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Current research directions in nutritional anthropology

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Research directions in social science on food and nutritionrelated issues can be classified into three broad divisions: nutritional anthropology, food systems research and foodways studies (the anthropology of food). The types of research questions currently being pursued within nutrition anthropology are 1) socio-cultural processes and nutrition; 2) social epidemiology of nutrition; 3) ideological features, cultural structures and nutrition; 4) food intake, nutrition and social and biological functioning; and 5) population genetics, physiological adaption and nutrition. In studying these topics nutritional anthropologists draw on theoretical and methodological components of their broader discipline as well as the fields of nutritional sciences.

Sosiaalitieteellisen ruoka- ja ravitsemustutkimuksen suuntaukset voidaan luokitella kolmeksi laajaksi kokonaisuudeksi: ravitsemusantropologia (nutritional anthropology), ruokasysteemien tutkimus (food systems research) ja ruokatapojen tutkimus eli ruoan antropologia (food ways studies, the anthropology of food). Ravitsemusantropologian tyypillisiä tutkimusaiheita ovat tällä hetkellä: (1) sosiokulttuuriset prosessit ja ravitsemus; (2) ravitsemuksen sosiaaliepidemiologia; (3) ideologiset piirteet, kulttuuriset rakenteet ja ravitsemus; (4) ruoankäyttö, ravitsemus ja sosiaalinen ja biologinen toimintakyky; (5) populaatiogenetiikka, fysiologinen adaptaatio ja ravitsemus. Ravitsemusantropologit soveltavat tutkimuksissaan sekä antropologisia että ravitsemustieteellisiä teorioita ja metodeita.

Kirjoitus julkaistaan poikkeuksellisesti englanniksi.

The study of human nutrition developed as a primarily biological science, while the study of food historically has attracted much wider attention from a considerable variety of scholarly fields. In recent years, nutritional sciences have become increasingly multi-disciplinary, and a number of other fields have taken up extensive research in food and nutrition.

Anthropological research on food and nutrition has increased exponentially since mid-century, moving in many different directions. Some work is intended to assist directly in the development of food policy and nutrition planning, and much of it is applied in orientation. Some contributes indirectly to problem solving through helping to illuminate our understanding of nutritionally-

relevant social behavior. The purpose of this paper is to review research directions in nutritional anthropology, first placing such research in the larger context of food and nutrition-related studies in the social sciences and humanities.

As a vehicle for social analysis, food has become a focal point for investigation of macro-level and micro-level processes. In the humanities and social sciences the exploration of "foodways" is increasingly claiming attention. Epidemiological research, too, is expanding in the direction of greater attention to food and nutrition-related studies.

As the body of published material increases, new studies are spurred by the momentum of previous research. At the same time, it is possible to identify a number of forces in our general social environment that have influenced the growth of interest in food and nutrition. Academic researchers are, after all, members of the societies in which they live, affected by social and cultural trends. Food and nutrition issues, from gourmet cooking to world food shortages, are claiming the attention of ever larger segments of the population, especially in the industrialized countries.

Among the social forces external to theoretical and methodological concerns of academic disciplines, the following four factors have played a role in expanding the magnitude of food and nutrition research:

1. The world energy and food crisis rose to public consciousness during the early years of the 1970s. Through reports such as *The Limits to Growth* (Meadows 1972) the extent of world-wide dependence on non-renewable energy and mineral resources and the role of these resources became increasingly clear to considerable numbers of the general public. Mass media attention to famine conditions and journalistic descriptions of world hunger helped to focus attention on contemporary malnutrition. An informed citizen could hardly escape the knowledge that food and energy are critical social issues.

2) The role of nutrition in health maintenance and in the etiology of many illnesses, including the "diseases of affluence," has been increasingly a focus of discussion. Research results first published in academic journals have been "translated" into a language that non-medically trained people can understand. Misinformation and mythology have proliferated, together with sound, research-based information. Public interest in the relationships of nutrition to health are reflected in the growth of "health food movements" and the proliferation of commercial channels for the sale of "health foods", organic and natural foods.

3) The emergence of ethnicity as a social and political phenomenon has also influenced interest in food. One significant expression of cultural traditions is through food and cooking, so that ethnic cookbooks, restaurants and cooking classes have all come to play a part in reviving and supporting traditional or ethnically meaningful culinary practices.

4) Among affluent populations interest in gourmet food and international cooking is transforming eating behavior. At the same time the emphasis on slimness, as an aesthetic principle and a health maintenance measure, has led to new forms of gourmet cooking. Variety, quality and experimentation in cooking and eating have become important values, influencing food marketing as well as household food behavior.

