

MAPP working paper no 8
March 1993
ISSN 0907 2101

Food Quality and the Consumers

Jesper Lassen
Project no 11

Preface

Active consumer influence on research and development in the food sector is the topic of the research project HEIDRUN (MAPP project 11) at Roskilde University Centre. Some might argue that consumers already exert major influence on R&D in the food sector since they decide which products to buy, and which not to buy. To a certain extent this is true. Consumers do make choices at the supermarket counter thereby sending a signal to the sector.

The problem is, however, that the choice is not that easy. The purchases depend - amongst other things - on the consumers' situation and a balancing of the many needs and considerations that have to be taken into account. To this should be added that the ability to determine product quality is often restricted by lacking food knowledge and/or products with reduced transparency. Factors like these imply that the signal transmitted from consumers over the market does not (necessarily) reflect their intentions, but rather what they buy under given circumstances.

The aim of project HEIDRUN (MAPP project 11) is to study the relation between consumer intentions and R&D in the food sector, including a study of more direct consumer influence on R&D in the food industry.

On one hand this paper addresses the general discussion of the term 'food quality', and, on the other hand, barriers for the communication of consumer intentions to the food sector and barriers in the sector for adapting to the communicated intentions.

*Jesper Lassen
Roskilde, March 1993*

Executive Summary

1. Consumers and professionals in the food sector will differ in the way they view food quality. Professionals have knowledge and resources to establish quality based on objective criteria. Consumers lack both, and they are typically concerned with many different products. *Quality perception* is therefore the best way to describe how consumers relate to the quality of food products.
2. The way consumers perceive quality is only imperfectly related to how they act on the market. There are many reasons why food choice can deviate from consumer intentions: lack of economic resources, of means of transportation, of time, of knowledge. Consumers' shopping behaviour is therefore an imperfect indicator of the quality consumers want, and an insufficient way of communicating consumer wishes to the food sector.
3. The fact that the food producer may be separated from the consumer by several links in the food chain, giving several occasions for the distortion of information, further complicates communication between consumers and producers.
4. Food producers' quality considerations are governed also by other criteria than the quality consumers want. The technology used may require certain attributes of food products or materials which may contradict consumer intentions. Economic pressure to reduce costs may lead to deteriorating quality.
5. While the information supplied by the market may be enough to give feed back on products launched based on the trial-and-error method, it is not enough with regard to decisions concerning major investments, like the use of new biotechnologies. In such cases, other forms of consumer participation have to be found.

Table of Contents

Communication between consumers and the food sector	1
Quality - from concept to perception.....	3
Quality and value	4
Consumer intention and behaviour	8
Consumer perceptions and choice in a historical perspective	10
Approaches to study consumer quality perception.....	11
The consumer and the food sector	12
Conclusion	15
References	18

It seems to be a triviality that consumers are concerned about the quality of the food they consume. The concern ranges from the shape of carrots, over salmonella contents in chicken, to the welfare of the cow now displayed as beef in the supermarket counter. Judging from the public debate, this quality awareness has increased over recent decades. There is no simple explanation to this, but factors like changing quality of the supplied food and the increased distance between consumption and production undoubtedly plays a role.

The food sector as such also tends to be more aware of food quality. Highlighting quality in the food sector is a result of at least two circumstances. One explanation is that the sector reacts to signals from consumers, e.g., through the market: When consumers demand quality, the sector will supply quality. As it will appear later in this paper, the relation over the market between consumers and the food sector is not at all that simple. The second reason for highlighting quality is as a means to control the processes from primary production to the retailers. Different systems with the purpose of controlling quality, like the ISO-9000 standards and the HACCP system, are employed now and exemplify the trend.

In spite of the focus on quality on both sides of the counter, a gap can still be observed between the quality desired by consumers and the quality provided by the food sector. It is the purpose of this paper to address reasons for this gap, with special attention to the validity of the information transferred via the market and barriers for adapting to the received information in the food sector.

In general there is a remarkable absence of contributions to the discussion of the relation between consumers and food quality. The other purpose of this paper is to contribute to this more general discussion of food quality.

Communication between consumers and the food sector

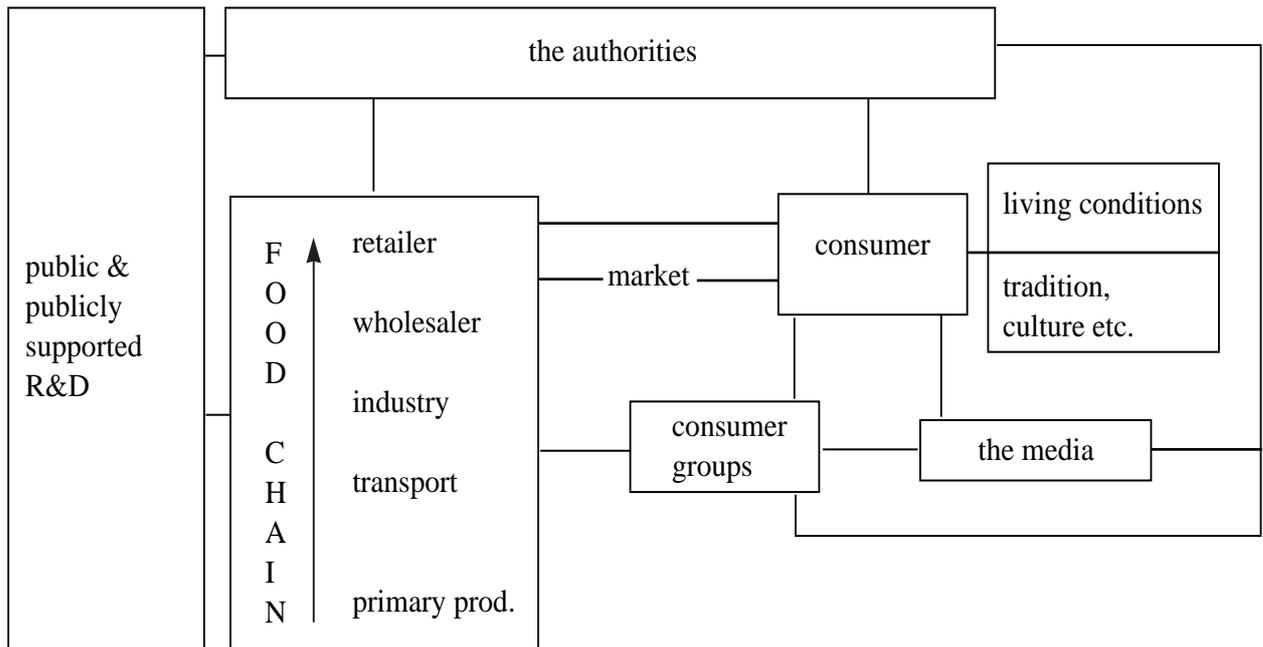
Although consumer preferences regarding food quality are communicated to the food sector in many different ways, it is nevertheless the market that has drawn attention as the most important means of communication in recent years.

