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# Consumer-led food product development

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## 3

**How does culture affect choice of foods?**

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**3.1 Food and culture in historical perspective**

Although I cannot cite any quantitative evidence for or against the claim, I believe that culture is the single biggest determinant of food choice. That is, if one wanted to predict what foods an unknown adult person chose to eat, actually ate, or liked to eat, the single most informative feature of that person would be his or her culture. Age and gender do not account for much variance in food choice. More surprisingly, factoring out general cultural influences, the preferences of parents account for little variance in their adult children's food preferences (e.g. Rozin, 1991). Note that the low correlation between parents and their children in food preferences argues against a major role for either genetic differences or family-specific food experiences. Differences in beliefs and values, within culture (including attitude to overweight and to natural foods) surely explain some differences in food choice within culture. But these effects are small, in comparison to the culture-based differences between, say, rural Asian Indians, Mexicans, French and Americans.

Prior to the 20th century, there was very little cultural exchange with respect to foods. The major exception is the exchange of foods between the Western and Eastern Hemisphere consequent upon the 'discovery' of the Americas by Western European explorers (Crosby, 1972). Colonization and exploration in the 17th to 20th centuries produced some exchange of foods. Often, because of restricted amounts and high cost, only the upper classes in Europe experienced these new foods. However, the availability of cheap sugar imported from the Americas (Mintz, 1985) had a major effect on food consumption and choice in Western Europe. This made sugar available to all, and allowed for widespread use of sugar as an additive to foods like coffee that might otherwise be unpalatable.

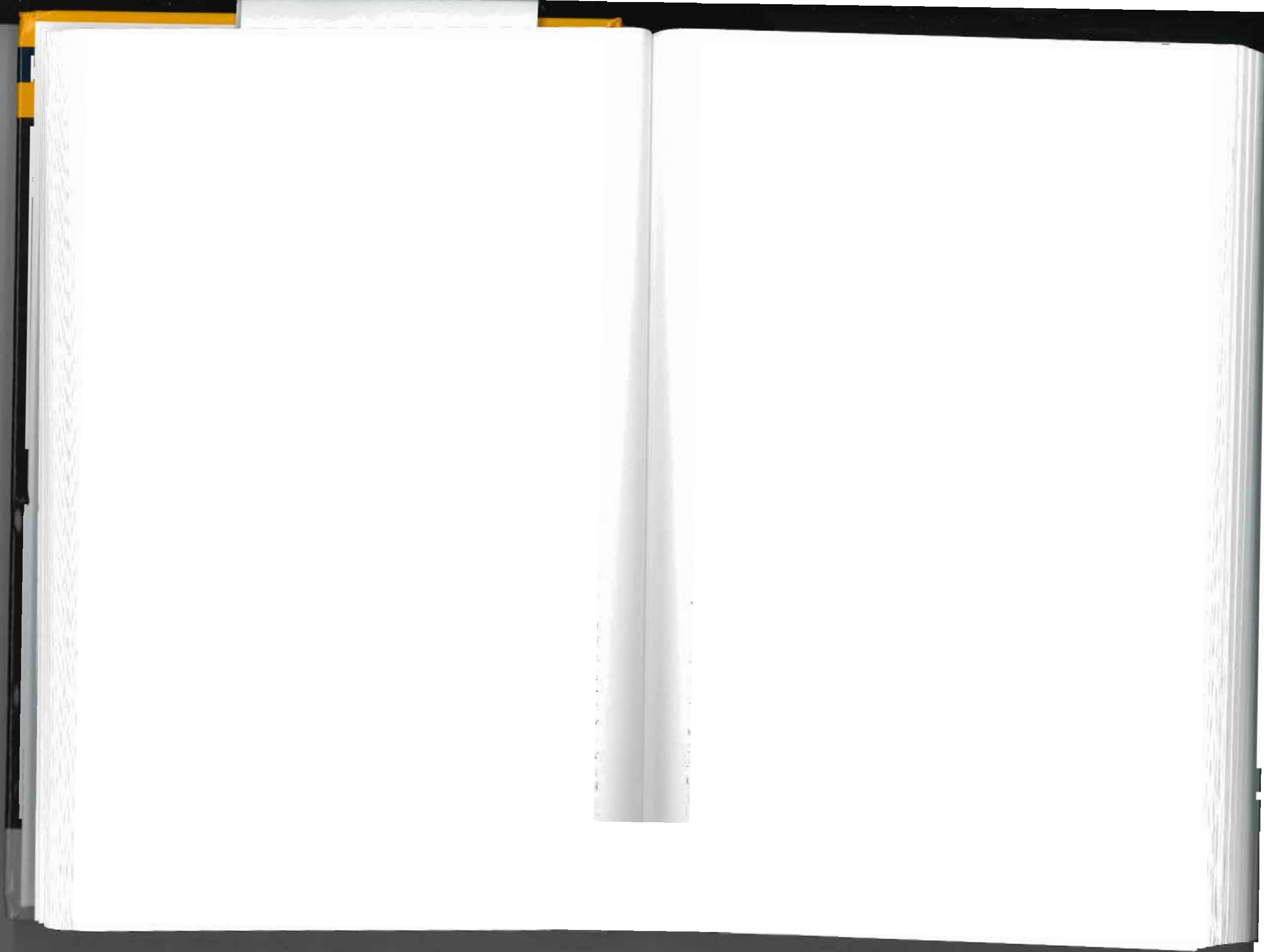
By the late 20th century, massive improvements in transportation, refrigeration, and travel had led to the availability of many new foods in supermarkets in much of the developed world. I believe that there is a greater variety of foods in my local supermarket, in the United States, than was available to anyone in the world even 50 years ago. Globalization has come to the world of food very rapidly, for the more affluent peoples of the world, and some aspects of globalization, such as cola beverages, have come to virtually everyone. Differences between what foods are sought or consumed in different parts of the world are decreasing. Almost everyone loves things that are sweet and creamy, and through technology humans are finding more and more effective ways to produce such foods, and do it cheaply.