In addition to external social forces, which influence scholars' interests, internal theoretical factors within disciplines also play an important part. In anthropology the rise of cultural ecology as a major theoretical perspective has undoubtedly been a primary factor in the development of nutritional anthropology (cf. Kandel et al. 1980). Food is a basic human need, and nutrition is an ideal vehicle for studying adaptive processes. Thus, many theories concerning cultural adaptation can be examined through an analysis of food systems and nutrition (cf. Ritenbaugh 1978). Apart from cultural ecology, anthropologists of other theoretical orientations have taken up food-related studies, as have other types of social scientists and humanistic scholars.

THE SCOPE OF FOOD AND NUTRITION-RELATED STUDIES

There is a now a large literature of food and nutrition-related studies, in addition to the studies carried out within the traditional nutritional science disciplines. Figure 1 provides a broad scheme for classifying this body of materials, showing the place of anthropological studies within each area.

The Anthropology or Sociology of Food: Foodways Studies

Studies of "foodways" are carried out by a number of disciplines in the social sciences and the humanities (alternatively labelled, the anthropology of food or sociology of food). A defining characteristic of most of the studies that can be grouped under the rubric of the anthropology of food is the emphasis on analyzing food as a way of understanding social and cultural processes. The focus is not so much on foods as "carriers of nutrients" as it is on food as a model or vehicle for studying culture. Types of research interests include:

— The description and history of food practices within a particular cultural group, sometimes focused exclusively on the description of a specific food with a unique culture history. Examples of this type of work include national-level studies, such as Talve's (1973) culture history of food in Finland, and the more narrowly focused studies of specific foods, such as the description of "Cincinnati Chili" (Lloyd 1981); Räsänen's (1977) study of traditional home-made alcoholic beverages; or the description of unique food preparation methods, such as the "making of knishes" (Goldman 1981).

— The analysis of food, including characteristics of serving and eating, to reveal symbolic structures. Examples of such studies are the well-known works of Mary Douglas (1966, 1972), and analyses of Hindu food rules (Khare 1976, Apte and Katona-Apte 1981).

— Studies of the relationships of food to culture history, including political and economic conditions, and to household structure and dynamics. An example of the first type is Mintz' (1985) analysis of social, economic and cultural aspects of sugar, while the work of British sociologists on family structure and power related to food (cf. Murcott 1984) illustrate the second type.

Food Systems and Food Policy Research

The research interests that can be grouped under the heading of food systems and food policy research include studies of food production and distribution, as well as studies of nutrition policy implementation and program evaluation. The disciplines that are particularly involved in food systems research are social and agricultural sciences, especially economics, political science, agronomy, anthropology and sociology, and nutritional sciences. Types of research include:

— Descriptive studies of population consumption patterns, such as those carried out under the auspices of Food and Agricultural Organization of United Nations (cf. for example, Perisse et al. 1969).

— Analysis of the relationships of food consumption to price structures and the impact of price policy on food selection (cf. Scrimshaw and Wallerstein 1982, Solimano and Taylor 1980).

— Analysis of the relationship of population growth and population shifts (eg. rural to urban migration) to food distribution and consumption patterns (Knutson et al. 1983).

— Studies about the effects of agricultural policy and activity on food availability, including anthropological analyses of economic development (Franke and Chasin 1980, DeWalt B. 1983).

— Evaluation studies of food policy and nutrition intervention, which include growing attention to social factors (Klein et al. 1979, Sahn et al. 1984).

Studies in Nutritional Anthropology and Social Nutrition

The terms "nutritional anthropology" or "social nutrition" are used here to refer to studies that link social factors to nutrient intake and nutritional status. In many such