To some extent it is obvious that the market has this communicative function, when e.g., the disparity between foods supplied and quality preferred grows too big. Such situations may result in declining sales, or, in the most radical instances as almost total rejection of the product, thus forcing the producers either to give up production of the particular product or to attempt development of new products in accordance with consumer wishes. The food sector experiences such drops in acceptance all the time, ranging from almost total boycott of foods from politically unacceptable countries, to decline in the sale of chicken as a reaction to increasing salmonella contents. To the extent that the food sector reacts and provides alternatives one could say that communication over the market has been successful.

Judging from these “successes”, the growing focus on food quality in the marketing of foods, and the fact that quality is emerging as a keyword in food production, it is tempting to con-

clude that the market works as a mediator of consumer quality preferences. This paper, however, claims that, although the market in some instances works as a mediator, there are hurdles that distort the signals passed from consumers over the market to the food sector. These hurdles are to be sought both in the market, in the consumers and the way they organize their lives, and in processes within the food sector from primary production over the food industry to the retailers.

Figure 1. A rough sketch of relations of importance for the communication of consumer preferences regarding food quality.



As figure 1 illustrates, food quality is not only a result of market relations between consumers and the food chain. Consumers will also exert their influence in a direct manner, when, e.g., complaining about the quality of a product, making suggestions, or participating in taste panels. More indirect influences on food production - and thus food quality - is obtained via the authorities, when, e. g., consumer views, due to a pressure from consumer groups, are adopted in the regulation of the food sector or in the guidelines for public or semi-public research and development. The picture is even further complicated by the fact that it is not a one-way communication from consumers via various agents to the food sector. Communication also flows the opposite way from the food sector, via the authorities, the media etc. to consumers thus influencing their quality perception.¹

¹For a further and thorough discussion of consumer influence in society see Grønmo, Ölander & Danielsen (1991). For an explicit discussion of influence via consumer groups see H.R. Jensen (1984).

Quality - from concept to perception

The expression “*quality concept*” is used by various authors to describe the foundation on which an evaluation of food quality is based². Both when the term is used in relation to a single food item and when it is used in relation to a total diet, it suggests a comprehensive understanding of quality. Public authorities, professional purchasers and certain parts of the food sector are - unlike ordinary consumers - likely to establish such a comprehensive understanding.

Public authorities and professional purchasers have certain resources at their disposal. In most cases their employees will possess substantial knowledge about food and food quality, as a result of food being their full time profession and/or an educational background in food related matters. Often authorities and professional purchasers also possess economic resources and/or technology enabling them to verify the actual quality. In most cases these extra resources enable them to build up a quality concept regarding both a single food item and a diet as a whole.

Often actors in the food sector have similar resources at their disposal, yet their situation is different. Whereas professional purchasers in a public kitchen or public food authorities need to take the whole diet into account when approaching food quality, the food sector will - in most cases - only apply their quality concept to very few products. They may even reduce their concept of quality to deal with only a few features of their products like the environmental friendliness or nutritional quality of the product.

Ordinary consumers are in a different position. First of all they do not possess the necessary resources to build up a comprehensive quality concept, neither in terms of time, knowledge nor money. Secondly, they have to evaluate the quality of single products as well as the diet as a whole. Finally, these evaluations of food quality are often made on behalf of other members of the family, making it even more difficult to establish a comprehensive concept of quality.

For these reasons the expression “*concept*” is not appropriate to describe consumer considerations concerning food quality. Instead **quality perception** is used, as an expression that reflects the fact that the consumer’s relation to quality is often incomplete and inconsistent³. Consequently this paper will use the term “concept” to describe the more professional approach to food quality, whereas “perception” will be used when referring to the consumer’s approach.

Consumers’ non-scientific approach to quality is also a consequence of their quality perception not only being a result of deliberate considerations, but also reflecting actual living conditions and cultural inheritance. This link between perception of quality, culture, living conditions and changing social conditions underlines the dynamics of the expression and is a clue to understanding differences in perception of quality both historically and at a certain time.

²An example of this is Meier-Ploeger (1983, p.33), who uses the term ‘Qualitätsbegriff’ (‘quality concept’), when describing the development in consumer perception and food quality. An additional example is Andersen (1981, p.11), who uses the term ‘kvalitetsbegreb’ (‘quality concept’) to describe both consumer and producer perceptions of quality.

³It should be noted that ‘quality perception’ is the most commonly used expression in scientific literature, although it rarely is a result of explicit considerations.

Quality and value

Depending on by whom, when and where the expression “food quality” is used, it carries varying meanings. In advertisements “food quality” is often used to emphasize the positive aspects of quality, whereas the professional food scientist often uses it in an objective sense, when describing the hygienic quality of a food item. In contrast to these more professional uses, it is difficult to generalize about how consumers use the term “food quality”. In order to group different uses of the word quality, Trenkle (1983) works with three different values of the term “quality” as applied to food: Value laden, positive, and neutral.

When quality is used as a **value laden** term, it refers to the sum of properties of importance for the use of the product. There is thus an implicit evaluation of the properties compared to the needs.

When quality is used as a **positive** term, it is implicitly understood as superior quality. This is typical for the marketing use, where quality refers to all the favourable properties of a product.

