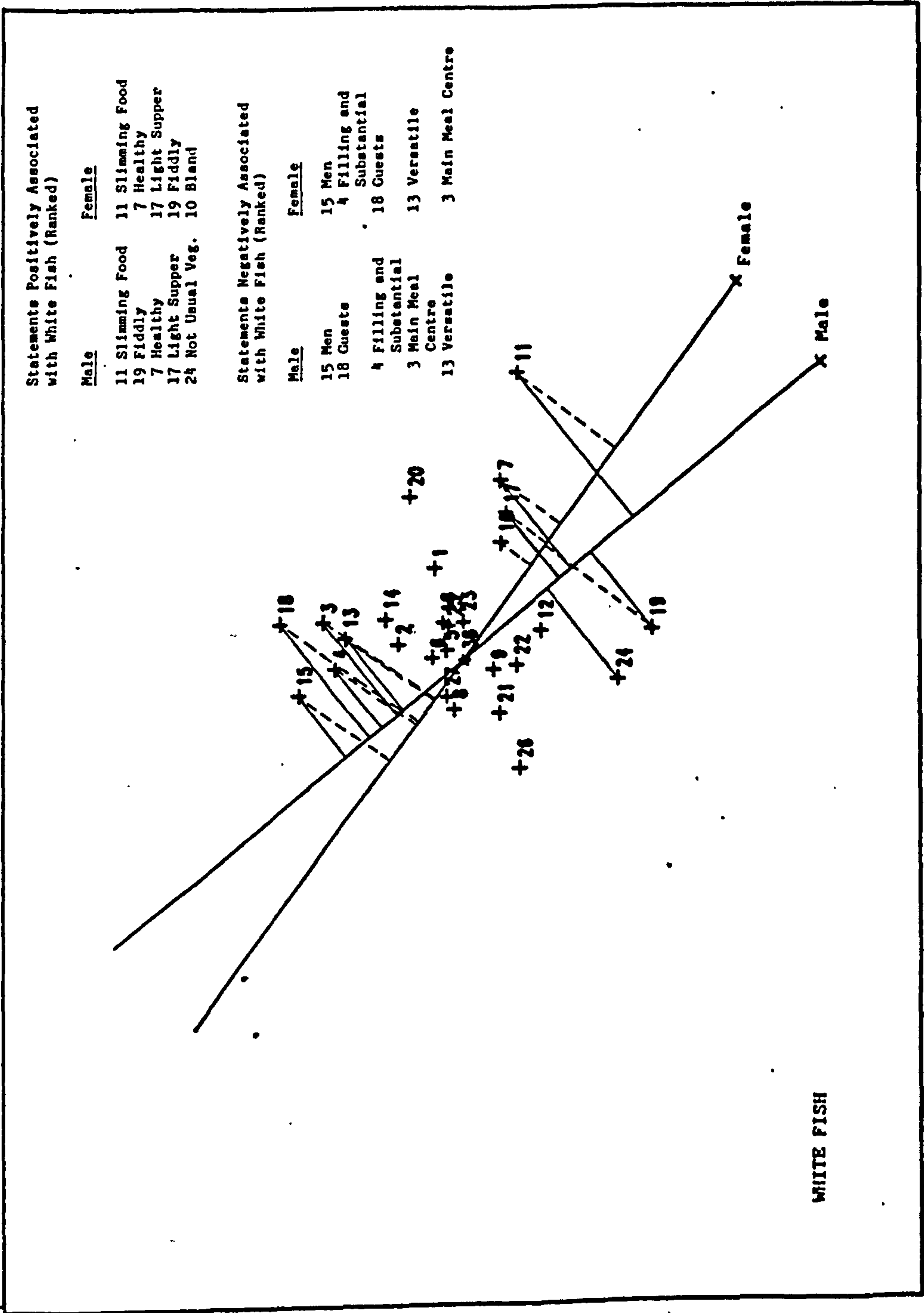


Table V4: Attitudes