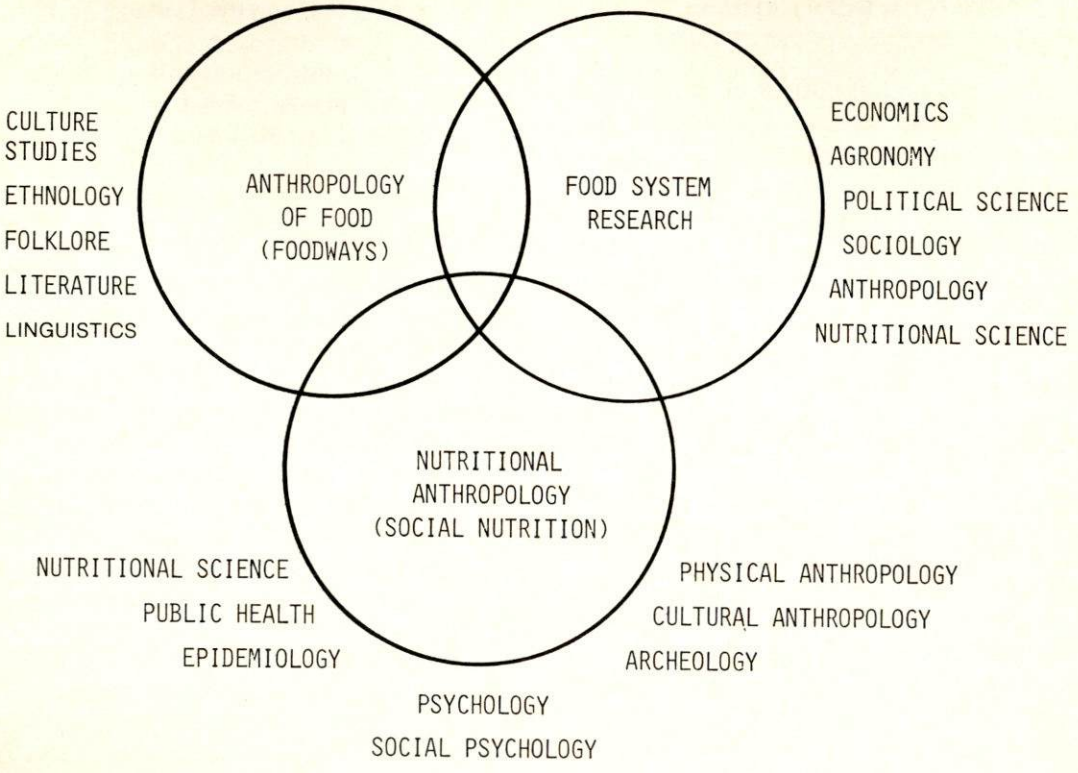

Figure 1. Scope of food and nutrition-related studies.

studies food intake and food patterns are also of interest; however, in contrast to studies in the "anthropology of food," nutritional implications are also examined.

In addition to anthropological disciplines, (detailed below) other fields involved in social nutrition/ nutritional anthropology include nutritional sciences, epidemiology, public health, sociology and social psychology. Apart from the research directions described below, research topics in these fields include:

— Investigation of the relationship of psychological (personality) characteristics to food and nutrition, including nutritional pathologies (Bruch 1973, Schafer and Keith 1982).

— Studies of social attitudes, perception and food selection patterns (cf. Lau et al. 1984).

— Studies of sensory and psycho-physiological factors in food intake and nutrition (cf. Rozin and Fallon 1981).

— Analysis of food acquisition patterns, nutrient intake and child development, including examination of the impact of malnutrition (Birch et al. 1981, Rush 1984).

RESEARCH ISSUES IN NUTRITIONAL ANTHROPOLOGY

Within nutritional anthropology several main directions of research have emerged. These can generally be classified under five headings:

— socio-cultural processes and nutrition (in which the nutritional consequences of social and cultural forces are examined);

— the social epidemiology of nutrition (in which specific nutritional conditions or characteristics are the focus of interest);

— ideological features, cultural structures and nutrition (in which the emphasis is on the relationship between beliefs/ ideas and nutrient intake);

— food intake, nutrition and social and biological function (in which the consequences of nutritional status or specific food intake patterns are examined in relation to social and biological behaviors);

— and population genetics, physiological adaption and nutrition (in which long-term adaptive processes are examined with respect to their nutritional implications).

Socio-cultural Processes and Nutrition

The term "socio-cultural processes" is widely used in anthropology to refer to long-term and short-term aspects of the evolution of human lifeways. This includes long-term evolutionary changes, such as the transition from hunting—and—gathering subsistence to settled, agriculturally-based societies, which have taken place at different rates and different times over the face of the earth. It includes, as well, more geographically and chronologically limited phenomena, such as particular politicoeconomic revolutions or the social aspects of technological innovations. In the contemporary world various aspects of social change, including the growth of cities and urban migration, delocalization of energy resources, industrialization, the explosive increase of contact with mass media, and the expansion of women's labor force participation outside of domestic scenes are among the significant socio-cultural processes of concern to anthropologists.

In nutritional anthropology, research on the relationship of socio-cultural processes to nutrition has, as its basic logical structure, the following format: "What is the impact of "X" on nutrition?"