When quality is used as a **neutral** concept, it refers to the sum of all properties separating a certain food item from others. To operate with a neutral concept therefore requires a method of listing all possible properties.

Claiming that it is possible to construct such an objective list of all possible properties is, however, not without problems.⁴ The previously mentioned historical dependency of both quality perception and quality concept illustrates that there may be future quality parameters we cannot imagine today. Who would, e.g., in the fifties have predicted that quality parameters such as environmental and ethical qualities would be as important as they are today, only 40 years later?

The fact that quality perception is linked to social conditions also creates problems for a “neutral” use of quality. Obviously the quality parameters that an upper-class housewife attaches importance to are different from the ones a single mother on social security attaches importance to.

Such differences become even more apparent, when cross cultural comparisons are made, of which anthropologists, such as Murcutt (1986), give an array of examples. Attitudes towards raw meat in different cultures and religion-based bans of all kinds of meat (or only pork) are some of the examples she refers to.

Vogtmann's work (1991) is an example of an attempt to construct a neutral, encyclopaedic quality concept. The basis of his attempt is a critique of the trend in modern research towards making everything measurable by improving instruments and methods. This, he argues, leads to a suppression of qualitative aspects favouring quantitative quality parameters. These con-

⁴It should be noted that the criticism of the neutral quality concept and the following critique of the value laden concept does not intend to construct ‘correct’ concepts. The sole purpose is to point out some difficulties in using and constructing these concepts.

siderations lead Vogtmann to the construction of a holistic concept (“ganzheitliches Prinzip”) with the purpose of including both qualitative and quantitative aspects. The development of Vogtmann's holistic quality concept is based on the science of ecology. As he notes, focus on the details (molecules, chemical substances etc.) rather than the totality (the ecosystem) results in the reduction of life to the sum of chemistry and physics.

The foundation in the science of ecology shines through in the following construction of a holistic quality concept by Vogtmann. The holistic concept is based on current scientific reports on food quality and recent investigations on consumer opinions. The concept includes the four headings listed in figure 2.

Figure 2. The aspects in Hartmut Vogtmann's quality concept. (Vogtmann, 1991, p. 19).

<p>External quality (Äussere Qualität): Size, form, colour, taste etc.</p> <p>Technological quality (Technologische Qualität): Special properties of importance to the production processes.</p> <p>Nutritional quality (Ernährungsphysiologischer Wert): Content of nutrition importance as well as content of toxic substances.</p> <p>The degree of environmental friendliness of the production (Umweltfreundlichkeit der Produktion): The environmental aspects of the production, the packaging etc.</p>
--

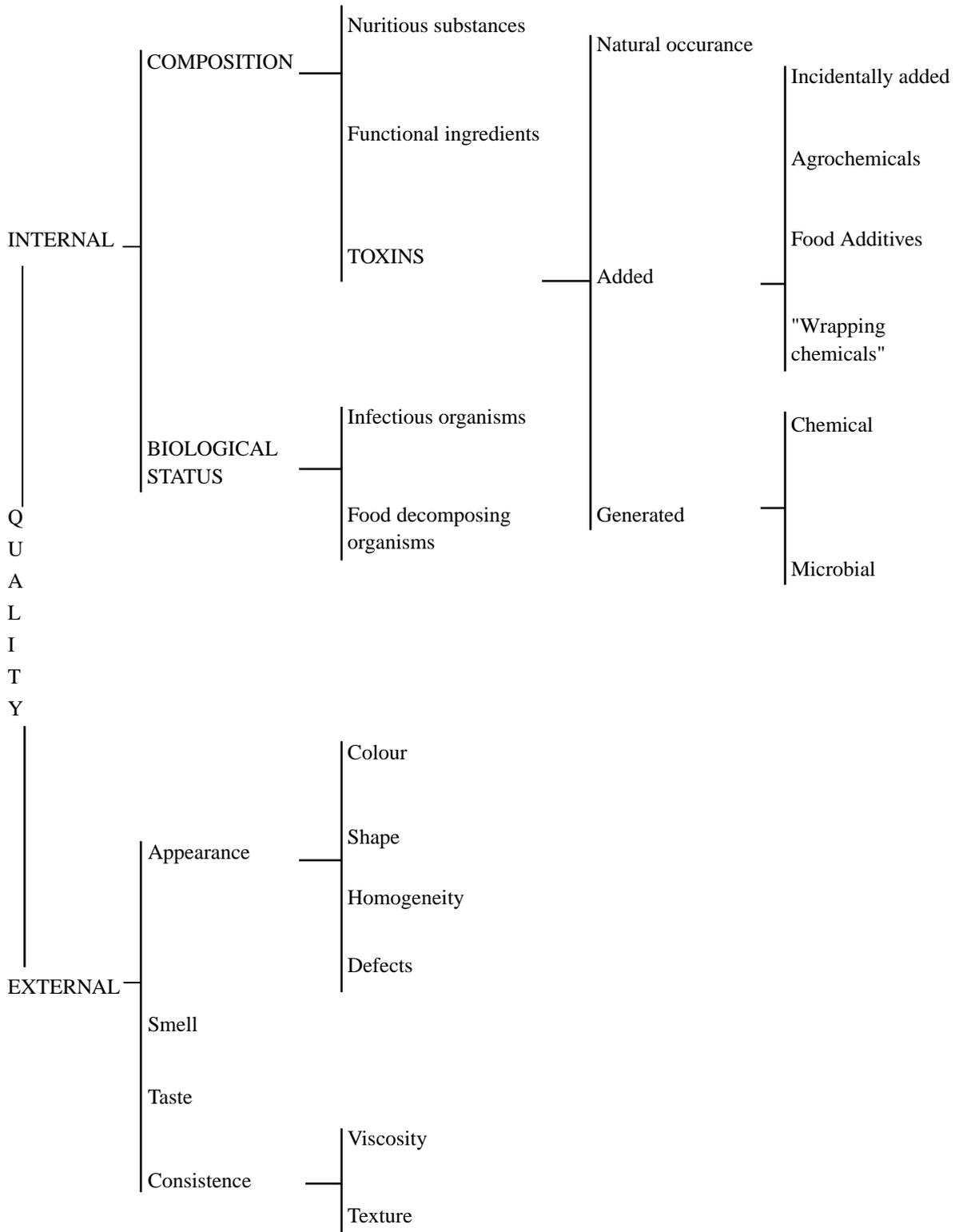
It can be argued that this quality concept - to continue Vogtmann's line of argument - reduces life to the sum of biology (ecology), chemistry and physics. A closer study of the four quality parameters reveals that in spite of his attempt to be holistic he neglects important parameters like the social⁵ and ethical⁶ qualities of the product. This is surprising in the light of the recent public debate where these values have played an important role. Considering that the concept is developed in relation to organic products, it is even more surprising since especially ethic aspects have been a major issue in the discussion of organic products.