towards white meat by class and age

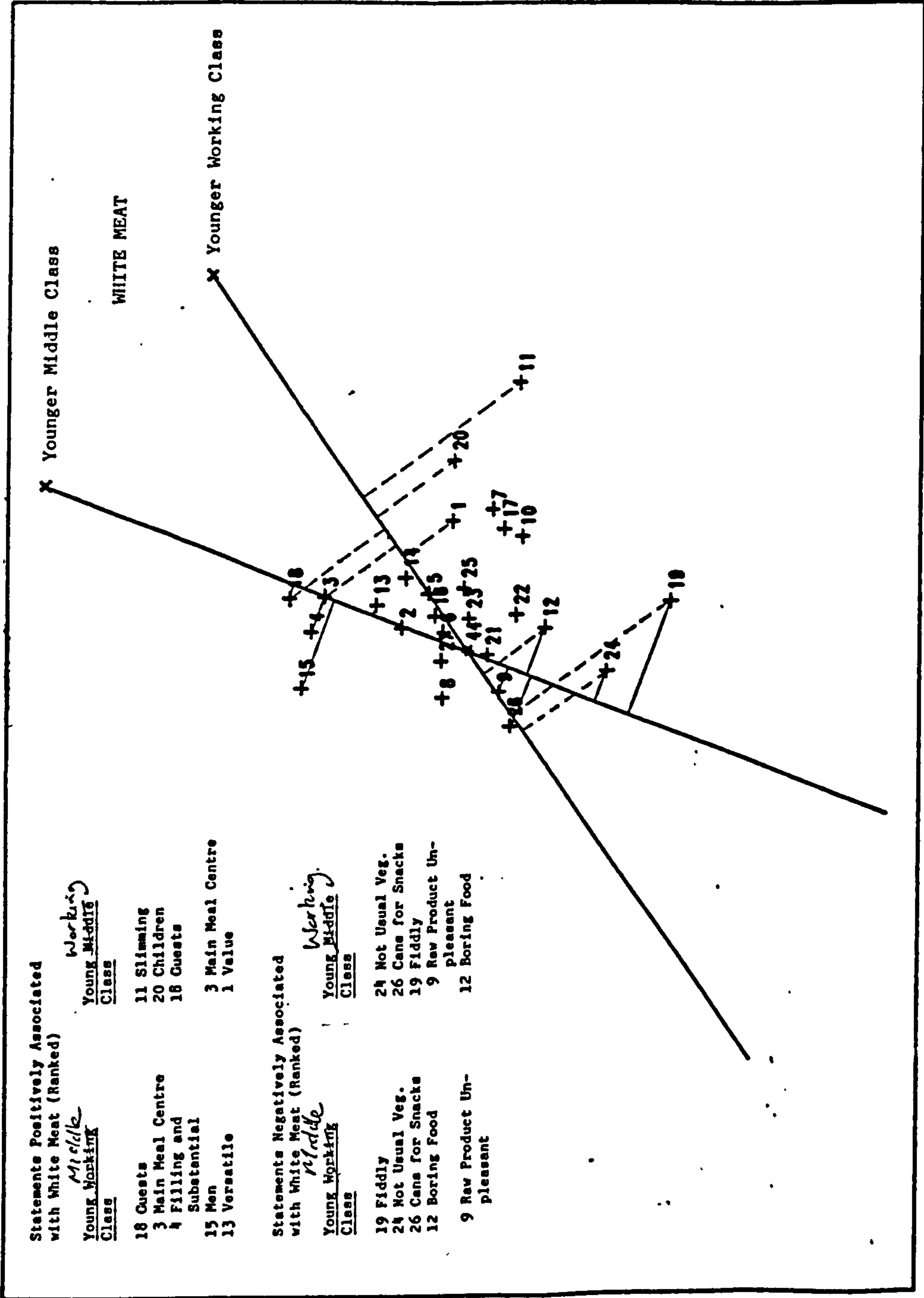
