Eating and knowledge, risk and danger in modern society

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RÉSUMÉ

Que peut-on réellement entendre par « savoir », en quoi consiste-t-il et, partant, quelles nouvelles attitudes développer ? A partir des recherches rapportées, on peut se demander si la limite pour les substances nocives se situe au-dessous du seuil de risque, lequel est franchi à la suite d'écarts alimentaires.

DEALING WITH RISKS

Human nutrition, or in more accurate terms: nutritional safety has come under dispute: nutrition today, is it safe, dangerous or risky? An old controversy between consumers and food experts is rising up again. Producers and scientists have launched the slogan: "Nutrition was never as safe as it is today". Consumer organizations, however, retort by using the term "poisoned food" in warning against food irradiation, gene technology and food scandals. The dispute about the implications of gene technology is even labeled a "religious war".

In this paper risk and danger in the field of nutrition are treated from a sociological point of view. Its aim is to look "beyond" scientifically established threshold values and the emotional arguments of citizens' initiative groups.

CONSUMERS AND EXPERTS

With regard to nutrition, we are accustomed to distinguish between "consumers" and "experts". Every human being is a consumer since we are forced by nature to supply ourselves with food in order to survive. In commonsense terminology one may conclude therefore that everybody is an "expert" in food consumption.

Yet not every consumer is an expert in the sense of being engaged and experienced in producing, manufacturing or marketing food. Those who are experts in this sense, for their part are also consumers by nature. Both experts and consumers, or their respective systems of beliefs and knowledge are intermingled and dependent on each other.

Consumers may be classified in two major groups:

a) easygoing, "uncritical consumers". They do not care for what they eat as long as they have enough to eat. Food scandals or nutritional recommendations do not bother them; their motto is according to "food is food".

b) "critical consumers" seeking health, life style and security. It is the group of "critical consumers" who try to influence the food market most. They comprise the subgroups of:

– health or wholesome (ecological, biological) food consumers;

– gourmet food consumers who make nutrition a part of life style;

– those who choose food due to political, ideological or religious beliefs, seeking "safety" or "security".

Typically speaking, they belong to the category of professionals, being doctors or teachers who argue with the public opinion through media. As for them, food is more than nourishment for survival. Food is part of their life style, of their ideological or health beliefs. Our paper mainly refers to this group of consumers.

In respect to nutrition experts, they are defined as those being involved in planning, processing, distribution, marketing or research in food or nutrition.

Both sides put such heavy strains upon the discussion on food safety today that we are tempted to doubt

– whether the opponents really speak of the same type of food, *i.e.* of identical or different stages of processing,

– whether critical consumers not only emphasize their risk perception but likewise act according to their perception,

– whether the opponents use the same type of proof for their respective opinions like quantitative or qualitative testing methods?

Our suspicion is raised and likewise our insight into the character of the dispute is dimmed by the fact that in the area of nutrition both individual and social factors are combined in an extraordinary way. That is why the topic of risk and danger in nutrition must be approached from two sides:

a) from the perspective of the individual actor —the notion of risk then is derived from and connected with experience, knowledge, attitude, and habit; or

b) from the perspective of a collectivity of actors —the notion of risk then is connected with terms like understanding, communication, control and power, life world and system world.

I. THE INDIVIDUAL PERSPECTIVE: DEVELOPMENT AND (UN)SAFETY

Nobody would deny that human life is constantly exposed to danger. Food that is taken from natural constitutes functions as basis for survival as well as source of nuisance and damage. Plants and animals control their food intake by means of genetic programming and practically speaking cannot commit errors.

Human "instinct controls" are only rudimentary and so we have to compensate for the deficit by help of experience. The notion of experience means a threefold human capacity: *a)* to make and store experience constructs from past situations, *b)* to combine them at will and *c)* to use these constructs as motives for future action. In total the store of experience constructs forms what we call culture or civilization.

Two revolutionary steps mark the history of human nutrition:

1. the mastering and use of fire, and

2. turning food products into food commodities through the food industry.

Ad. 1: The impact of heat upon food has enlarged the safety space considerably by putting away many imponderabilities of food intake ranging from indigestibility to the danger of poisoning. At the same time, however, human curiosity for new foodstuffs has also obviously increased and so has acceptance of nutritional risks.