The omission is, however, not a result of Vogtmann's neglecting these issues. Vogtmann earlier in his article mentions animal welfare as a characteristic feature of organic animal production and later on points at social issues as one of the future challenges of the agricultural system. It draws attention to the utility of neutral quality concepts: In most - if not all - cases they will end up as value laden concepts. At best 'neutral' will refer to a cross section of parameters considered important to product quality at a given time and place, by an individual or organisation.

⁵Social quality is a question of the social consequences of the production. It could be questions like: Does the production of a given product support the centralization trend in agriculture, thus undermining the existence of local rural societies? or: Does the production lead to unnecessary exploitation or other suppression of the labour force?

⁶The ethical quality concerns the ethical consequences of the production. It could for example be questions like: To what extent does cattle suffer unnecessary pain prior to slaughter.

Figure 3. The contents of the quality concept, according to Andersen (1981, p. 9)



Similar problems may occur in cases where quality is defined as a value laden concept. This is illustrated by Andersen (1981, p. 7ff), who defines quality as “*the range of positive characteristics shedding light on the utility of a product to a given purpose*”. According to Andersen, the purpose, in this case, is to serve as food for humans. It should be noted that Andersen does not define quality as purely positive features, but as a mixture of both positive and negative aspects. The stress on positive characteristics in his definition may reflect his opposition against the tendencies towards a negativism in the quality discussion, which he mentions earlier (p. 7).

One may, however, like Rasmussen (1984, p. 9ff), wonder why Andersen gives the quality concept such a distinct positive definition. Although it may not be his intention, stressing the positive side can, in the ultimate consequence, lead to a one-sided focus on positive features at the expense of negative ones. Such a one-sided focus is especially problematic if the quality concept is used in the context of technology assessments, where the purpose is to assess the consequence of a given technological development on product quality, at worst leading to an over-optimistic evaluation of the application of a new technology.

Figure 3 shows Andersen's quality concept, and illustrates his division between external quality (smell, taste, appearance texture etc.) and internal quality (composition and “biological status”). Just as illustrated in the discussion of the neutral concept, Andersen's problem is that his attempt to construct a value laden concept does not include all aspects of importance for the product's ability to serve as food for humans. E.g., he leaves no space for parameters like the social, ethical and environmental consequences of the production. That these should be included today is easily argued, since there is an increasing attention to these values as observed by Adams (1990). The rich supply of guides for consumers, parents and office clerks or whoever wants to be green or ethical (Elkington & Hailes, 1988; Elkington & Hailes, 1989; Elkington & Knight, 1991) is further evidence that many consumers find these parameters important when evaluating whether a product is fit for human consumption or not.

Although the actual historical surroundings play an important role for the content of quality concepts, this can not be a satisfactory excuse for omitting social, ethical and environmental aspects in Anderson's concept. In 1981, when his book was published, Danish food retailers had already seen consumer rejection of foods from South Africa, Chile and Israel for social and political reasons. Resources and environmental considerations had been consumer topics although not to the same extent as today. This is, e.g., illustrated by the debate amongst consumers about milk containers. One of the fora for this debate was *Tænk*, the Danish Consumer Council's journal with several articles and “letters to the editor” between 1978 and 1981 (Forbrugerrådet, 1978-1981). The essence of the dispute was whether recycled glass milk containers were more or less environmentally friendly than paperboard or plastic containers.

Another example is Danish consumers' criticism of the pork quality. The discussions started in the early seventies as a criticism of the declining organoleptic and safety quality of pork caused by modern methods of production - especially the increased use of antibiotics in pigfarms was in focus (Witte, 1982, pp. 26-50). Around 1977, ethical aspects of the relation between increasing antibiotics consumption and welfare of farm animals was also included in the debate - culminating in 1978, when the artist and writer Mikael Witte was sued for issuing a series of posters with the text: “*Danish pigs are healthy - they are bursting with penicillin*”.

Consumer intention and behaviour

Returning to the consumer, understanding a given consumer's perception of quality is not enough to tell how he or she will act on the market - and consequently which signals are communicated to the food sector. The individual consumer's reflections over different quality parameters constitute a basis for the formulation of an intention of what to buy. Many food producers and retailers know from experience that consumers do consider parameters like convenience, health, environmental friendliness, safety, nutritive value etc. before buying, but these alone do not determine the intention. Along with conscious reflection, intention also has a subconscious side, reflecting cultural relation, social status, upbringing and other factors of importance for the formation of norms.

In the idealized model of market economy, consumers are equipped with a free choice, ensuring that production and supply correspond with consumer intention. As has been pointed out by, e.g., Hans Rask Jensen (1984, p. 31), this is a qualified truth. Apart from being a result of needs, he also points at the conditions under which consumption takes place and the influence of individual producers and the production system as a whole, as being important for supply and demand.

In the following, attention is directed to some of the more important barriers to the freedom of choice, which may account for discrepancies between intention and actual behaviour.

Living conditions restrict freedom of choice, both in a material (a matter of economic capability, accessible means of transportation etc.) and an immaterial way (a matter of available time, food-knowledge, etc.). The market also influences freedom of choice in two ways: Both as a matter of how the market is organized and which products are supplied by the market.