The X is conceptually the independent variable, with nutritional outcomes treated as outcome or dependent variables. What is sought is understanding of the impact of a particular process, event or condition: the transformation of a subsistence base from one form to another; the introduction of a new technology; the shift from one form of political and/ or economic organization to another; migration from a rural to urban scene or from one country to another; social differentiation and class structure; or the introduction of Western health services. These are all examples of the types of processes that have been examined by nutritional anthropologists who structure their research in the format of "social process-to-nutrition relationships."

Describing the structure of inquiry in this manner requires a clarification to point out that in methodological terms the socio-cultural processes may be operationalized with multiple indicators. For example, an empirical examination of the impact of urban migration on nutrition in a particular national context may include the following independent variables: 1) current place of residence, 2) years of residence in the city, 3) liking for and commitment to urban living, 4) amount of contact with city prior to urban migration, and 5) social support in the city.

These variables represent a sampling of characteristics or components of the urbanization process, which researchers may choose to emphasize in a particular cultural setting or because of their specific theoretical orientation.

Alternatively, the critical social process of interest may not be operationalized through specific variables or indicators, but through comparative studies of groups that have or have not experienced the process in question or through before-and-after studies in situations where a specific change can be anticipated in advance.

Usually a number of nutrition variables are examined in studies of the type that can be classified under the heading of "socio-cultural processes and nutrition." With living populations food intake records are often collected, food pattern analysis may be undertaken, followed by analysis of nutrient intakes, which are then compared to a standard. Other measures of nutritional status, including anthropometric, biochemical and clinical indicators may also be examined. With pre-historic peoples or populations, known only from skeletal remains, other types of analytic procedures must necessarily be utilized to assess nutrition and health status.

A common feature of this research rubric is that multiple measures of nutrition and health status are utilized, while a single cultural process is examined.

The following list of research questions illustrates the range and types of work that fall within the heading of anthropologically-oriented research on socio-cultural processes and nutrition:

— How has urban migration or migration from one country to another affected food intake and nutritional status? (eg. Duyff et al. 1975, Jerome 1980).

— How has the shift from subsistence farming to cash cropping affected nutrition? (eg. Gross and Underwood 1971, Dewey 1980, Dewey 1981)

— How has the growth of health care and other social services affected food intake and nutritional status?

— How has the expansion of mass media affected food intake and nutritional status?

— How has the commercialization of food distribution and consumption, including the growth of canteens, workplace cafeterias and "institutional food provisioning" affected food intake and nutrition? (eg. Buchbinder 1977)

— How have changes in women's roles influenced food selection, food behavior and nutritional status? (eg. Popkin and Solon 1986, Eide and Steady 1980)

— How do technological innovations, including new foodrelated technologies, affect food intake? (cf. Brandtzaeg 1982)

— How have economic revolutions influenced food intake and nutritional status? (eg. Marchione 1977)

— How has the shift from gathering-hunting to agricultural subsistence affected human nutrition? (cf. Cohen and Armelagos 1984)

— How do intra-household food distribution patterns affect food intake? (cf. Khare and Pinstrup-Anderson 1984).

Social Epidemiology of Nutrition

The research mode that can be described in terms of social epidemiology is usually similar in its final product to research on social processes and nutrition. The difference is one of emphasis. The initial focus is on a nutritional condition, and the researcher seeks to identify the role of social factors in the etiology of that condition. Thus, the growing body of research on determinants of nutritional status and food intake behavior can be seen as paralleling social process research, with an epidemiological emphasis. The logical structure of the question takes the form: — What are the determinants of (or the factors associated with) outcome Y?

The outcomes of interest are nutritional variables or variables that are closely related to nutrition. Y may be as general as a global assessment of nutritional status; as specific as levels of intake of a particular nutrient, a nutritional pathology or eating disorder; measures of growth or factors thought to influence nutrition and health outcomes.

The variables that are conceptually independent variables cover a wide range of social, cultural and biological characteristics, which may be analyzed as properties of individuals, or, in the the case of some social and environmental variables, at the level of social groups. For example, with respect to the latter, availability of health services may be hypothesized to affect child growth, leading to a research design in which groups of children form communities with different levels of health care resources are compared.

Within the general rubric of "social epidemiology of nutrition" a wide range of research questions have been examined. Illustrative of the types of questions are the following:

— What are the factors that account for "quality of weaning practices" and nutritional status of weaning-age children? (eg Marchione 1980, Hunte and Sultana 1984)

— What are the characteristics of households (and individuals) that help to explain differential consumption of specific nutrients, such as saturated fats, highly refined carbohydrates or Vitamin A?

