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October 9, 1996

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Dear Harriott:

Greetings! It's been awhile. I hope you are well and I'm glad to see your still involved.

Your paper fron the recent RDA Workshop brings back some memories: sone good and sone not so good. I wondered if you were aware that the principal author of the Dietary Goals, Nick Mottern, was a really committed vegetarian; he had goals other than helping the public. I never thought the Report was up to much but I strongly supported the Goals themselves. You may recall that the first edition included instruction to eat less meat (Unfortunately I don't have a copy of that edition). When this came under attack, I said that while I thought it was probably a reasonable Goal, we had almost no evidence to support it. It waas dropped over Mottern's real resistance. Actually, Mottern wrote another report just as the committee was going out of business with even stronger vegetarian arguments. I told him I would write every member of the Committee opposing his statement if he went ahead. I have heard that he published it himself although I have never seen it.

I had been involved, not successfully, with low-protein diets in kidney disease which are gradually getting recognized and more feasible. My guess is that eventually the Dietary Guidelines will include something about limiting protein or meat.

The formulation of the Guidelines were not quite as much an inter agency activity as you imply. We had a small committee of 6 that was supposed to figure out how the USDA and HEW were going to respond to the Goals. We bogged down. Some thought we had to have a full scale review of all the data which none of us was willing to do. I said that had already been done and all we needed to do was take a position. The final decision was that we would abide by the committee of the An Soc Clin Nutr which was already at work but had not yet reported. Their report was far from unanimous but supported what eventually became the Guidelines. A writer was hired and after numerous exchanged between the USDA and HEW and NIH they were published.

When the Goals were published Phil Handler, Pres NAS, told me that the FNB would never approve such nonsense. Sure enough, the Board

was soon full of Harper, Olson, etc. I've never been clear one what happened, however, Two members of the Board told me that they were gradualy moving toward my position but when Handler et al testified he said that 100% of the Board supported Toward Healthful Diets.

The distinction between the preventive and high risk approach have never been quite so stark. The RDA are said to cover everyone so this is the preventive approach and they have never included a high risk strategy. Those pushing ther preventive approach have also emphasized that the high risk group needs special attention. Other than philosophy, however, there was always the matter of practicality. Everyone should know that diet therapy is a loser at the individual level, obesity the best example, unless the problem is very severe, as per phenylketonuria, etc.

I think you down play to some degree the simple search for answers. When I went to Peru in 1950 I was pretty well instructed from Wisconsin about the importance of milk, the new RDA, etc. I thought I should be able to show that Peruvians were calcium deficient. It became pretty obvious that they responded practically in parallel with Mitchel's Americans but at a lower level. They, and most of the world, are "adapted" as measured by calcium balance. The issue, of course, is whether their health is better or worse because of this adaptaton. The fracture data indicate protection although it might not be related to calcium.

Nor do I agree that there is something wrong because Chinese women increase their bone density with calcium supplements. Most studies have shown a modest increase in bone mineral withcalcium supplementation. The fact remains that the Japanese, Chinese, etc. have lower bone density but still have less fractures. Something other than bone mineral content is involved. It seem remarkable in this day and age, with all of the emphasis on clinical trials, that there is still no good evidence that calcium supplements actually decrease fractures.

Practically all estimates of calcium need are based upon calcium balance. It is facinating, I think, that random numbers (See Kanis) provide as good a dose-response curve as do most of the actual balance data (Matkovic & Heany, for example). Most of it doesn't mean a damned thing. Fortunately, we didn't calculate balance in our Peruvian studies but related excretion to intake, ie independent measures, which should be legitimate. Calcium policy is based largely upon bad balance data and assumptions about the effect of modest changes in bone density.

I'm currently arguing again, and will no doubt lose, that the RDA format makes no sense and should be abandoned. There is no way that a single value can be appropriate for a 300 lb active fullback and

a small sedentary man of the same age. But all of our experience indicates that you can devise a diet which is satisfactory for both which will be eaten in different amounts.

Well, enough. Maybe your article will promote some thought as it did with me.