There are a few fundamental issues that must be foregrounded before any serious discussion of food, culture, and the consumer.

The most important point is that almost all research on the psychology of food choice, and probably most of the consumer research in industry, has been carried out in the Western developed world. This means Western Europe, the United States and Canada, Australia, and New Zealand. The populations of all of these countries constitute less than 15% of the world's population. Either India or China alone have more living human beings than all of the Western developed world. The people on whom our knowledge is based are relatively wealthy, eat a rather varied and moderately high-protein diet, and have a lot of exposure to many of the cuisines of the world. They spend a small minority of their total income on food (no more than 12% for Americans in 1990; *Economist*, 1990) compared with around 50% in the less developed countries. Much of their food could be thought to fall in the luxury category, and they have abundant choices. For most of the people in the world, what is eaten is what has always been eaten; tradition rather than choice dominates the food world. However, with increasing wealth and globalization, the world is slowly becoming more like the Western developed world, so that what we learn about that world will be more and more applicable.

The second critical point is that food is much more than nutrition and pleasure. For almost everyone in the world, it has those two aspects or functions. But food is deeply related to social life. In the Western developed world, the evening meal is often the only family get-together of the day, and food is the focus of many celebrations. Dates are often scheduled at restaurants or cafes. Chocolate is often a gift showing affection. Much of the conflict in families with children has to do with eating habits of the children. There is perhaps a universal tendency to avoid and dislike the food of one's enemies. The recent anointment of 'freedom fries' in some parts of the United States as a protest against France, and their French fries, is one of many examples. Throughout the world, developed or developing, food is deeply intertwined with social life.

There is an important moral aspect to food, as well. Some of this may be mediated by the belief that 'You are what you eat.' We have shown that this belief is held, implicitly, even by educated people in the developed world (Nemeroff and Rozin, 1989), and is often explicitly believed in traditional



are uncertainty avoidance, power distance, individualism vs collectivism and masculinity vs femininity. Schwartz identifies 11 dimensions, which can be reduced, to some degree, to two, which he calls openness to change vs conservatism, and self-enhancement vs self-transcendence.