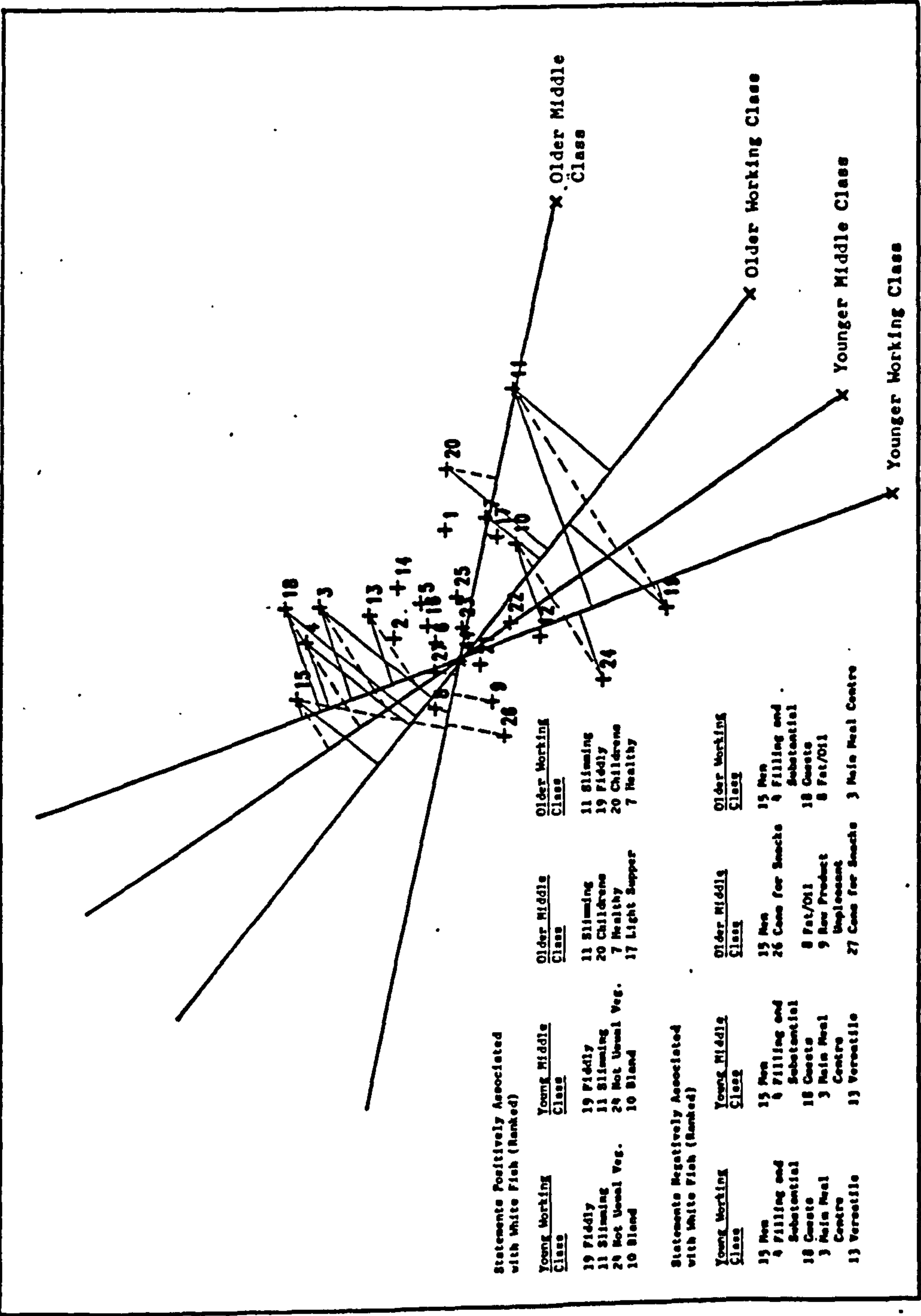