Best wishes,

D. M. Hegsted

RDA Workshop: New Approaches, Endpoints and Paradigms for RDAs of Mineral Elements

Interests and Values in the Recommended Dietary Allowances and Nutritional Guidelines for Americans[1]

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ABSTRACT Evidence is provided showing that interests, values and belief systems have affected the development of Recommended Dietary Allowances (RDAs) and nutrition guidelines for Americans in the past and can be expected to do so in the future. The conflicts of the 1980s relative to the nutritional guidelines for Americans and the RDAs illustrate the tension among values that can parallel a conflict of interests. In the conflicts of the 1980s, we saw an apparent conflict between those policies that attempt to optimize outcomes for a large class of affected parties and those policies that attempt to establish constraints on actions which appear to threaten individual autonomy and freedom of choice. The former approach derives from utilitarian, consequential moral philosophy which evaluates policies by evaluating costs and harms, and weighing them against benefits to all parties. The latter has its strongest advocates in contemporary libertarianism which takes individual freedom to be the bottom line. Ethical vegetarianism, a belief system which would limit RDAs and guidelines to those that can be translated to vegan and other vegetarian diets, has been a more recent entry into the discussions. Such human value issues suggest that a set of RDAs or of nutrition guidelines is analogous to and may be considered to be an ethic. An ethic is a theory reached via the method of reflective equilibrium that is a coherent ordered triple set of beliefs: a set of considered moral judgments, a set of moral principles, and a set of relevant scientific background theories. The reasoning, however, can become circular and unsound when the considered moral judgments, moral principles and relevant background are not independent sources of information. If they are mixed or, for example, an intuition is mistaken for a scientific conclusion, the reasoning can be flawed. J. Nutr. 126: 2390S–2397S, 1996.

INDEXING KEY WORDS:

• *nutrition policy* • *RDA* • *ethics*

The purpose of this article is to provide evidence that interests, values and belief systems have affected the development of RDAs and nutrition guidelines for Americans in the past and can be expected to do so in the future. The conclusion that interests and values were involved in both the development and the critique of the dietary guidelines and the RDAs was reached in the analysis by Kunkel and Thompson (1988) of the tension among nutritional scientists and policy-makers that was evident in the late 1970s and 1980s. The evolution of the RDAs was, until the mid-1980s, relatively free of public controversy. Controversy emerged, however, with the conception that nutrients are not only essential for growth and development and maintenance of health, but also that some play roles in the reduction of chronic disease. Public dietary advice as nutrition guidance was based on different kinds of data, including epidemiological studies and studies on heterogeneous groups of compounds (such as fats and fiber). Nutrition guidelines were vigorously debated; their scientific validity, the safety and appropriateness of the recommendations, and the feasibility of implementation were challenged. Different human interests and ethical values were evident in the conflicts.

Each of us, scientist as well as a moralist, holds a set of moral principles and draws intuitions from these principles. The focus on moral principles in this article is on the dominant modern ethical theories: (1) rights-

[1] Presented at the workshop "New Approaches, Endpoints and Paradigms for RDAs of Mineral Elements" held in Grand Forks, ND on September 10–12, 1995. This workshop was presented jointly by the USDA, ARS, Grand Forks Human Nutrition Research Center and School of Medicine, University of North Dakota. The publication of conference proceedings was supported by International Life Sciences Institute, Lederle Consumer Health, National Livestock and Meat Board, Quaker Oats, U.S. Borax Inc., and the U.S. Department of Agriculture, Agricultural Research Service. Guest Editors for this workshop were Forrest H. Nielsen, W. Thomas Johnson, and David B. Milne, USDA, ARS, Grand Forks Human Nutrition Research Center, Grand Forks, ND.

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based and (2) consequentialist/utilitarian with welfare concerns for the consequence of action. One version of rights theory is libertarianism, which champions minimal government and maximal freedom. In the libertarian view, government has a duty to protect life, freedom and property rights, but has no duty to protect people from their errors or compensate for personal inadequacies. A second version of rights theory adds government's responsibilities to assure minimum quality of life and equal opportunity. Utilitarians determine the morality of an action or policy by evaluating the impact (or consequences) of the act for human welfare. The view of utilitarianism is that consequences for each member the public count equally. Its leading principle is to maximize benefit or reduce harm for all parties.