Much of the more recent research in psychology has focused on the contrast between individualistic and collectivist cultures (e.g. Markus and Kitayama, 1991; Triandis, 1995). In collectivist cultures, there is a stronger family influence, and a greater emphasis on conformity and social responsibilities. The individual is seen as interdependent with others, rather than dependent. Nisbett (2003) has described a major difference in pattern of thinking between Americans and East Asians. Perhaps the most important aspect of this difference, related to individualism vs collectivism, is an analytic attention to detail in the Western cultures, and a more holistic, integrative, context-sensitive outlook in the Eastern cultures. Those interested in consumers might find these differences in perspectives of interest.

In terms of food purchases, the organization of collective cultures implies that purchase decisions are more likely to be made on behalf of the family. The American tendency to cater to each family member's particular tastes is probably less prominent in more traditional and more collective cultures. In those cases, generally one eats what one has always eaten, and relishes it. One hundred flavors of ice cream are not so appealing in the traditional setting.

One major and important distinction between cultures has to do with attention and honor bestowed on people as a function of age. In the United States and many other Western-developed cultures, it is the middle-aged people who have the most power and respect. Children are adored but must know their place, and old people hopefully go away quietly, often in a home for the aged. In Japan and many other countries, by contrast, the small child rules; no punishment is meted out to him or her. And old people are respected and revered. The later years of life are not as reliably accompanied by decline in social importance, as in the United States. This pattern, in more traditional cultures, is reinforced by the fact that older people usually live in the same compound as their children and grandchildren, and play a significant role in the rearing of their grandchildren. Older people probably have more influence on food selection in more traditional cultures.

### 3.4 Culture and acquisition of food preferences

Put simply, we do not know how food preferences are created. Within culture, there is much variation in preference for particular dishes, and for particular basic foods. We do not know why. It does not seem to be due primarily to either genetic differences or family influences, since family resemblance in food preferences is low (Rozin, 1991). Common-sense, informal observation of the world suggest a number of mechanisms for preference creation, for each of which there is an important cultural influence.

The principal effect of culture on food choice is probably mediated by exposure. People generally choose foods they have experienced, and there is a generally positive relationship between exposure and liking (e.g. Zajonc, 1968). This holds for foods (e.g. Pliner, 1982). Culture is the principal determinant of what foods one is exposed to. In traditional settings, one is exposed only to locally produced foods, and those are a subset of all the potentially available foods in the local environment (e.g. excluding some plants, insects, and most vertebrates in most cultures). Exposure depends on availability and cost. When something is present, and affordable, there is the opportunity to develop a taste for it.

A second known mechanism for creation of preferences has to do with Pavlovian conditioning. There is no doubt that under certain conditions (and we do not know what those limits are), when a new flavor or food is contingently followed or accompanied by an already liked (or disliked) flavor, or by certain types of gastrointestinal and postabsorptive events (positive or negative), the liking for the new food can be changed. This is called evaluative conditioning (deHouwer *et al.*, 2001). This is probably how people get to like dark unsweetened coffee. They initially experience it with a distinct sweet taste, and the sweet taste pairing probably causes an increased liking for the coffee flavor, and perhaps even the bitterness. Cultures play an important role, because cultures program what foods will be eaten together. Thus, the jelly on a peanut butter and jelly sandwich may serve to increase the liking for both the peanut butter and bread.

Mere exposure and evaluative conditioning probably do not account for most food preferences. These can be attributed, rather vaguely, to social influence. We do know that evaluative conditioning can occur when the critical event (the unconditioned stimulus, in Pavlovian conditioning) is a positive or negative facial expression of a person who is consuming the food in question (Baeyens *et al.*, 1996). But much cultural influence probably manifests itself outside the conditioning paradigm. Desires to be adult, to be like admired people, and influences of this sort, operate in sometimes subtle ways to create likes or dislikes. And they also often fail to operate, as parents can testify. Birch *et al.* (1996) have ably reviewed much of this literature. One of the striking findings in this field is that explicit rewards for eating a food may increase the intake of the food, while the reinforcement is in force, but they do not create liking for the food.