Ad. 2: Similar conclusions can be drawn from the second revolutionary step: scientific knowledge and control of food processing have raised the degree of safety. Concurrently, the amount of additives and combinations thereof has been multiplied to a level that reduces the impression of safety considerably. In addition to that, the food market expects consumers to increase their demand and consequently more consumers will have to accept the chances of a wider range of products, means: a larger range of unsafety and nutritional risk.

People can make their food choices according to the criteria of availability and quality, *i.e.* taste and nutritiousness. While early man who lived in tropical zones had less concern with availability, but more with taste and nutritiousness, modern man finds food safety to be of existential importance for him. He can't help wondering to which degree of probability he can tolerate the food (that is to say: its ingredients) offered by modern (super)markets.

II. THE SOCIAL PERSPECTIVE

So far we adopted the individual perspective. We shall now turn to the social perspective and use for that purpose the approach of social action theory.

Only a human being that lives in splendid isolation would be able to select the aims and motives of his activities from purely individual interpretation of his environment. As a matter of fact, we all live in social groups and are forced to consider other humans' interpretations as well as our own ones. We solve the task by means of communication, *i.e.* to say: we try to "understand" the others and to make ourselves understood. We may interact in a nonverbal way, with the help of body language and gestures, if the situation is clear and the code well-known. But the many-foldedness of everyday life-world has compelled mankind to develop more differentiated "languages" of colors, images, phonemes and words. The use and exchange of signs and symbols is now the most important characteristic of social behavior aiming at mutual recognition, equality, tolerance and democracy.

POWER

One singular elementary fact has escaped this interpretation so far, *i.e.* the one we call "POWER". The approach to power is not easy, because this notion is among the most important and likewise most difficult topics of sociology, jointly with control, conflict, deviance and coercion.

We propose to start with the observation that human beings, although living in collective ways, all have personal interests, aims and motives of their own. If the divergence of such targets grows to make them oppositional targets, group action cannot come about until the members have reached a kind of agreement. In order to substantiate the necessary cooperation, animals, for their part, rely on genetic programs which human beings are lacking. They depend on their capacity to conceptualize an order of their divergent interests. They imagine a factor that should bring about the order they wish —and such a factor envisaged by members of a group is the root of what we call power.

Power, therefore, has a twofold meaning:

– on the one hand it is the epitome of the control function of a group, it is limited in space or time and deemed to be beneficial for the group (in PARSONS' words: for integration and latent pattern maintenance);

– on the other hand power is the basis for the chance to find people's obeyance for one's own will even when opposed by others —and as such it can lead to external domination over the group.

In order to understand what is considered a risk it is essential to assess the role of power in social life. Modern systems sociology maintains that the ordering function of power is all the more apparent the more complex societies are. Modern societ-

ies then have to acknowledge "more powerful" institutions. Other writers like DARWIN and NIETZSCHE found the origin of power in man's appetite to dominate his conviviants.

HABERMAS' "critical theory" is based on the assumption that group members work on their divergent interests by means of communication. Thus they establish so called rules and norms that gradually attain a systemic character and superpose themselves above the "chaotic" lifeworld. If this is true, those who administrate the rules and application thereof, *i.e.* the technicians, scientists, clerks and legislators finally achieve complete dependence of the everyday life world upon the system world.

AN ACTION-ORIENTED MODEL OF NUTRITIONAL BEHAVIOR

Everyday life-world is the arena where human activity unfolds. Nutritional behavior is a sub-case of the general phenomenon called human action, *i.e.* visible activity (at the exception of thinking, which is invisible), caused by a so-called "because" motive and aimed at an objective or target, the so called "in-order-to" motive (SCHÜTZ A.). This definition is the starting point for the following model to be proposed under the label MARS = Multiple Autonomous Regulation System.

The term (human) action should cautiously denote something different from any kind of activity that only was brought about (reflexive, automatic behavior). Action is always directed at an aim in that the actor anticipates the purpose or objective of his action before he acts. External inputs (I: stimuli, perceptions) launch the invisible process of motivation: by means of constantly comparing the actual situation with the personal experience constructs "at hand" (E), the amount of such experience constructs is permanently condensed and diminished so that a final determination (D) may occur and the respective action starts (S).

Action according to such a planning process will lead (or in a deviant case: will not lead) to a result (an output : O) and this result again will react in feed back loops on multiple levels upon the motivation process. This means "multifactorial" determination of human action.