Ethical theories can explain ways of thinking. Different people may hold different theories as philosophic principles. They will tend to interpret issues in terms of their impact on right or in terms of impact on welfare. Although it may be possible to bear both rights and consequences in mind at once, this is more difficult than might be imagined. Furthermore, even if individuals do not adopt ethical theories as consistent belief systems, it may improve our understanding of nutritional policy to proceed as if they did. Moral principles explain moral judgments (intuitions) in the sense that they show why people reach different (but reasonable) conclusions about public issues.

The controversies—nutrition guidelines

The controversies relative to nutrition guidelines followed reports that recommended both a set of dietary goals representing "prudent" eating habits and guidelines for changes in food selection and preparation, and actions within government and industry with the stated goal to maximize nutritional health. They can be traced to 1957 when the American Heart Association (AHA) issued a series of reports which suggested the premise, and then subsequently built recommendations on it, that diet plays an important role in the pathogenesis of atherosclerosis (Page et al. 1957a, Page et al. 1957b). The AHA suggested that fat, total calories and the ratio between saturated and unsaturated fat as well as a variety of other factors may be important. Vigorous public debate was elicited, however, when the Select Committee on Nutrition and Human Needs of the Senate, a moving force in food stamp reform and other direct interventions, issued and publicized "Dietary Goals for the United States" (the McGovern Report) in 1977 and, in late 1977, the Second Edition. A translation of nutritional standards into foods was both explicit and inherent in the Goals. Immediately, the reports elicited unprecedented controversy and a flurry of rhetoric, most of which took hope, or refuge, in questioning the scientific validity of some of the assumptions in the Goals. The assumptions were questioned by both food industry professionals and some nutritional scientists. Dissenting scientists believed that the first effort should be to establish a system of evaluating individuals to determine the segment of the population that was at high risk and then to make appropriate dietary and other recommendations rather than taking a universal, prescriptive public health approach.

The U.S. Departments of Agriculture (USDA), and Health, Education and Welfare [(now Health and Human Services (USDHHS)] followed in turn with the document, "Nutrition and Your Health: Dietary Guidelines for Americans" (U.S. Department of Agriculture and U.S. Department of Health, Education and Welfare 1980). The Guidelines called for Americans to eat a variety of foods, maintain ideal weights, avoid too much fat, saturated fat and cholesterol; eat foods with adequate starch and fiber; avoid too much sugar; avoid too much sodium; and if they were to drink alcohol, to do so in moderation. The formulation of the Guidelines, however, was an interagency governmental activity with little external interaction and the controversy was extended. The argument for a universal dietary prescription for Americans, that is, the public health approach, was that although epidemiological data were uncertain and although intervention trials might be inadequate, the results of the studies were uniform in reporting a favorable trend toward decreased coronary heart disease risk with diets that lower blood cholesterol.

In other quarters, strong reservations were expressed about the adequacy and reliability of such scientific bases for general dietary guidelines for prevention of disease. The 1980 Food and Nutrition Board (FNB) of the National Research Council (NRC) countered by issuing its own statement, "Toward Healthful Diets" (Food and Nutrition Board 1980) which cautioned against overestimating the power of the diet to prevent disease. "Toward Healthful Diets" recommended the clinical or high risk strategy that placed emphasis on programs for identification of individuals in risk categories: family history, elevated blood pressure, diabetes and risky profiles of blood lipids. (It should be noted at this point that this was the 1980 FNB and major philosophical differences existed between the 1980 FNB and subsequent membership of the FNB.)

The initial publications of both the "Dietary Guidelines" and "Toward Healthful Diets" produced equal and opposite storms of protest. The action coming from the USDA, a policy-making department with a long history of farmer support, found little favor among organizations representing animal agriculture. Their common interpretation was that the Guidelines could be achieved only by reducing the consumption of eggs, red meats and milk products. The American Medical Association (White 1979) also took the position that, although laudable, the assumptions about the effectiveness of the proposed dietary changes were questionable.

But, the media and a substantial portion of the scientific community joined in criticism of "Toward Healthful Diets." Thus the arguments raged, and the diet-cholesterol-heart issue was much discussed. As Grundy (1986) later remarked, little could be done about it because of limited understanding, lack of proof, and little actual ability to do anything about high blood cholesterol.