### 3.5 Some examples of specific issues in product marketing and development in a cultural context

#### 3.5.1 Chocolate

Edible chocolate is a human creation, made from an unlikely source; a very bitter bean that does not have a particularly appealing texture. After much innovation and technological advance over hundreds of years of Western

history, chocolate has evolved into one of the most appealing foods on earth. It has a concentration of calories that ranks it very high among all foods; two highly appealing innate properties, sweetness and fattiness; an extremely attractive aroma, and the specially appealing property that it melts at body temperature, producing an oral sensation that is exquisite for most who sample it. From its Mexican origins, it arrived in Europe and became one of the most favored foods in the Western-developed world, and surely the most craved food in that part of the world.

Chocolate raises two fascinating cultural questions. There is no ready answer for either. First is the question of the geographical distribution of chocolate use. Although it grows only in tropical regions, it is widely consumed and adored almost entirely in temperate climates, particularly Western-developed countries. Why is chocolate not prized in South America, Africa, and Asia, the places where it grows? We do not know, but it is surely a temptation for chocolate manufacturers to spread it from the 15% of the world's population that loves it to the remaining 85%. And this could have the side result of increasing the pleasure of consumption for billions of people. Here are some possible reasons for the focus of chocolate consumption in Western developed countries, all pure speculation:

- It does not keep well at tropical temperatures, particularly since it melts at body temperature.
- It is just too expensive.
- The quality of the chocolate available for consumption in most tropical countries is poor.
- It does not fit into the relevant cuisines or cultural conceptions of what a food is. Chocolate may be seen in some cultures as a children's food. Also, chocolate reaches its pinnacle in desserts that are often not a highly developed part of traditional tropical cuisines, so it may not easily achieve its niche in the food cuisines of many cultures.

Given the success of cola beverages and many other Western products in the developing world, it is at least possible that the main problem may be simply exposure to good quality chocolate.

The second question has to do with the rather narrow distribution of this super food in terms of its culinary uses within the cultures that adore it. Chocolate is almost invariably consumed as part of a confection or sweet snack, or as a beverage (e.g. hot chocolate). It is rarely used on savory foods, and has not been a success as a flavoring for yogurt or soda, though it has scored immensely well as an ice cream flavor. Why, even in the parts of the world that love its flavor, texture, and aroma, is it used in such a narrow context? Why don't we put it on vegetables? (The same high popularity but narrow culinary distribution holds for the two other extremely popular xanthine food/beverages, tea and coffee.) Perhaps if we could answer this question, we would know more about how to make chocolate more acceptable in the developing world.

### 3.5.2 Dairy products

Dairy products constitute a major part of the food intake of people in the Western-developed world. They are a much more modest part of the diet of most of the rest of the world, and are virtually absent in the food of China, the most populous country in the world. It is true that the great majority of the people who are not in the Western-developed world are lactose intolerant, and so would experience gastrointestinal distress on consumption of moderate amounts of milk or other non-fermented dairy products. But this is not a sufficient account of the situation. Fermented milk products have low lactose levels and are usually well tolerated by lactose-intolerant people. The substantial intake of yogurt in India is one clear example of this. Surely the Chinese, among the most inventive people on earth in the domain of cuisine, could have figured out that fermented milk was easily digestible. They had extensive exposure to it by virtue of the long Mongol occupation of China, since the Mongols were major dairy consumers and consumed fermented milk products. A reasonably complete account of dairy rejection in China needs an important sociocultural component; lactose intolerance may be a contributing factor, but it is not the only one. One possibility is that hostility to the invading Mongols included hostility to their foods. This may have been enhanced by the fact that milk, as a body product, is potentially disgusting. And, on account of their odor, fermented products have a strong tendency to be disgusting. Yes, the Chinese consume and love some fermented products, such as 'thousand year old' eggs, and soy sauce. But even though most cultures love some fermented products, these same cultures are usually repelled by others. Many Americans and Europeans, for example, are fond of fermented grapes (wine) and milk (cheese and yogurt), but are deeply offended by decaying meat. For some in the world, some forms of decaying meat are much preferred to decaying dairy products. Therefore, part of the acceptance of dairy products has to do with traditions about what is food, what is not food, and what is disgusting.