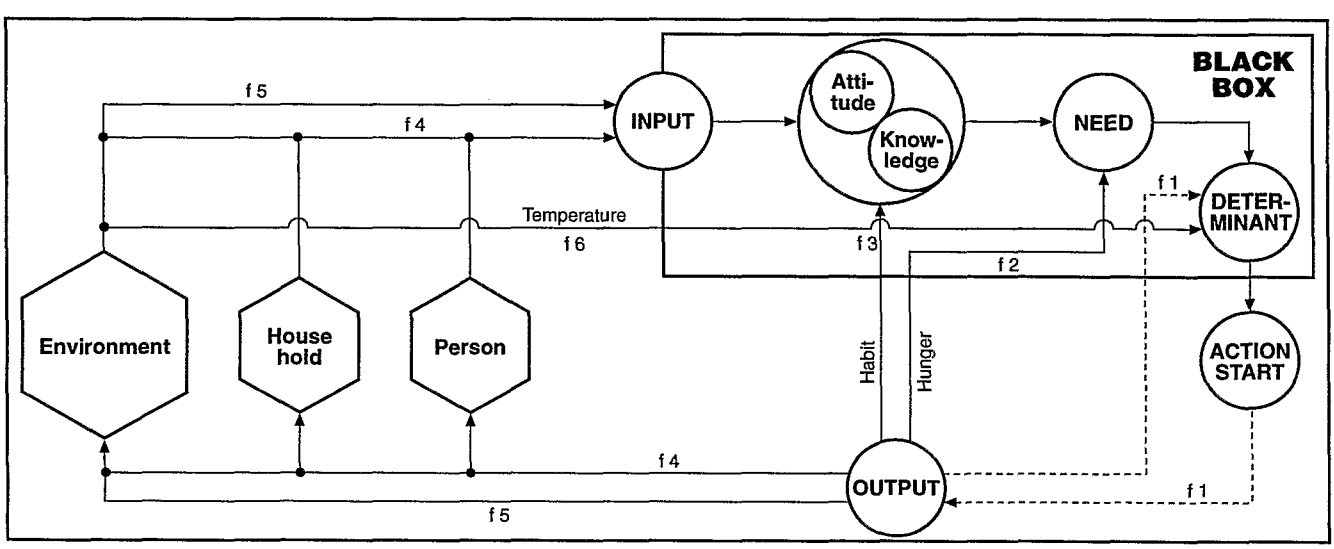
Personal experience shows and scientific literature confirms it, that elements of cognition methodically acquired from school, media, household or extension service and labeled "knowledge" are relevant for launching actions, it is true. A great number of activities, however, in particular nutritional ones, occur without being backed by knowledge or even against better judgement.

The same problem occurs with individual activities not conforming to rules that the actor explicitly accepted, *e.g.* so called "values" (think of undesirable treatment of environment). Most attempts to explain the "gap" between value orientation and action fall back on the term "habit". Habit, for its sake, is then to be found in the vicinity of a multitude of similar terms like tendency, trend, liking, aversion, attitude, disposition, stance etc. The MARS model has habit as a visible sequence of actions (H) bound and related to a special constellation of experience constructs called "attitudes" (A), that are fixed (prefabricated) formation of experience constructs directly adequate to live situations and being internalized in order to make frequently occurring sequences of daily behavior easier to handle.

RISKS AND DANGER

The MARS model supplies the necessary components for a better comprehension of nutritional risk behavior from the individual's perspective.

In order to make a motivational decision turn into factual action, a certain amount of energy is needed. This energy hypothetically may come either from a source outside or from a source inside the person. External energy that makes us move,



is called power, force, control. All these terms have (at least partly) "negative" loading. They exert an external influence upon us, *i.e.* they rule us by means of coercive resources as well as by means of signs and symbols.

Principally speaking from inside the individual are all those energies that are derived from the notions of benefit or gain, of value or pleasure, in short, from a "positively" loaden factor. Power, however, may also be internalized and labeled then: authority, duty, need or necessity (deficit: hunger, thirst; and: DANGER). Both yielding to or escaping from them can bring about human action.

The scope of the action intended determines how much energy will be needed. Many singular actions have their place in larger complex schemes of short and long term action sequences like training or life programs. They are constantly evaluated by means of bodily and spiritual assessment of a person's being satisfied or dissatisfied. Moreover, these processes of evaluation control whether long term aims collide with short term aims, whether one line of motivation is congruent with the alternative one or not. This is what under an individual perspective appears as RISK.