This was apparently the peak of the public conflict. The 1985 Revised Guidelines (U.S. Department of Agriculture and U.S. Department of Health Education and Welfare 1985) were essentially those of the 1980 Guidelines. Some commodity groups, notably the National Cattlemen's Association, the American Meat Institute, and the United Egg Producers, issued tentative statements endorsing the Guidelines. The moderation that comes with the cure of time, not necessarily new scientific data, began to draw acquiescence if not consensus. Federal legislation was achieved that required that USDA and USDHHS to review and jointly present dietary guidelines. Inherent in the political basis for the requirement is the desire by certain agricultural commodity groups that (1) the guidelines be uniformly stated in government policy and (2) the guidelines also be positive for agricultural production as well as for matters of diet and health. The third edition of the Guidelines was released in November, 1990, and a new edition will be released in 1996.

Successive nutritional guidelines were issued, each with less public controversy, although skepticism remained among some nutritionists. The "Surgeon General's Report on Nutrition and Health," released in July, 1988, presented a comprehensive review of the evidence on the common themes of nutrition guidelines (U.S. Department of Health and Human Services 1988). The outright emphasis of the report was on the reduction of fat in the American diet, but the recommendations bore little quantitative definition.

The National Research Council (NRC), National Academy of Sciences, released the most recent guidelines "Diet and Health," in February, 1989 (National Research Council 1989a). The recommendations are quantitative and reflect a studied estimate of the order of importance: Dietary macro components are considered first with highest priority given to recommendations (reducing fat) based on the strongest scientific evidence and the likely impact on public health. "Diet and Health" was significant in that it again fostered the translation of nutrition guidelines into food selection. The USDA Food Guide Pyramid (U.S. Department of Agriculture 1992), which recommends five food groups, is essentially a companion to the NRC report.

RDA controversies—questions of congruence

The attention to the health consequences of the dietary pattern apparently has also been the spark of contention relative to the RDAs . The RDAs have been revised at about 5-year intervals since 1943; the latest revision, the 10th Edition, was published in 1989 after a hiatus of nine years and controversy for four (National Research Council 1989b). Feeling that the RDAs, intended as they historically were to cover the nutritional needs of nearly all healthy people, were promising too much, the 1980–1985 Committee on Dietary Allowances, the original revision committee for the 10th Edition, proposed new nutrient intakes to protect healthy people against nutrient deficiencies, with consideration of safety factors. Under this conception of what the RDAs are meant to be, the review committee recommended a 20–30% reduction in vitamin A and a larger decrease in the allowance for vitamin C, as well as decreases for other nutrients.

But, in October, 1985, the president of the National Academy of Sciences and chairman of the National Research Council, on recommendation of the 1985 FNB, decided not to release the report which would have set the 10th Edition of the RDAs (Press 1986). The controversy appeared to center on the proposed new recommendations for vitamins A and C (Olson 1987). Members of the Committee stated what they considered to be sound evidence for the new recommendations; the newly proposed values were set at amounts considered fully adequate to prevent symptoms of deficiency. Higher values of vitamin C, for example, to aid in the absorption of iron or to reduce the risk of cancer were not considered to be justified in the light of the data regarded as insufficient to quantify the contribution of the nutrient for optimal absorption of iron or the reduction of the incidence of cancer. The larger issue for others, particularly those dedicated to the prevention of cancer, was that even though data were not yet definitive, the great increase in the public interest in the role of dietary factors made it desirable that the RDAs be consistent with an umbrella set of "reasonable, healthy" dietary recommendations to the public (Press 1986).

The members of the Committee on Dietary Allowances felt that the RDAs were being suppressed because of a growing attention to the health consequences of the actual foods that are eaten, but that such a pattern could not be described in the quantitative nutrient-by-nutrient language of the RDAs (Kamin 1985). The question raised by the Committee was whether "intuition," "preliminary evidence" and "informed guesses" were enough to set a new RDA. Acquiescence to the advocacy of consumer groups at the expense of sound judgment based on scientific data was charged. The "impasse" between the RDA Committee and the 1985 FNB was seen by the Committee as not based as much on a difference in the interpretation of scientific data as it was on the human value considerations in hypotheses postulating the prevention of certain chronic diseases by selected vitamins and the "nonscientific" needs of agencies and industries who

saw a need for congruence of the RDAs with the public health nutrition guidelines (Harper 1987, Olson, J. 1987, Olson, R. 1985).