### 3.5.3 Variety

One of the consequences of modern food technology and the free market is an enormous variety of potential foods. Much of this variation can be described as 'micro-variety': large families of very similar products, such as the 100 flavors of ice cream offered in some stores, or the wide variety of coffee, yogurt, or olive oil flavours and types. These must have some appeal to some consumers, because they flood the modern Western supermarket. It is very possible, based on recent research in psychology (Inyegar and Lepper, 2000; Schwartz, 2004), that under many situations, even Americans find a high micro-variety of choices somewhat aversive, and discouraging of consumption. In accord with this finding, the majority of specific products in a typical American supermarket sells fewer than one case a week (Kahn and McAllister, 1997). Most critically, it is clear that interest in micro-variety, and interest in new things, including food, is a cultural variable. Traditional cuisines highlight particular foods, and particular versions of those foods. Just as Americans are offended by chocolate

string beans, which seems to violate their culinary sensibility, micro-varieties, as an alternative to a culturally proto-typical food, may violate the culinary sensibilities of people in some cultures. Americans are, perhaps, at one extreme here, though ironically, the recent data on the limits of the appeal of variety and choice come from Americans. My local supermarket has 150 different types of yogurt and 100 different types of antacids.

Recent comparative studies of Europeans and Americans suggests a notably higher preference for micro-variety in Americans (Rozin *et al.*, 2006). One extreme of this is the American diner, with literally hundreds of food choices. If one orders steak, one has the choice of any of a set of vegetables as one side order, and then French fries, home fried, baked or mashed potatoes. And then, the individual can season his or her food at the table with ketchup, mustard, hot sauce, salt, and pepper, at a minimum. The idea here seems to be that each individual has a unique preference function, and food should be individually tailored to it. The idea of individualized food may have some connection to the Protestant tradition that focuses on individualism. The more traditional idea is that there are best combinations, such as steak and French fries, in France, and that when one goes to at least a good restaurant, one wants the chef to offer just a few choices, and arrange them to his or her liking.

We know very little about attitudes to variety for most human beings, those in traditional, developing cultures. There is the classic opposition between the appeal of familiarity and potential boredom from lack of variety. Openness to new experiences has been identified as a major culture-difference variable (e.g. Schwartz, 1992), and it may have particular manifestations in the domain of food. In more collective cultures, a consensus about what is the best form of X may have much more influence than it does in more individualistic cultures.

#### 3.5.4 Natural and genetically modified foods

At least in the Western-developed world, 'natural' is an attribute that makes a food more appealing (and often more expensive!). Interestingly, naturalness for medicines is much less appealing (Rozin *et al.*, 2004). There is a fascinating conflict between love for the natural, and desire to be protected from it by technology, as when facing death or natural disasters. There have been few studies in this area, but there seems to be little basis for the common belief that natural foods are both healthier and better tasting (Ames *et al.*, 1987; Schutz and Lorenz, 1976). Even for educated Westerners, when the natural preference is analysed, it seems to be less reasoned or rational, and more a commitment to the superiority of nature, *per se* (Rozin *et al.*, 2004). We do not know if this is true for the less developed world, but from what we know about the hyper-rationality of Westerners, it seems likely that if they revert rather quickly to an 'ideational' justification for natural preference, this would be all the more common in people from more traditional cultures. What this means, of course, is that evidence for risks of consuming natural foods, or advantages of processed foods in some instances, will probably fall on deaf ears.

Although the preference for natural is very high in Americans, it is striking that opposition to genetically modified foods is notably higher in Europeans than in Americans (Gaskell *et al.*, 1999). We currently have no account of this difference, but it is clear, from experiences with mad cow disease as well as genetic engineering, that complex political factors, general attitudes to technology, and trust in institutions all play a role in attitudes to genetic engineering (Frewer and Salter, 2003; Siegrist, 1999).