In the same sense, but in a sociological perspective, risks are a scheme which outweighs calculated benefits and expected damages.

Mathematical equation of risk management is:

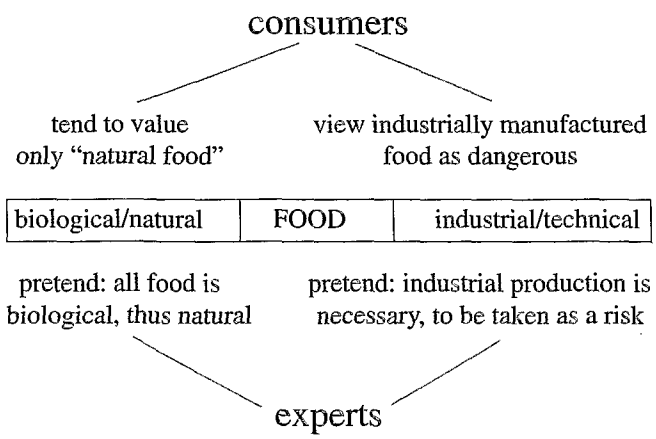
risk = probability of risk (event) x expected damage (in monetary equivalents)

LUHMANN emphasizes that risks are always associated with and dependent upon decision. Risks are taken through decision since the decision taker expects that benefits from his/her action will surmount the calculated probable damage. High risks are those with a high probability to occur; so if the negative outcome happens, the damage may be high, too. Vice versa low risks have a lower probability. However, high risks are usually associated with high possible gains such as when brokers buy and sell all their stocks.

Dangers on the other side are events that happen without decisions being made and no possible gains are expected. Dangers are seen like fate, most of the time nothing can be done to prevent them. Risk is not to be confounded with danger. Risk is a calculable factor, it appears when calculation starts. The occurrence of a danger is a matter of probability, too, but its menace is permanent. The probability component being similar is the reason why many view danger the same way as risks. He who knows about a danger can make moves to escape from it or to go even closer or deeper into the impact area of the menace. But only then it is what we call taking (or: avoiding) a risk.

Such a decision may be taken individually e.g. in nutrition: fasting or gluttony, refuse or intake of drugs and the like. The situation is quite different if collective action is based on a decision of those who are in power, if the group passes such a decision on their members and finally imposes it upon them. Risk definition then attains the status of a "social fact" (DURKHEIM E.).

This is the background against which the German sociologist BECK U. launched his sociological neologism of "risk society". He maintains that modern societies are confronted with what he calls "new risks". They are different from *a)* "traditional risks" that are defined as those well-balanced decisions that merchants, explorers, doctors or entrepreneurs took in historical times, and they are also different from *b)* the "risks of industrial welfare states" with which we are familiar since the advent of industrial mass production. The latter brought about a generalized system of insurance which is guaranteed and controlled by public institutions. This system was (and still is) based on scientific risk assessment, but as compared with the earlier past, it has abandoned two defining elements: *a)* it puts responsibility for damage not on those who caused it but on the community of the



insured ones, and *b)* it abandons risk awareness as an element of group life that compels members to take risk voluntarily. *c)* The "new risks" are those arising from nuclear radiation, from the ozonic hole and from pollution with harmful substances that cause forests to die and species to disappear. They bear novel aspects as compared to the former types of risk insofar as (BECK 29):

- they are effective all over the globe,
- they are caused by accepted "modern" ways of life,
- they exist as scarcely structured products,
- they continue to be developed and strengthened in a systematic way.

NUTRITIONAL RISKS

All these traits are to be found in the area that is covered by the term "nutritional risk" in its present form. The individual has only very limited chances to perceive the traits mentioned, he/she depends on the experts' knowledge for to judge on

possible implications of consumption. Thus strictly speaking, there are really not nutritional risks at stake but nutritional dangers as were defined above: diffuse perception of possible menaces which the consumer might only avoid by rigid abstention from consumption.

These observations finally lead us to the sociological perspective of nutritional danger and risk. It is necessary to understand that consumers and experts have different concepts of nutrition.