Clinical vs. public health paradigms

The stated philosophical arguments in the controversies concerning RDAs and nutritional guidelines, related to the formulation of policy based on data from the experimental science approach vs. data from epidemiological approaches and other empirical studies. But, the persistent question was whether to seek out persons of clinical risk and modify their risk factors by appropriate medical intervention, such as done with hypertension, or to use public health strategy keyed to public education. The clinical strategy was strongly advocated by some scientists as the best means, for example, of controlling high plasma cholesterol (Harper 1988, Olson 1986). Heredity was regarded as an important determining factor. The development of effective medicinal drugs offered an alternate route, and the use of drugs became the mainstay of a continued clinical approach. Proponents of the public health policy (Hegsted 1985 and 1986a), however, saw differences in diets among populations as the major reason for differences in rates of coronary heart disease and cancer, and argued for general dietary modification. There seems to be a widespread acceptance today of the concept of nutritional guidelines among nutritional scientists. But, at least a few of the nutritional scientists, who questioned the public health approach in the 1980s, remain unconvinced (Harper, unpublished paper, Olson and DeBakey 1989). Their theme remains that degenerative diseases increased since the RDAs of 1943, not because of deterioration of the diet, but because people lived longer. Today they also argue that the application of nutritional guidelines relative to dietary fat to prepubertal children is not justified.

Perhaps something should be said about the role of economical interests. Since 1980, the repeated advice on risk factors for coronary heart disease reaching physicians, other health professionals and policy makers carried a message that registered with the public. The intake of foods high in cholesterol and saturated fats, e.g., eggs, fluid milk and lard, has declined substantially. Adults have reduced their intake of beef and meats generally and have greatly curtained their consumption of visible fats (Cross et al. 1986). Our observation (Kunkel and Thompson 1988) was that animal producers, the meat industry and the scientific disciplines and organizations associated with animal agriculture changed from a defensive, libertarian stance to one that seemed to recognize a moral responsibility for public health. But, the convincing point was likely the changing market rather than changing values. Should the guidelines, in particular, and the supporting RDAs be radically changed, external resistance, political values and industrial interests may again intervene.

Emergence of new issues

Further insights into the ways interests and values might relate to RDAs and nutrition guidelines may be seen in new issues, now largely external to the process of setting nutritional standards, but which attempt to introduce new philosophical views into policy. Interests closely associated with animal rights organization have proposed a system of "food groups" that include no animal protein, not even fish or dairy products. Some nutritionists argue a hypothesis that it is the intake of foods of animal origin, at the expense of foods of plant origin, which causes degenerative diseases (Campbell 1994). A food guide pyramid based on Mediterranean dietary traditions (Willett et al. 1995) has been suggested to emphasize plant foods, fruits, and olive oil as the principal sources of fat, low to moderate amounts of eggs, dairy products, fish and poultry, low amounts of red meat, and low to moderate amounts of wine. These new issues may be reflective of ethical (moral) vegetarianism or simply of a genuine belief that animal products bear components that are detrimental to health. Either way, a value system is served.

The arguments of ethical vegetarianism, calling for the reduction or elimination of all animal products from the diet, are based on the extension of the traditional moral principles to animals. This extension can take either a rights-based or a utilitarian form. Briefly, concern for the rights of animals is based on the belief that each individual, human or animal, is worthy of moral respect; if humans have a right to life, so do animals. Utilitarians also associated themselves with the broad intellectual movement that was committed to equality. They argued that the welfare of the rich and privileged should not be weighted more heavily than that of the disadvantaged. For some of them, there is no reason why suffering of human beings should be more significant than the suffering of any sentient being. Although contemporary utilitarians continue to value the well being of humans more highly than that of animals, they base this preference on the higher cognitive capacities of humans. Where animals have comparable cognitive capacities, the moral significance of the consequences is comparable. Such utilitarians balance whatever benefit an action may cause for humans against the harm that it may cause for other creatures that are sensitive to feelings and are able to perceive. Vegetarianism, in the terms of the philosopher Peter Singer, is a means of reducing animal suffering rather than an end to itself (Singer 1975 and 1980).