In recent work, it has been noted that lay American conceptions of natural are at some variance with 'expert' conceptions. Thus, lay Americans rate a cocker spaniel as more natural than a genetically modified plant or animal with a single gene insertion (Rozin, 2005a). It appears that judgments of naturalness have more to do with process than content. For example, Americans rate natural water with some chemicals removed from it as more natural than that same water, after the removed chemicals have been replaced. The first and third exemplars are chemically identical, but because they have been directly altered by people twice, they are less natural than the water with just the removal, which has been altered only once (Rozin, 2006).

As genetically modified foods become more common, it will be very important to understand the basis for their rejection, especially as they become less expensive and, perhaps, more flavorful and shelf stable. It is likely that increasing acceptability of such foods may involve different strategies in different cultures.

### 3.6 Looking directly at a cultural comparison: the food world of French and Americans

Claude Fischler and I, over the past few years, have been engaged in studies comparing French and American attitudes to food and food-related behaviors. Our motivation for this was the observation that Americans had become very ambivalent to food, with the pleasures of eating tempered by worries about obesity, attractiveness, and health. This concern seemed to be counter-productive, as evidenced by the facts that it is very difficult to maintain weight loss and that Americans are getting heavier. Furthermore, even though the French eat a diet higher in fat, eat fewer foods modified to reduce fat and salt, and worry less about the food-health link, they are at least as healthy as Americans. Our findings suggest a range of differences between the cultures (e.g. Rozin *et al.*, 1999, 2003; reviewed in Rozin, 2005b).

- The French tend to think of food as something to eat and experience, while Americans tend to think of food as chemicals entering the body and affecting it.
- The French prize food as a great pleasure, in comparison to some other pleasures, such as having a large and very comfortable house or hotel room.
- While the French modify their diet to 'improve' health less than Americans, they actually think their diet is healthier than Americans think their American diet is.

- The French eat slightly less than Americans, and the outcome of this is that they are less overweight.
- One reason the French eat less is that their portion sizes are smaller.
- A second reason is that they are less inclined to snack between meals.
- It is probably true, though good evidence is still lacking, that the French get more exercise, primarily through walking and bicycling as part of their normal life, than do Americans.

For the French, as opposed to Americans, the theme of eating brings forth ideas of moderation, as opposed to the abundance theme for Americans (think of stuffing oneself at an American Thanksgiving dinner). The French opt more for quality than quantity in food, more for taste than for shelf-life. They savor food experiences more, and are less bothered by the physiological consequences of eating. And they may reject the American tendency to think of food and drugs as on a continuum (thus nutraceuticals), and rather think of them as very separate entities, sold in different stores. The result of all this is a special reverence for food in the French, and an enjoyment of it, in moderation, less conflicted by health concerns. What this means in terms of products and marketing, is presumably that health appeals might be more effective in the United States than in France.

Of course, nothing is that simple. The French are major consumers of beef, and yet there was a substantial drop in beef intake after the 'mad cow' disease scare, and they are more concerned about genetic engineering than Americans. Even these two very similar cultures have important subtle differences that we are just beginning to understand (see Stearns, 1997, for an extended discussion of the food and body worlds of French and Americans).

### 3.7 Understanding cultural dimensions in food choice for food product development

There are important food universals, such as the preference for sweet tastes and fatty textures. There are also important ecological facts that have a major influence on food consumption and choice; some products grow in only some areas of the Earth. There are some universal realities, such as the fact that one cannot eat something unless one has access to it, and can afford it. Availability is itself largely a cultural variable, and so is preference. We do not know how cultures establish food preferences in the process of development, and how, on a larger scale, particular foods or dishes or attitudes to food and eating become part of a culture. It is striking and puzzling that hot chili peppers spread throughout the tropical and semi-tropical Eastern Hemisphere from their origins in the Western Hemisphere, but that tomatoes, potatoes, and corn, also from the Western Hemisphere, and with more initially acceptable tastes and great nutritional value, were accepted as human food in fewer areas. It is probably true that the upper classes around the world, with their strong orientation to Western ways, are more susceptible to change and more accepting of new Western

technological advances in food processing. It is probably also true that some cultures are more receptive to novelty than others. One reason for this may be the importance of their own food traditions. France is dedicated to its cuisine. It is not even really clear what American cuisine is, and its breadth and multi-ethnicity might well promote a greater acceptance of new foods.