Economic capability plays an important role for the poorest consumers, although only a small minority are so affluent that they can disregard food prices. Most consumers must first of all satisfy their basic needs - a possible "surplus" may then be used to bring intention and choice into accordance. In this connection, it must be stressed that it is not only a matter of choice between different food items, but also a choice of whether to spend the "surplus" in other areas than food. To some consumers this choice could be between increasing food expenditures or investing in better housing conditions - to others it might be the choice between a summer cottage or extravagant daily meals.

Time is a resource of increasing importance as more time is spent away from home. The necessary time for purchasing, preparing and eating competes with other time consuming tasks. (Bonke, 1992). The limited time could affect food choice by increasing the degree of preparation of the purchased foods, or by choosing dishes that only require little time for preparation or consumption. In relation to available time, the economic situation of the family is also of importance⁷, since good financial circumstances allow investments in time saving

⁷The available time and affluence are pointed out as important parameters when explaining differences between the food consumption of 'mothers at work' and that of 'mothers at home' by Worsley (1991).

household appliances such as dishwashers, food-processors, microwave ovens etc. These appliances may again influence food choice - e.g., by forcing consumers to choose dishes or ingredients adequate for the kitchen machines.

When it comes to shopping, consumers may be squeezed between limited opening hours and their own working hours. The consequence may be that consumers are forced to concentrate their purchases in one supermarket instead of different shops, and are hence restricted by the, after all, limited supply in the supermarket. To some extent this problem is related to the **mobility** of the consumer. Whether shopping is done on foot, on bicycle, or by car, is important both with respect to optimizing time use and with respect to the number of shops within reach. The less mobile a consumer is, the more dependent he or she will be on the retailers located close to places of living and work. Other things being equal, village families' food choice will be influenced by the local grocer's - if it is the only remaining local shop. Another possible consequence of shortage of time is concentrating shopping on weekends - with the consequent choice of foods with prolonged shelf life.

Along with the increasing degree of preparation of many food products, food knowledge plays an increasingly important role. Knowledge about food and food production, either acquired by upbringing or through the educational system, is becoming important, as the distance from production to the consumer increases. Whereas earlier, most food manufacturing took place in home kitchens, the last 100 years have seen large parts of the preparation move out of the kitchens and into the food industry. Along with this transfer of food preparation from the kitchens to the food industry, still more links are added to the food chain. E. g., most fish is not bought fresh at the local fisherman or fishmonger's, but is a highly sophisticated product, often caught thousands of miles away from where it is consumed, transported (frozen) to a fish auction, sold and re-transported either to one of the few remaining fishmonger's, or to the fish industry. In the fish industry the fish is subject to further preparation: filleting, mincing, cutting, breading etc., eventually reaching the consumer through the supermarket, wrapped in plastic and packed in paperboard.

As this example shows, consumers who lack insight in production will be in a difficult position when estimating whether a product is in accordance with the desired quality. This judgement can be further complicated by the **transparency** of the product. If the appearance of the product hampers an evaluation of the quality, food knowledge is not much help. The transparency of the food will not only depend on the degree of preparation, but also on wrapping and presentation of the food items.

Marketing of products claimed to be "*green*" or "*environmentally friendly*" is in many cases a good example of how lack of knowledge makes it difficult to identify the actual quality, and thus to act according to one's quality perception. Such environmental claims need for example not refer to more than one environmental parameter: Tomatoes labelled "*green*" may refer to a CFC-free container. The fact that the container is made of plastic and wrapped in foil, thus consuming oil resources, or the fact that the tomatoes are intensively grown with the use of oil for heating the greenhouse, pesticides, herbicides and artificial fertilizers to ensure a large outcome, seldom appear from the labelling.

A high degree of **self-sufficiency** will to some extent neutralize some of these boundaries, but will on the other hand imply access to the necessary land and time.

As these different factors influence the freedom of choice and consequently the relation between intention and choice, they also reduce the validity of the information flow from the market to the food sector. The more intention deviates from actual choice, the less valid will information about consumer wishes inferred from the market be. Roughly speaking the market can pass on information about how consumers act under given circumstances, not what they would like to consume - i.e., their intentions.

Consumer perceptions and choice in a historical perspective

So far this paper has presented a static view on food quality, but as many authors note, there certainly is a historical dimension - see e.g. Koch and Kryger (1984), or Fjellström (1990). Intentions and choice change over time, and can be observed both as changes in which topics the individual consumer regards as important, and as social movements in larger groups of consumers. These fluctuations can be observed both between different historical periods, as Fjellström (1990) describes in her studies of a Swedish sawmill society over the last 100 years, and within the lifetime of a consumer, as dealt with by Gerber (1989), when he discusses new trends following the increasing number of older people.

Changes in **intentions** can be radical like addition or exclusion of quality dimensions, but they can also be minor fluctuations in how important different dimensions are considered to be. Environmental safety is an example of a dimension that has been added to the list of many consumers' quality perceptions - although they do not always seem to act accordingly. A high level of energy in food products is an example of a dimension that is falling out in the Western world, as getting enough energy no longer is a dominant problem.

On the one hand fluctuations in intentions reflect the current debate, advertisements from the food sector, and information from the public authorities, on the other hand intentions also depend on changes in the situation of individuals or families. Having children, growing older, changes in living conditions, trips abroad, visits to ethnic restaurants etc. are examples of factors that almost inevitably affect our intentions. Finally it should be mentioned that intention is also related to the technological development as consumers are forced to assess the flow of new products.

Food choice and eating habits are closely related to intention, because intention guides the consumer's attempt to optimize his or her behaviour. Consequently, changes in consumer habits result partly from changing intentions and therefore factors affecting intentions, **and** from factors influencing conversion of intention to behaviour. Changes in intentions have been discussed above, the following will give a few examples of factors influencing the conversion of intention into behaviour.

Societal changes may affect the situation of consumers in many ways, and thereby result in changing habits, as shown in Fjellström's studies of Swedish sawmill workers' eating habits from the start of industrialization till now (Fjellström, 1990). One example of such changes is the development of the infrastructure, enabling consumers from the once rather isolated sawmill community to travel to other larger towns to buy goods they had only heard of before.