Others take a harder line. Animal rightists extend the concept of moral rights to include nonhuman beings (Regan 1980 and 1983). The view is that there is basically one moral right, the right not be harmed on the grounds that doing so benefits others, and at least all normal adult animals have this basic right. Veganism naturally follows. Proponents of the vegan lifestyle would reject the use of animals and their products for

food because animals suffer and have the right not to be killed. Varner (1994b) claims that even milk cows and laying hens are eventually slaughtered and that it follows that milk and eggs should be morally rejected as well as meat.

A person holding to ethical veganism, by definition, holds to the moral judgment that nutritional standards can and ought to be devised to guide the planning of nutritionally adequate vegan diets for all people, at least in industrial countries where dietary supplements are available.

Because deficiencies of energy, protein, vitamin B-12, vitamin D, zinc, iron and calcium have been cited as risks associated with vegan diets (Dwyer and Loew 1994), ethical vegetarians have focused on the needs for these nutrients (Pluhar 1992, Varner 1994a). The argument is often that lower RDAs can be set or that supplements can be used, so that a plant-centered diet becomes feasible for the general population. This line of reasoning has suggested that the dietary requirement for vitamin B-12 is overstated because the deficiency is rarely seen in vegetarian societies, that vitamin D requirements can be met by availing one's self of sunlight, that supplements of iron are needed for nonvegetarians as well as vegetarians, or that the need for calcium is not fully understood and the current RDAs for calcium are unnecessarily high.

Each of the target nutrients can provide a case study of interests and values. Calcium is a particularly interesting case. Dairy products supply over two thirds of the calcium in the diets of people in the United States. The vegan philosophical argument questions whether dairy products can be provided in a way consistent with treating animals in a humane way (Varner 1994b). The linchpin of their argument, that dairy products are not needed in human diets, is that the prevalence of hip fracture is more common in the United States, Britain, and Sweden where calcium intakes are higher than in other countries. This observation strikes at the conventional nutrition wisdom which states that osteoporotic risk is increased if peak bone mass is less than the genetically determined maximum at skeletal maturity. Decline in bone mass with age is a universal process in elderly women. Peak bone mass at maturity and bone loss in later life are believed to be the two major determinants of bone mass in elderly women (Arnand and Sanchez 1990, Heaney 1993).

To the vegetarian, the suggestion of Hegsted (1986b) that the higher protein intake of omnivores causes an inefficiency in calcium utilization strikes a responsive chord. Indeed, Recker et al. (1992) have reported that the self-selected dietary calcium to protein ratio was a strong predictor of gain in bone mass among young women 19–30 y of age. Hegsted's second theory (Hegsted 1986b), relative to the paradox, that a lifelong adaptation to a high calcium diet is an inefficient utilization of calcium that may eventually impair the ability of the body to utilize dietary calcium and conserve the bone structure, also fits the philosophic judgement of the ethical vegetarian.

It might be argued that the judgments of a small number of ethical vegetarians are external to and likely of little consequence in the process of setting RDAs and nutrition guidelines. But, the presentation of food standards that reflect Mediterranean dietary traditions is also based on a conception that a near vegetarian diet is healthier (Campbell 1994). A discussion of health implications for the recommendation of decreased consumption of dairy foods in the Mediterranean diet pyramid (Kushi et al. 1995) draws support from a logic similar to that expressed by the ethical vegetarians; that is, somehow increased consumption of dairy products is related to increased incidence of osteoporotic fractures. There is no indication that the enthusiasts for the Mediterranean diet are motivated by an animal welfare bias. The motivation may be a genuine utilitarian interest in human health instead. But, the philosophic judgement can be the same.