### 3.8 Future trends

There is no reason to think human proclivities to like fat and sweet, and to try to obtain food with as little effort as possible (part of our biological heritage) will change. There is every reason to believe that the food industry will find ways to make foods more appealing in flavor and texture, and less expensive. An insight into what might be possible can be gained, with great pleasure, by a meal at El Bulli, the incredibly innovative and marvellous restaurant in Catalonia. In the long run, easy food that tastes great will take over, but it is largely cultural variables that may determine how quickly, and in what ways this happens. Globalization is here and growing, and superior products, defined in terms of certain dimensions such as textural distinctiveness and variety, and certain flavors, will prevail for most people. Globalization will guarantee that more people will have the opportunity to try more foods, as will increasing wealth. However, for the near term, it is likely that there will be resistance, more in some cultures than others. And there will probably be, in many cases, a tenacious continuance of traditional food ways. Perhaps the work by Goode *et al.* (1984) is generally illustrative of what will happen: Italian Americans accept many modern and many American foods, but Sunday dinner is still Italian, after three generations. Modernity and tradition can live side by side, and they probably always will.

### 3.9 Sources of further information and advice

There are a few recent compendia that treat food in a cultural context in some detail. Two are the *Cambridge World History of Food* (Kiple and Ornelas, eds, 2000) and the *Encyclopedia of Food* (Katz, 2004). Excellent books that treat food in a cultural context include Leon Kass's (1994) *The Hungry Soul*, Michael Pollan's (2006) *The Omnivore's Dilemma*, Jared Diamond's *Guns, Germs and Steel*, and Claude Fischler's (1990) *L'Homnivore*. Books that provide a useful background about human food choice and some of the cultural influence on it include Barker (1982), Booth (1994), Meiselman and MacFie (1996), and Shepherd and Raats (2006), and a useful and broad, culturally sensitive model of food choice is presented by Sobal *et al.* (2006). The growing subfield of cultural psychology has much to contribute to our understanding of how people interact with their worlds, and food in particular, in a cultural context. The new *Handbook of Cultural Psychology* (Rozin, 2007) provides a broad perspective

on this, with a particular chapter on the cultural psychology of food (Kitayama and Cohen, 2007). And then there is the magnificent array of ethnic cookbooks available in any substantial book store.

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## 4

### Psychobiological mechanisms in food choice

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#### 4.1 The importance of understanding psychobiological mechanisms in food choice

Humans evolved an appetite control system that was designed to protect the body from nutrient shortages and to allow us to exploit food supplies which were scarce. The modern-day consumer no longer faces the everyday pressure of searching out the rare resource of nutritional food which occupied humans during our evolutionary history. However, the modern consumer retains a highly complex appetite control system which is predisposed to allow us to identify and consume safe and nutritious foods. The environment consumers now live in is very different from that which shaped our appetite control systems, and this mismatch has been suggested as a contributory factor to the worldwide increase in incidence of obesity and disordered eating (Zimmet and Thomas, 2003). A key factor in modern food development must be a recognition that our ability to control intake can be compromised by factors such as disguised energy content. This chapter reviews our current understanding of food choice and preference from a psychobiological perspective, highlighting the relationship between food selection and preference and the appetite control system.

#### 4.2 Need-states and hedonic rewards in eating

Two key concepts need to be understood. The first is the concept of need-state. This phrase originated in physiological models of controls of eating and drinking, and reflected a general approach to the physiology of motivation which was based on analogies between the way the body may regulate its internal