Table V5: Attitudes towards white fish by class and age



APPENDIX W

SHEPARD DIAGRAMS: GOODNESS OF FIT

Figure W1: Shepard Diagram: Products

AVERAGE SCORES ON 27 SCALES FOR 4 PRODUCT GROUPS

FIRST SCORE

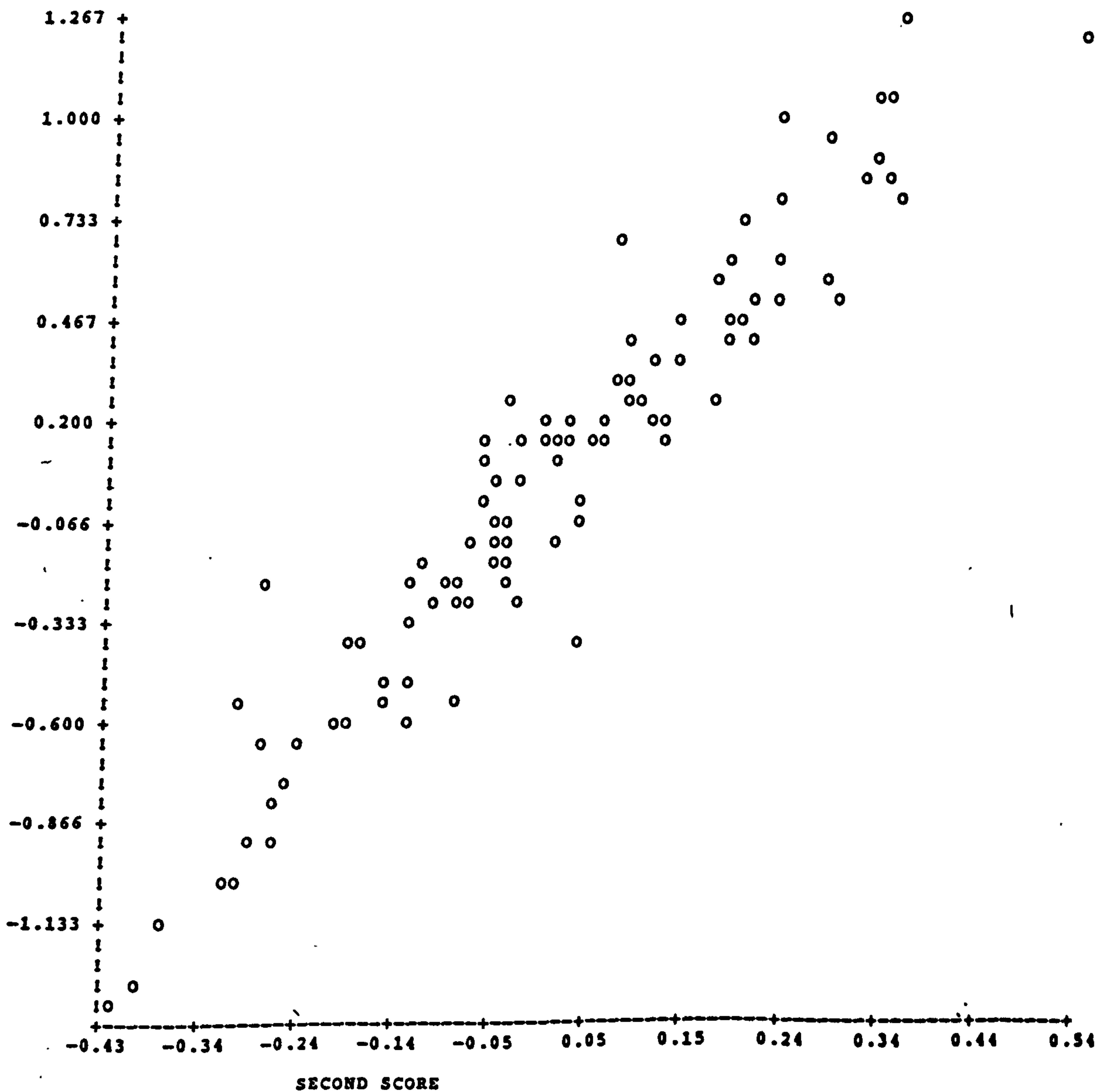


Figure W2: Shepard Diagram: Products and Age

AVERAGE SCORES ON 27 SCALES FOR 4 PRODUCT GROUPS AND 2 AGE GROUPS

FIRST SCORE