There seems to be something wrong here. The judgment that differences among nations in the higher incidence osteoporotic fractures is the result of high intakes of calcium-rich animal products in the diet, can also be flawed reasoning. Specific studies led by T. Colin Campbell et al. (Chen et al. 1991, Hu et al. 1993) in China, where the incidence of fractures is low, yielded results based on measurements of diets and bone mass of middle-aged and elderly Chinese women that provide strong support of the beneficial effects of increased calcium intake on bone health. Chinese women in a pastoral country, who consumed large quantities of calcium in dairy products, had a consistently higher bone density than women in the nonpastoral counties, even as they grew older. The lower incidence of bone fractures in the Chinese women could be the result of factors other than high dietary intakes of calcium, for example, genetic differences, body size and a more active life.

It seems needless to point out that in the symposium, "Required versus optimal intake: a look at calcium," sponsored by the American Institute of Nutrition in 1993, and by the National Dairy Council and Land O'Lakes, Inc., the speakers took no direct note of Hegsted's theories (Miller and Weaver 1994). The general conclusion reached in that symposium as well as the Consensus Conference on Osteoporosis (Conference Report 1993) was that the calcium requirements for peak bone development and reduced age-related bone loss are higher than the current RDAs. These conferences seemed to develop recommendations under the presumption that the calcium allowance that should be set for the American population is one that will help them achieve their genetic potentials for growth through nutrition rather than one for populations in developing countries.

Interests and values

Our earlier thinking (Kunkel and Thompson 1988) concluded that the issues of the 1980s illustrate the

tension among values that can parallel a conflict of interests. It is an instance of a traditional theoretical conflict in ethics. Social theorists have long recognized a conflict between those policies that attempt to optimize outcomes for a large class of affected parties with those that attempt to establish constraints on government action which appears to threaten individual autonomy and freedom of choice. The former approach derives from utilitarian moral philosophy, whereas the latter has its strongest advocates in contemporary libertarianism. Utilitarian moral philosophy evaluates policies by calculating the harms or costs of a policy option and weighing them against benefits to all affected parties. The policy alternative that optimizes this ratio would, all things considered, be most fully justified. Libertarian social philosophy, by contrast, takes individual freedom of choice to be the summum bonum, not to be compromised by cost-benefit calculations. Libertarianism justifies public policy intervention according to a strict interpretation of noninterference rights, so that policy is warranted only when a citizen's life, liberty or property is threatened by the actions of a third party.

The basic tension between optimizing outcome and safeguarding informed consent was at the bottom of the controversy between public health and clinical strategies (Kunkel and Thompson 1988). This basic philosophical conflict was also visible in the criticisms that each group would make of the other's position. In criticizing the public health philosophy, the libertarian would point out that no benefit is denied to high risk groups by a strategy of individual diagnosis and therapeutic intervention. The libertarian would want good information to be widely available, but, as a general point against utilitarian thinking, the libertarian might point out the benefit-cost analysis can be only partial analysis, at best, and is notorious for omitting indirect outcomes in its calculation.

The utilitarian, on the other hand, may object to the high risk strategy on the ground that many people needing treatment will probably be overlooked. Interventions requiring individuals to seek out and demand personal care as patients are costly of the individual's time, are focused on an educated middle class, and are less likely to reach the people needing treatment than a broad public program. The public health philosophy seems adamant in its claim that the broad dissemination of information obtains benefits that justify the cost, but this adamancy derives from an outright rejection of the libertarian assumption that noninterference rights can never be sacrificed in pursuit of social benefit.

The passage of the Nutritional Labeling and Education Act of 1990 (NLEA) signaled an ascendancy of the public health approach in policy and established policy-making through regulatory decision (Kessler 1995). With the implementation of the NLEA, nutritional policy became, in part, an environmental economic policy. But, the basic tension between optimizing outcome and safeguarding informed consent is residual with the food label. Nutritional labeling does not in itself speak the language of nutrition policy. Nutritional labeling permits the consumer to relate a food to his/her interpretation of dietary guidelines.

An additional consideration of ethical vegetarianism in the context of this study is the suggestion that members of the nutritional science community have interests and values of their own that are contrary to those of a vegetarian segment of the population. Both vegetarian and nonvegetarian scholars draw their supporting citations from the scientific literature. It is in choosing articles to reference that interests and values of ethical vegetarians may be seen. But, such writers will also argue that the scientific community may be showing its own value system by failing to consider the needs of those who choose a vegetarian lifestyle.