Just as better means of transportation gave easy access to new goods in other towns, they also had an impact on the transportation of commodities to the local retailers - resulting in a richer supply in the sawmill community. This, along with increased wealth among the locals, contributed to a development towards both a larger number of local shops and a larger number of goods provided. This development culminated in the middle of this century, after which the number of food shops over the following decennia fell from 5-6 food retailers in the forties to only one (diminishing) food retailer today. This is mainly due to the increasing percentage of families with cars. All in all these changes result in an increasing number of food products available within reach of the local consumers, thereby influencing their habits.

Development of new technologies in the food sector may result in new products or changes in access to existing products, thus influencing habits. New products may both be "*real*" novelties, and new versions of known products. Real novelties are expected to be a result of the biotechnological development in the food sector (Jelsøe, Jespersen, Lassen & Rank, 1990) - although, at present, there are only a few examples. One example is the mycoprotein Quorn which was developed as a meat-substitute (Edelman, 1988). An example of a new version of a known product - also from food biotechnology - is bread produced with genetically modified yeast. This type of bread could be marketed legally in Britain after the official approval of modified yeast in 1990 (Aldhous, 1990).

Even though many examples of new products will be based on developments within the food industry, developments in other parts of the food sector will also bring about marketing of new products, and thus indirectly lead to changing habits. Such changes can take place in all parts of the food chain, from introduction of new seeds or improved methods of farming in the primary sector to improved cooling conditions in the retail sector. Apart from changing the supply, cheaper products are also likely results of these technological developments and - other things being equal - a subsequent change in food choices.

Approaches to consumer quality perception studies

As indicated earlier, consumers do not constitute a homogeneous group - they vary in age, sex, income, family size, cultural inheritance, social status, education etc. Thus consumer habits, as well as quality perception and intention, vary, not only over time but also within the consumer group as a whole, at a given time.

For the food sector this inhomogeneity of consumers constitutes a problem when trying to conduct research and development in accordance with consumer perceptions. The sector's problem is hence how consumer quality perception can be boiled down to operational instruments for production planning purposes.

Traditional research into living conditions based on differences in income, education, age, profession etc. is not a sufficient instrument to uncover differences in quality perception, since it does not reveal the fact that consumers living under similar conditions very well may have different perceptions of quality and thus behaviour - as stated earlier.

As an alternative, studies of consumer life-style have frequently been used to direct production and for marketing to adequate groups of consumers. Lifestyle studies, however, do not sufficiently account for how consumer priorities are influenced by the organization of everyday life.

For consumers, inhomogeneity is not a problem in itself. On the other hand, the problems it gives rise to in relation to the food sector do influence consumers. To the extent that the food sector's analytical instruments cannot determine consumer quality perception, inhomogeneity strikes back on consumers in the form of product development out of pace with consumer quality perception⁸. The grouping of consumers also poses a risk, if research and development in the food sector is concentrated on developing products for certain groups. As it is much more attractive to develop products for large and prosperous groups, minor or poorer groups may be neglected in the planning of research and development in the food sector.

These considerations should not lead to the conclusion that more homogeneity amongst consumers is desirable from a consumer viewpoint. It should rather lead to the conclusion that information especially about the weak groups of consumers should be strengthened.

Attempts to group consumers according to their quality perceptions could be based on so-called "mode-of-life" studies, as suggested by Land (1993). In mode-of-life studies, working life is assumed to structure spare time activities, eating habits, and other everyday routines. Detailed knowledge about how life is lived makes it possible to establish an understanding of consumer priorities. Three dominant modes-of-life are suggested by Højrup (1983): The *wage earner*, the *independent* and the *career-oriented*. These can be subdivided further into smaller groups. Mode-of-life studies, as they are conducted today, would, however, in most cases need further development before they could be adopted as a means for guiding research and development. This is especially due to the extensive resource requirements of mode of life studies as they appear today.

The consumer and the food sector

One aspect of the food sector's attempt to match supply to consumer requirements is seen at the retailers, where advertisements or whole shop concepts are built around a well-defined consumer segment. Another aspect is efforts with the purpose of guiding the production chain according to consumer intentions. As should be apparent from the previous, these attempts may be misled due to the problems in translating intention into action. But also relations within the production chain itself limit the degree to which production can be guided by consumer intentions.

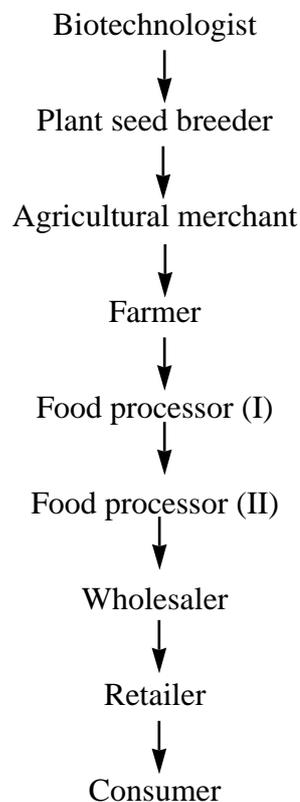
⁸Here it should be born in mind that consumer quality perception is not the only guide for planning research and development in the food sector.

Just as the individual links in the food chain aim at heeding wishes of the final consumer (with the mentioned difficulties), they also depend on their own “production environment”, and requirements from following links. This dependency poses at least three problems:

- *There is no direct communication of consumer priorities from consumers to the links where R&D takes place.
- * The quality concept in the food sector depends on other factors than just consumer priorities.
- *R&D in the food sector is, to a large extent, determined by the necessity to produce at still lower costs.

Communication of consumer priorities usually takes place through the retailers - apart from situations where (sub-)producers collect information in other ways, e.g. directly from the consumers, through the media, etc. Consumer priorities may thus have to pass through many links before they reach the first links in the chain, possibly resulting in a deformation of the priorities communicated. The tendency towards a growing number of links between primary producers and final consumers increases the risk of communication failures. This type of problem can be illustrated by the participants in the development and production of a new plant based on the new biotechnologies (see figure 4).