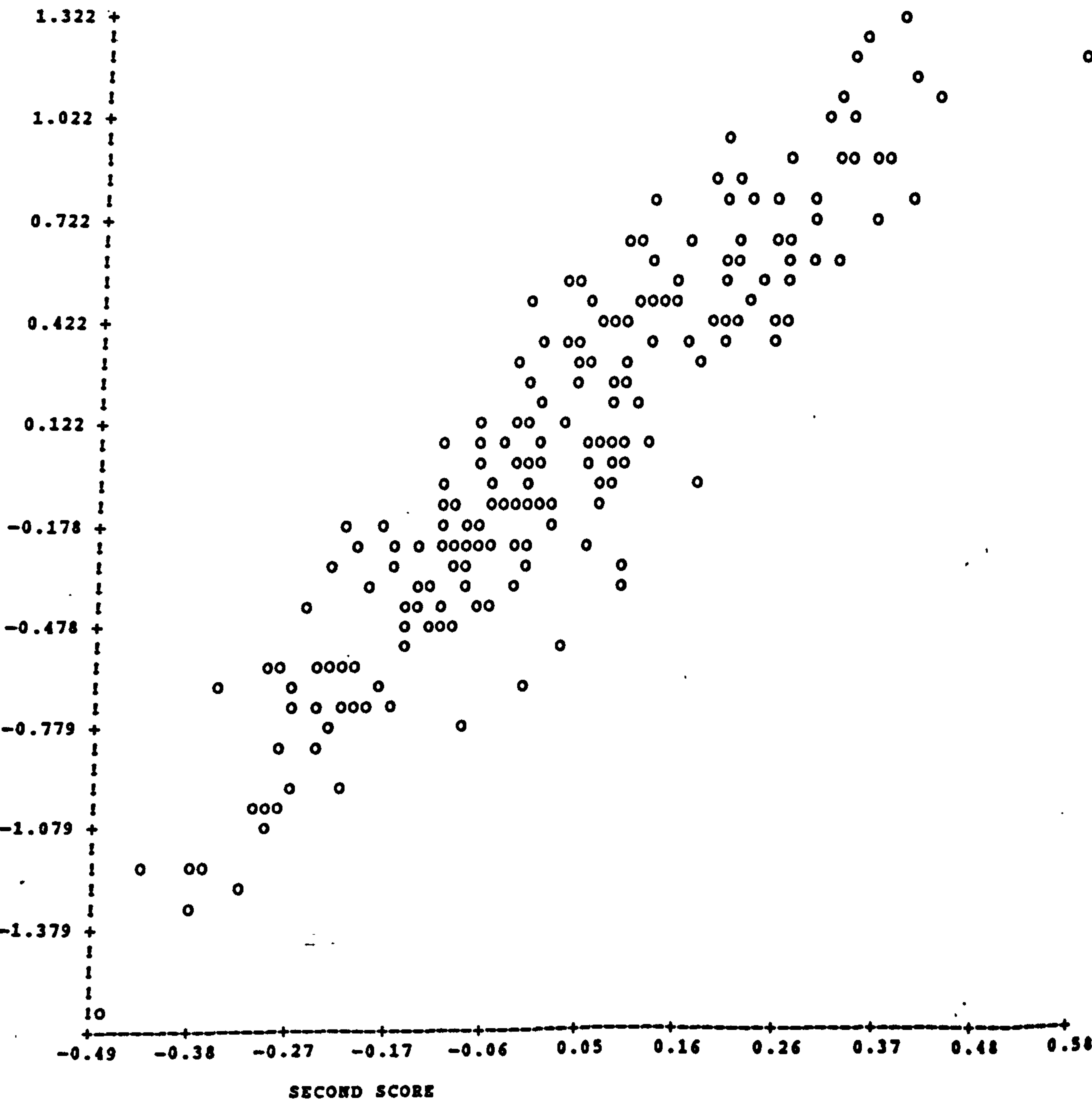


Figure W3: Shepard Diagram: Products and Gender

AVERAGE SCORES ON 27 SCALES FOR 4 PRODUCT GROUPS AND 2 GENDER

FIRST SCORE

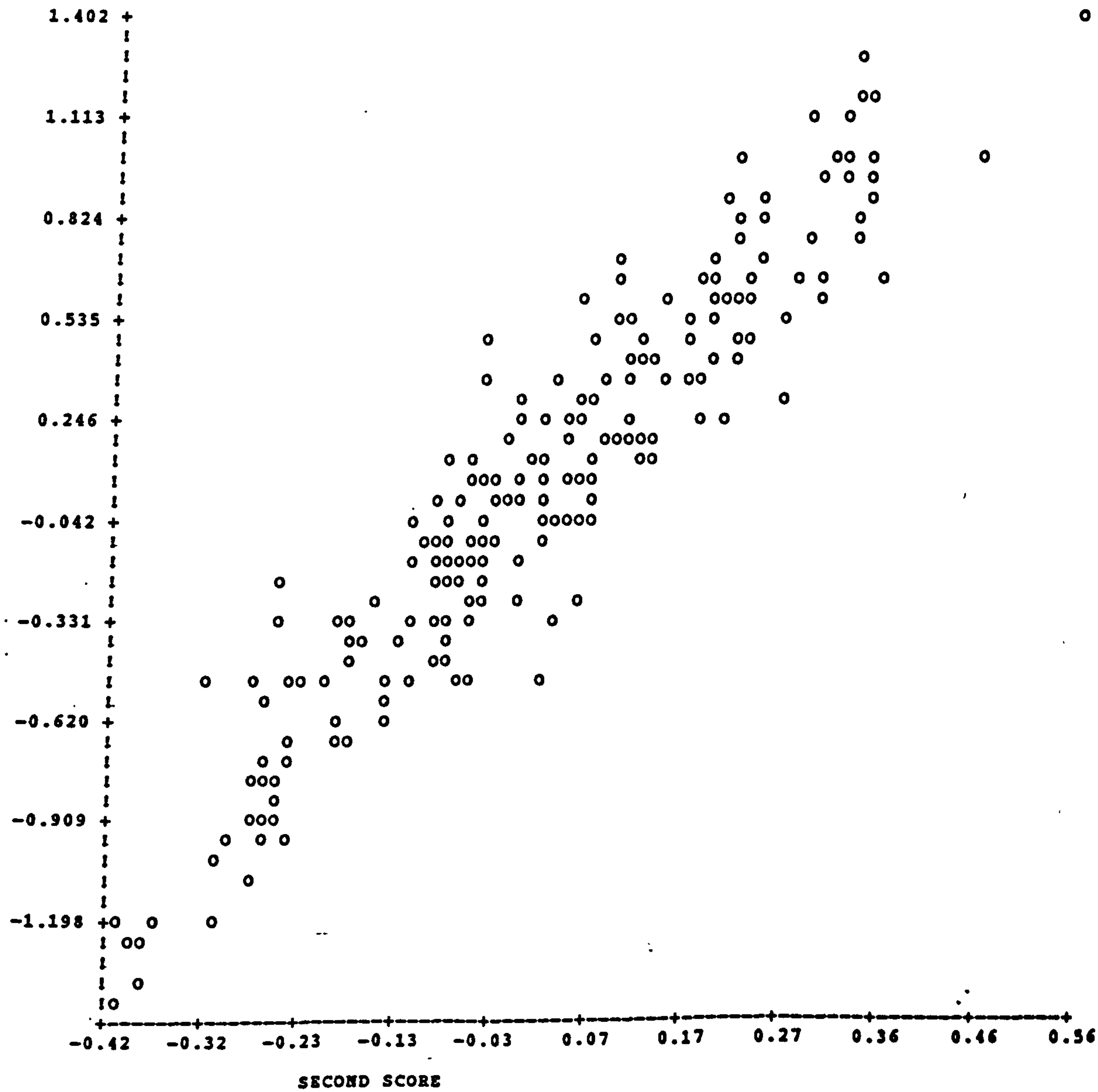