Conclusion—the nutritional ethic

It is clear that different philosophies emerge in the dietary policy debate, not because the contending parties consistently employ them as ethical values, but because they serve consistent and pecuniary interests (Kunkel and Thompson 1988). They are, in one sense, a cloak for interest group politics. The philosophical position, nevertheless, places the pursuit of private interests in service to widely held public values. Without implicit appeal to the philosophical ideals of liberty or welfare, the naked interests of private parties, consumerists, farmers, food industry, supplement industry, could have no claim on the public conscience.

The observation that human interests and ethical values have played roles in the formulations of the nutritional guidelines and the RDAs suggests that these standards also take on the characteristic of an evolving ethic. Both standards are fashioned largely on both utilitarianism and a social contract centered on the interests and rights of individual members of the human species. The standards do not have goals in themselves, but their goals are the goals of human agents using numbers, ranges and description of foods to their ends. They are based on sets of beliefs held by particular persons.

Philosopher Norman Daniels (1980) writes that an ethic is a theory that we reach via the method of wide reflective equilibrium. A person holds a coherent ordered triple set of beliefs that are as follows: (1) a set of considered moral judgments; (2) a set of moral principles; and (3) a set of relevant background theories. The person may work back and forth, revising his moral judgements, moral principles, and background theories, to arrive at an equilibrium point formed from the triple beliefs.

Thus, an ethic is a moral theory in which our considered intuitions have been brought into equilibrium with our philosophical principles and the scientific and

other background knowledge. It seems to us that this is essentially the process by which RDAs are settled and nutritional guidelines are devised. Comparative reasoning toward equilibrium is a legitimate method used in science and law as well as ethics and policy-making.

It is in ethics that we see that the construct must face a test. Comstock (1995) points out that considered moral judgments, moral principles and relevant background theories should all be independent sources of information. If we mix them up, or begin to mistake one for the other, our resulting ethic will not be in equilibrium. For example, if we mistake one of our intuitions for the deliverance of a science, then we may have reasoned in a circular fashion. The reasoning is flawed. The extension of dietary guidelines regarding fat to children (Olson 1995, Tershakovec et al. 1995) and the suggestion that adaptations to lower dietary intakes of calcium are nutritionally feasible may be examples of mistaking intuition for the deliverance of nutritional science.

Comstock (1995) notes that in ethics, we go back and forth among moral judgments, moral principles and background theories, revising our first intuitions in the light of other intuitions, general moral principles and scientific information. Then our general principles are revised in the light of carefully considered intuitions and new scientific information. Our scientific information is revised when the number of different observations becomes so weighty as to cause scientists to jettison existing theory in favor of a new one.

So it is with development of an RDA or a nutritional guidelines. Nutrition guidelines evolved within a utilitarian philosophy. RDAs may be evolving within the same philosophy. The evolution of new scientific background theory is the likely reason for the need for revision of RDAs at this time. In a sense, each successive set of RDAs, since the first publication in 1943, has been undermined by subsequent scientific observations and theory. But, different chosen moral principles such as libertarianism, utilitarianism, or the extension of these philosophical principles to animals, are apparent in the literature and can be presumed to "color" the public testimony and view. The danger in moral reasoning lies in confusing circular reasoning, an unsound method, with the sound method of comparative reasoning toward reflective equilibrium (Comstock 1995).

Moral principles and judgments, however, are valuable. Naked scientific theory will not likely suffice alone. Our intuitions seems to be that current formulations of RDAs are inadequate and a new format is required for the RDAs. Intuitions will be stimulants and guideposts in any future revisions of nutrition guidelines. It is just that such intuitions ought to be brought into an equilibrium with scientific theory. If they can not be, they should be honestly admitted to be advocacies of social values and even personal interests.

ACKNOWLEDGMENTS

The collaboration of Dr. Paul B. Thompson, Professor of Philosophy, in the first phases of the work in interests and values in national nutrition policy and the comments and suggestions that he provided in the preparation of this article are gratefully acknowledged. The comments of Lee Cartwright and R. Joanne Lupton, both nutritional scientists, during the development of the manuscript are sincerely appreciated.

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