Figure 4. Participating links in the production of a food product based on plants.



The matter is further complicated by the fact that food products are often results of a web of many food chains, rather than a single chain. A chain like the one illustrated in figure 4 could include the chains producing artificial fertilizer, agricultural machinery, subsidiary materials used in the processing industry etc. All such chains are of importance for the final product quality, and therefore targets for communicating consumer preferences.

The problem of communicating consumer preferences through long chains is to some extent relieved by the construction of companies covering several links in the food chain. An example is the Danish sugar industry, where the breeding of sugar beets, refinement of sugar, development and production of technology for the sugar processing industry is gathered in the same group of companies. On the one hand this should ease communication, but on the other hand such constructions also imply problems due to the massive size of the companies.

The second problem concerning the participants in the food chain is that their production environment is not necessarily one where quality concepts are similar to those communicated from consumers. A major concern here is the suitability of raw materials and products for further processing - the so-called "*technological quality*"⁹. The organisation of the production, the technology selected etc. thus imply requirements regarding the quality of necessary raw materials, with implications for the final quality.

This dimension of the quality concept leads to research and development based on the production processes in a certain link, and influenced by the demands from the following links. One such demand can be homogenous quality on a well defined level for products delivered by sub-producers. Or, as it is seen in several branches of the food sector, that a producer has to have a certification in the ISO-9000 series before being accepted as a sub-supplier. In this connection it must be stressed that an ISO-9000 certification guarantees a quality standard chosen by the actual producers. It does not necessarily assure agreement with consumer quality perceptions.

Preliminary studies¹⁰ in the fish sector have shown examples of the importance of controlling the supply of raw materials, and ways of doing so. In the fish industry, the quality of raw material is important as it - to a large extent - determines the kind of final products that can be produced. This leads to attempts to control supplies of raw materials by, e.g., close contact to fishing vessels, thereby avoiding the traditional supply channels through auctions.

The development in the shrimp industry illustrates that technological quality can be in opposition to a commonly recognised consumer quality aspect such as freshness. The technological development in the shrimp peeling industry has resulted in increasingly automated processes - in contrast to the former processes, mainly based on hand peeling. Introducing almost automatic peeleries has, however, had the consequence that shrimp can not be processed fresh, as fresh shrimp are crumbled by the machinery. Therefore fresh shrimp have to be stored a few days prior to production.

⁹This quality concern is, e.g., presented by Hartmut Vogtmann (1985).

¹⁰These studies are undertaken as part of the present research project Heidrun - MAPP project 11.

The third aspect where conditions in the food sector can lead to R&D in opposition to consumer quality perceptions, refers to economic considerations. Research and development with the purpose of reducing production costs will almost inevitably affect quality.

To return to the shrimp peeleries, one of the reasons for introducing fully automatic lines was to reduce the labour force - and consequently to lower wage expenses. Consequences were reduced product freshness, as shown above, and altered organoleptic quality due to extraction of gustatory stimulants to the water, used for transporting shrimp through the automatic production line.

The rise of biotechnology as a new means to reduce production costs in the food sector (both used directly as a means of cost reduction and indirectly as a means to overcome supply problems of raw materials or new helping agents) also carries a whole range of possible consequences for product quality. The heated discussion following attempts to use genetic engineering in primary production or in the food industry illustrates this¹¹.

On the other hand, reduced production costs will (in most cases) result in reduced prices and thus - other things being equal - greater freedom of choice for consumers and/or reduced expenses. Although food prices, as illustrated in this paper, are extremely important when the consumer acts on the market, they are not normally considered a part of food quality. From a consumer point of view they should rather be seen as something to measure quality against.

Conclusion

One of the aims of this paper was to clarify the use of the term food quality in relation to consumers. This was done by contrasting the conditions under which consumers relate to food quality to the conditions in the food sector. This comparison showed that consumers have a complex relation to food quality - summarized in the use of the term "quality perception", referring to their understanding of food quality. Unlike consumers, actors in the food sector are likely to have larger resources and will approach food quality in a less complex context - thereby being able to establish a more comprehensive understanding of food quality - summarized in the term "*quality concept*". This emphasizes the importance of considering the actual user and the circumstances whenever reference is made to "*food quality*".

The other aim of this paper was to cast light upon barriers obstructing the flow of information on perception of food quality from consumers to the food sector via the market. On the one hand barriers were identified in the situation of the consumer. Such barriers are related to affluence, available means of transportation, knowledge, available time etc. On the other hand, barriers were identified in relation to the product and the market - such barriers are associated with the transparency of the product, the geographical distribution of retailers, the food supplied by various retailers etc. These barriers will not only differ within different groups of

¹¹ Consequences of new biotechnologies for the consumer are further discussed by Jelsøe, Jespersen, Lassen and Rank (1990).

consumers at a given time, they also vary through the life span of the individual consumer as well as in a historical perspective.

The consequence of these barriers is that consumers do not necessarily act according to their intentions, resulting in a reduction of the validity of the information from market to the food sector. This leads to the conclusion that the market can pass on information about how consumers act under given circumstances, not what their intentions are.

In addition to this, conditions in the food sector also limit the degree to which the communicated information is adopted in the actual processes. This is due to at least three circumstances: The first is that consumer perception has to pass through different links in the food chain before reaching the relevant link. The second limitation is that sub-producer quality concepts depend on other factors than consumer preferences. The third limitation is that to a large extent the object of research and development in the food sector is to obtain increased profits - and not only to satisfy consumer perception of food quality.

A consequence of the restrictions in information and adoption of information is that consumer influence on research and development in the food sector via the market is limited. This concerns especially influence from minority groups or consumers with diminishing resources, as circumstance will either force them not to act according to their intentions or to send signals too weak to be caught by the food sector (e.g., by not representing a large and profitable market). Large groups, and groups of consumers with large resources, are more likely to have an influence on research and development via the market - although their signals will also be restrained.

With these limitations, the market can serve as a guide for the withdrawal of food products from the market. When it comes to guiding research and development of new products, the market is less useful. This is due to the fact that the market only passes information about existing products on to the food sector.