For "consumers" food has to be "natural and biological". "Consumers" feel endangered by food which is industrially produced thus not natural. Human senses such as taste, smell, optical criteria or texture do not allow to differ "industrial food" from "biological food". Thus "consumers" feel that their free choices are devalued. "Consumers" feel endangered by industrially produced food. High technologies such as food irradiation, use of pesticides, toxic agents or genetically manufactured food can not be recognized as such by human senses. Natural and biological food offer "consumers" the choice they want to have: To eat wholesome, gourmet and save food.

To "consumers" food an nutrition are a matter of trust since they can neither know nor taste whether food was "technically" or "biologically" produced.

For experts everything is "natural", that means produced from raw material taken from nature. Therefore processed food is natural. "Industrial food" as such is transformed natural and biological material. Food is not dangerous, production technologies bear risks which can be calculated (and thus be reduced) according to scientific models and knowledge.

To "consumers" industrially produced food is dangerous leaving no options for them to decide on whether to take the risk to eat or not, because they do not know whether it is "industrial food" or not. It is the natural food only, "biological" food which offers "consumers" alternatives.

If "consumers" and "experts" talk about "natural food" they refer to different value systems which are not consistent. "Consumers" and "experts" argue on different levels. They have different belief and attitude systems which seem to be irreconcilable at first sight. To understand such a confrontation we have to dig for common attitudes and beliefs on nutrition. The following attitudes are generally accepted by "consumers" and "experts" alike:

1. Our present basic understanding ground on the concept of modern, western, democratic, industrialized societies.

2. Industrial societies focus on competition and marketing strategies. Both competition and marketing strategies are valued as motor of progress and future. Progress promotes further food product variety.

3. New food products are developed permanently and have to claim stake on the food market.

"Consumers" are overwhelmed by such a multiplicity of new products which are offered to buy. This leads to feelings of insecurity (of what to buy) and anxiety (what is in the product, which technologies were implied).

"Experts" and "consumers" have also different concepts of what they perceive as dangers ("consumers") or risks ("experts") of nutrition.[1]

Ranks of nutritional risks or dangers differ between "consumers" and "experts".

Fig. 2
Ranking of nutritional risks and dangers "consumers" versus "experts"

rank	"consumers" (perceive anxiety and danger)	"experts" (perceive risks, scientific model, knoweldge)
1	pollutant and toxic agent	malnutrition
2	impurity through technical procedure	natural toxic agent
3	natural toxic agent	impurity
4	malnutrition	pollutant and toxic agent

Clearly "consumers" view factors that can not be sensed such as pollutant and toxic agents to be prior to other risks or dangers but on the other hand "experts" give to those the lowest rank. What is most dangerous to "consumers" is the least risky to "experts".

How can this be explained? Why do "consumers" and "experts" differ in their risk and danger assessments?

Let us first rest on "consumers" assessments.

Feelings of dangers and insecurity among "consumers" are reinforced by two means:

– through food scandals such as hormones in meat, BSE, salmonella in eggs, etc.;

– through media and news.

In the media there are often reports on new dangers of food. Headlines like "cancer in beer", "toxicity in milk", "nematodes in fish" alarm "consumers". TV, radio and newspapers are public opinion leaders on what is generally perceived to be wholesome or dangerous.

"Experts" opinions and statements are often contradictory or difficult to understand and do not alleviate "consumers" insecurities.

Anxiety or mistrust may also result from new or unknown food products. Marketing and advertising strategies try to diminish them. However, it is easily overlooked that anxieties are not overcome by cognitive strategies (such as educational work) alone.

"Consumers" demand full declaration of all food ingredients. According to German food law the contents of food have to be listed. However, there is no law that obliges producers to label the way how the food was produced.

E-numbers abbreviate food contents in accordance to the food law. E-numbers are alarming to "consumers" who often do not know how to decipher them. E-numbers are often associated with poison such as E-605.

"Consumers" are also irritated about controversial statements of "experts". They do not have the knowledge whom to trust or mistrust. "Consumers" are thus easily trapped by persuaders who claim to be "experts".

"Experts" assessments of food risks

Malnutrition is rather common in Germany. According to the last report of the German Nutrition Association[2] we eat too much, too much fat, too much sodium, too much alcoholic beverages, too much sugar.

Results are diseases such as coronary heart diseases, high blood pressure, obesity, cancer, diabetes and many more. This sums up to costs due to malnutrition of more than 103 billion DM yearly. For the individual malnutrition often results in suffering, loss of vitality and premature death.