Figure W4: Shepard Diagram: Age and Social Grade

AVERAGE SCORES ON 27 SCALES FOR 4 PRODS 2 CLASSES AND 2 AGES

FIRST SCORE

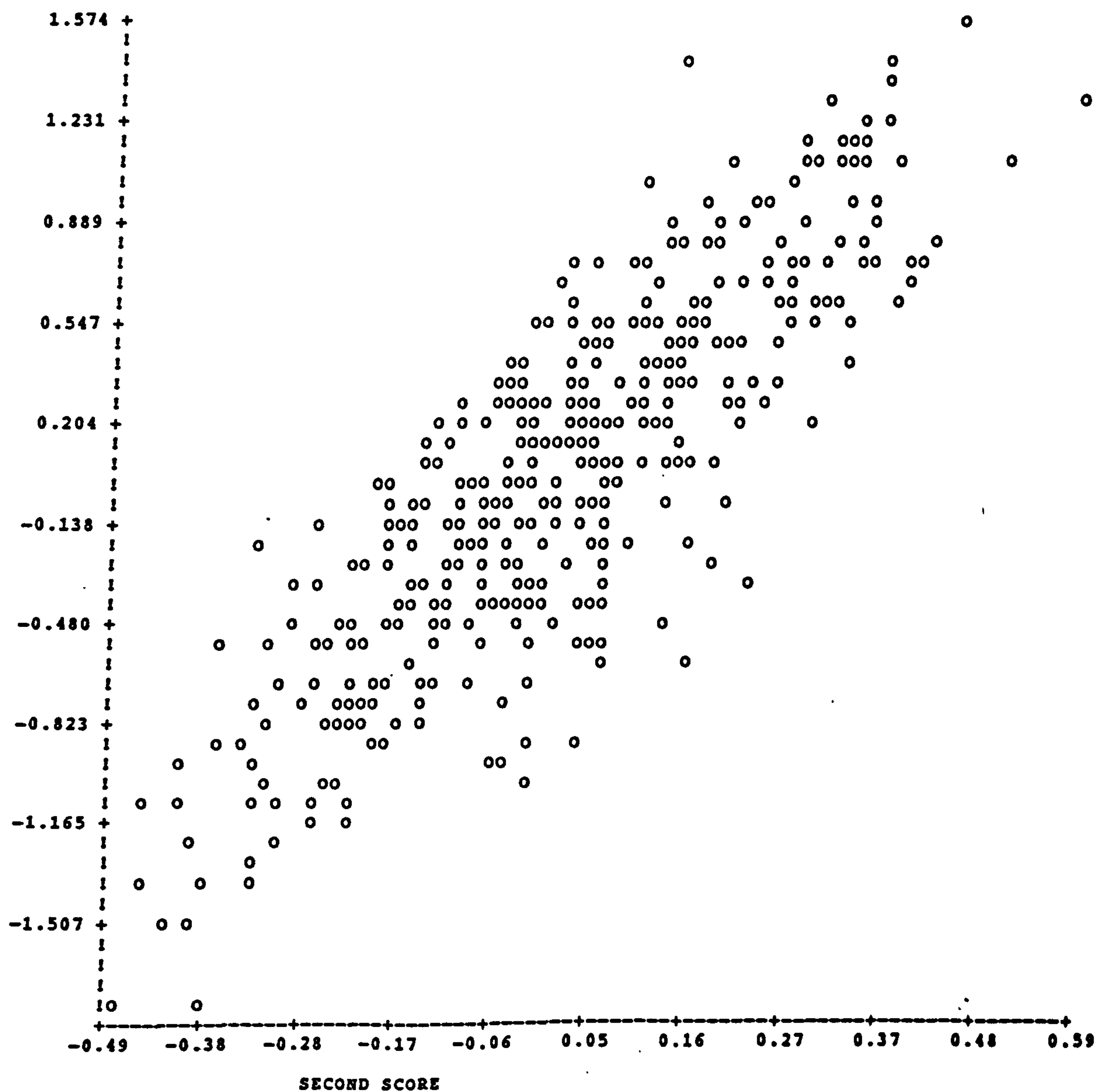
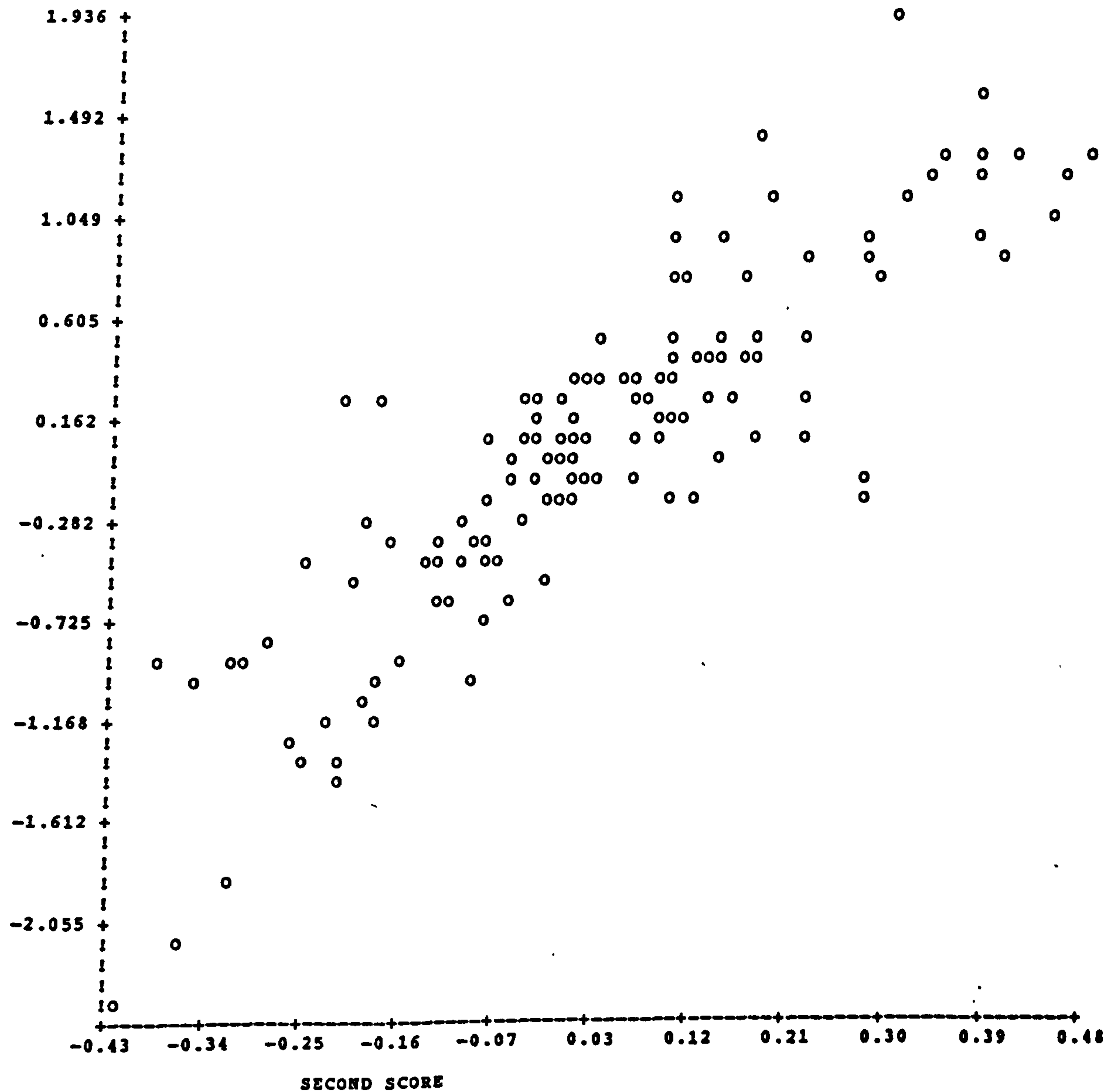


Figure W5: Shepard Diagram: Products and New Products

AVERAGE SCORES ON 27 SCALES FOR 4 PRODUCT GROUPS + BALLS

FIRST SCORE



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