The market can, however, also be used as a guide when testing prototypes of new products. If the products only represent a minor research effort, such trial and error introductions of new products are an opportunity for the consumers to exert their influence.

The situation is different when new products represent major investments in research and development. In such cases the incentive to market and keep the product on the market are large, since investments are often extensive. Consequently, the food sector is likely to invest massive amounts in advertisements and marketing campaigns attempting to overrule a possible consumer rejection. It is therefore necessary to see the consumer influence exerted via the market in light of the power with which the food sector meets it. In these situations, consumer influence in the early stages of the product/technology development could help avoid conflict situations that might occur when the product is marketed - for the benefit of both consumers and the food sector.

Today, such influence is often obtained indirectly through the participation of consumer organisations or individuals in the public debate, giving input to the food sector as well as the authorities. Influence can, however, also be exerted more directly either through attempts to start a dialogue with the food sector or when consumer organisations are directly involved in the processes proceeding legislation of importance for the new product/technology.

These problems underline the need for the development of practical methods to adopt consumer preferences in the early stages of the development of new processes or products.

The use of new biotechnologies, and especially gene technologies, in the food sector are examples of such extensive investments in research and development of new products. Consumer influence on the adoption of these new technologies will depend on other means of influence, such as participation in (starting a) public debate in the early stages or influence on legislation through consumer organisations etc.

References¹²

- Adams, R. (1990). Green consumerism and the food industry: Early signs of big changes to come. *British Food Journal*, 92(9), 11-14.
- Aldhous, P. (1990). Modified yeast fine for food. *Nature*, 344, 186.
- Andersen, P. E. (1981). *Introduktion til levnedsmidlers kvalitet* <Introduction to food quality>. Lyngby: Polyteknisk Forlag.
- Bonke, J. (1992). *Choice of Foods - allocation of time and money, household production and market services*, MAPP working paper no. 3, Aarhus, Denmark: The Aarhus School of Business.
- Edelman, J. (1988). The development of a novel food. *Journal of Chemistry, Technology and Biotechnology*, 43, 35-39.
- Elkington, J. & Hailes, J. (1988). *The green consumer guide: From shampoo to champagne: How to buy goods that don't cost the earth*, London.
- Elkington, J. & Hailes, J. (1989). *Green consumer's supermarket shopping guide: Shelf by shelf recommendations for products which don't cost the earth*, London.
- Elkington, J. & Knight, P. (1991). *The green business guide*, London.
- Fjellström, C. (1990). *Drömen om det goda livet - Livskvalitet och matvanor i et upväxande industrismhälle* <The dream of the good life - quality of life and eating habits in a growing industrial society>. Acta Ethnologica Umensia, vol.1, Uppsala: Almqvist & Wiksell.
- Forbrugerrådet (1978-1981). *Tænk*, København.
- Gerber, J. (1989). How the aging explosion will create new food trends. *Food Technology*, April, 134-135, 150.
- Grønmo, S., Ölander, F. & Danielsen, A. (1991). *Konsumentinflytande i samhället* <Consumer influence in the society>. Nord 1991:13, Valby.
- Højrup, T. (1983). *Det glemte folk* <The forgotten people>. København: Institut for Europæisk Folkelivsforskning/Statens Byggeforskningsinstitut.
- Jelsø, E., Jespersen, P. H., Lassen, J. & Rank, J. (1990). *Bioteknologi i levnedsmiddelsektoren - Konsekvenser for ansatte og forbrugere* <Biotechnology in the food sector - consequences for employees and consumers>. Teknologinævnets rapporter 1990/5, København.

¹²Titles in <..> are translations of Danish or Swedish titles. These translations are not part of the actual titles.

- Jensen, H. R. (1984). *Forbrugerpolitik og organiseret forbrugerarbejde* <Consumer politics and organized consumer activities>. København: Akademisk Forlag.
- Koch, I. & Kryger, P. (1984). *Levnedsmiddelproduktion, levnedsmiddelkvalitet og ernæringspolitik* <Food production, food quality and nutritional policy>. Roskilde: Tek-Sam Forlaget.
- Land, B. (1993). *Mode of life theories in relation to consumer analysis*. MAPP Working paper. Aarhus, Denmark: Aarhus School of Business (forthcoming.)
- Meier-Ploeger, A. (1988). Welche Anforderungen stellen Verbraucher an die Qualität von Lebensmittel. In: A. Meier-Ploeger & H. Vogtmann (Eds.): *Lebensmittelqualität - ganzheitliche Methoden und Konzepte*. Alternative Konzepte 66, Karlsruhe: Verlag C. F. Müller, pp. 33-44.
- Murcutt, A. (1986). You are what you eat: Anthropological factors influencing food choice. In: C. Ritson et al. (Eds.) *The food consumer*. Chichester: John Wiley & Sons Ltd, pp.107-125.
- Rasmussen, E. L. (1984). *Levnedsmiddelkvalitet og levnedsmiddelpåvirkning* <Food quality and influences on quality>. Research Rapport no. 26/84, Lyngby: IMSOR/DTH.
- Trenkel, K. (1983). Lebensmittelqualität und Verbraucherschutz. *AID Verbraucherdienst*, (28), 211-217.
- Vogtmann, H. (1988). Lebensmittelqualität - eine ganzheitliches Prinzip. In: A. Meier-Ploeger & H. Vogtmann (Eds): *Lebensmittelqualität - Ganzheitliche Methoden und Konzepte*. Alternative Konzepte 66. Karlsruhe: Verlag C.F. Müller, pp. 9-28.
- Vogtmann, H. (1985). *Qualität und Quantität - Ein Widerspruch in sich?* In: H. Vogtmann. (Ed.): *Ökologischer Landbau mit Zukunft*. Stuttgart, pp. 31-53.
- Witte, M. (1980). *Danske svin. Politiske svin - politiske plakater* <Danish pigs. Political pigs - political posters>. Århus: Husets Forlag.
- Worsley, A. (1991). Mothers work and food consumption: Going out to work changes mothers food diets? *Ecology of food and nutrition*. 25, 59-69.