On epidemiological level "experts" argue to calculate costs (103 billion DM)[3] versus benefits (longer, healthier life) in favor of better, healthy nutrition.

Since "progress" is the motor of industrial societies, there is a tendency to diversify the food products. However this diversity is not a real variety but pretended. Bright colors, new outlook, different shape and taste promise (faked) diversity.

Food which looks good is assumed to taste good and thus to be healthy. We all know of the disappointment when shiny, bright, red, spotless and promising tomatoes are tasteless, dull and boring. Nutritionists already warn of occurring malnutrition due to loss of real variety in the supermarket. Optical variety does not mean optimal nutritionally balanced variety. Food has never been as safe as today. Most natural toxic as well as pollutant agents are known, hygienic and technical standards of food processing are high. Due to such knowledge, precaution and know how risks are low and if any calculated.

However, from scientific point of view risks can never be totally excluded.

It was mentioned above that food intake *per se* carries dangers for health and well-being. In order to deal with dangers, three strategic ways are open to man:
- your bodily personal experience;
- communication of compiled knowledge to others in formal (school) or informal (family) situations;
- the habit of sharing food and meals.

Nobody can altogether avoid food intake, it is true, but you can, if you wish, make a choice and refrain from certain foodstuffs. He who cannot make a (food) choice, exposes himself to DANGER; he who can and does choose, is accepting a RISK. As long as undoubtable knowledge about food safety is not guaranteed, food intake is dangerous and personal experience to be made with extreme caution. A certain degree of probability of disadvantages has to be accepted then.

Early man made his choices from the offers of nature, we do select from the offers in the supermarket. We accept possibilities of nuisance or damage, *e.g.* from intake of harmful substances while at the same time we assess and value the positive aspects like a certain taste or tradition. Thus we turn dangers into risks.

A danger rather unknown to members of industrial societies in the Northern Hemisphere but all the more acute in the Southern Hemisphere, is starving (to death). We only need to put the two parts together and we are able to conclude that the danger of starving today has been turned into a risk. It is not blind fate but human decision like over-exploitation of natural resources and armed conflicts that are responsible for hunger.

If we turn to the classification of risks again, we find all the three types mentioned in the field of nutrition.

a) Traditional risks

Traditional manners and traditional risks are strongly interrelated. They are characterized by being precisely limited to the individual and his/her immediate surroundings: "I ate or drank... and it did not harm me..." or the like.

Pretesting and sharing meals were precautions in medieval times against voluntary abuse. Food adulterations were sanctioned by draconic punishments at the time, nevertheless they occurred again and again. Group related forms of food choice and intake nutrition emerged and nutritional rules to initiate special and important events like ceremonies, holidays, wars, pregnancy or lactancy. Such traditional forms of nutritional risk behavior are still to be found as means to maintain group cohesion (like beer drinking in student clubs). Modern food science, however, follows the universalistic trend and has either disproved such kind of local or individual attitudes or flatly condemned them.

This is at least partly due to the fact that the second type of risks found little use in the area of food and nutrition.

b) Welfare state risks

19th century "second agrarian revolution" succeeded in preventing the food misery presaged by MALTHUS. Food abuse and food deficits can be explained convincingly through the impact of social and economic facts (so called class structure). Weighing risks is not necessarily involved in dealing with the nutritional questions of last century.

The precautions taken according to the ideology of welfare state were based on the assumption that risks can be excluded or at least be diminished due to the principles of causality, predictability, public welfare and insurance. The "risk factor model" of nutrition behavior is a recent and still disputed result of this kind of risk assessment. It maintains a one-dimensional interpretation of risk, as if all risks were of the same type and grew from similar (not: same) reasons.

c) New risks

The topic of "new risks" consequently is not well accepted by the established nutrition science, as can be concluded from the programmatic classification of "real" and "assumed" risks of the German speaking "Societies for Nutrition" (ed. by ERBELSDOBLER and WOLFRAM, 1993). The 1988 "Government Report on Nutrition" even dares to speak of "avoidable" (and logically hence: of unavoidable) risks. They claim that society must act in order to stop avoidable risk behavior and that is not "intake of polluted or residue-bearing food" but nutritional abuse of too much sugar, fats and sodium.

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NOTES

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