— What are the determinants of duration of breast-feeding or the selection of breast feeding rather than bottle feeding? (eg Mohrer 1979, Adair 1983, Duthie 1983).

— What types of child care practices account for different nutritional status of young children? (eg. Woolfe 1977)

— What factors of lifestyle and social conditions are associated with nutritional status difference of elderly people living alone?

— What are the risk factors for (various) eating disorders?

Ideological Features and Structures and Nutrition

It is often said that a primary feature of human existence is our tendency to create symbols, which then structure social life and individual action. Studies of symbolism and the nature of human cultural forms have been a significant aspect of anthropological study from the inception of the discipline. Many anthropologists regard it as the main focus of the field.

Given its central place in anthropological work, it is not surprising that studies examining the relationship of cultural ideology to nutrition have begun to emerge. In contrast to analysis of food symbolism in contemporary work on the "anthropology of food," investigations of ideology and nutrition analyze the linkages between idea systems and nutrient intake. Thus, the structure of investigations takes the general form: What is the relationship of beliefs to nutritional outcoes?

In the preceeding statement the expression "beliefs" is used to indicate a wide range of variables, operationalized in many different ways. It includes studies of nutrition knowledge, as well as more generalized cultural components, such as the influence of perceptions about "appropriate male and female foods." Some ideological variables are readily elicited from informants or subjects; others are less easily articulated and more difficult to measure. Some are so removed from everyday consciousness that they can only be indirectly examined.

Often when anthropologists, especially cultural ecologists, undertake a study of the relationship of ideological factors to food intake/nutrition, they also include analysis of social variables. That is, the cultural components are examined in relation to material conditions and social characteristics. The following list illustrates research directions in the area of "ideology and nutrition:"

— What is the impact of pregnancy and lactation "food taboos" on maternal nutrition? (eg. Laderman 1983)

— What are the nutritional consequences of religious systems with major fasting cycles? (Knutsson och Selinus 1970)

— How do beliefs about the relationship of food to health affect food intake? (eg. McCullough 1973, Messer 1981)

— What is the impact of maternal knowledge on infant and young child feeding practices? (cf Pelto 1981)

— What has been the impact of a nutrition education program on food intake and nutritional status?

Food Intake, Nutrition and Social and Biological Function

Anthropologists are increasingly involved in a mode of research that has characterized much of the bio-medical research in nutrition. Rather than being examined as an outcome, food intake and/or nutritional status becomes the starting point for the research. The questions to be explored concern the consequences of particular levels and types of intake.

The structure of this type of research can be described in the following form: What is the effect of level of nutrient intake on health condition, social or psychological characteristic?

A classic example of this type of investigation in the biomedical sciences in the massive body of research on the relationship of fat intake to cardio-vascular disease. Within physical anthropology there is also a research tradition with the same structure in which the focus is on the relationship of food intake to growth and development (cf. Greene and Johnston 1980)

However, it is only recently that socio-culturally trained anthropologists have become involved in research on social functions or social outcomes in relation to nutritional status. A primary factor linking nutrition to social behavior is energy expenditure. The research question may be phrased, then, as follows: "In the absence of adequate energy

intake, what kinds of adjustments in energy expenditure do individuals make (in given cultural settings) and what are the social consequences of these adjustments?"

Population Genetics, Physiological Adaption and Nutrition

Anthropological work that can be classified under the heading population genetics, physiological adaption and nutrition seeks to apply principles of human adaption to the analysis of relationships between nutrition and physiology or genetics. In its most general form the theoretical question is:

"How has the nutritional history of a population shaped or influenced physiological and genetic characteristics?"

Described in terms of logical structure, the form of the question is: What is the role of environmental characteristic or long-term social factor in explaining the distribution of nutritionally-relevant genetic or physiological trait?

The types of traits that have drawn the greatest attention from anthropologists are those with public health consequences. With respect to a genetic trait, the best known example is the case of lactase deficiency, which affects milk consumption. In many populations after early childhood the majority of individuals lose their capacity to synthesize lactase, an enzyme required for digestion of milk. This is generally recognized to be a genetically-mediated condition. The search for an explanation lead anthropologists to examine the role of dairying to account for the distribution of lactase deficiency, and to hypothesize that adult ability to synthesize lactase represents a mutation that conferred an adaptive advantage in populations that were heavily dependent on milk as a primary food (McCracken 1971).

Other types of research interests that can be characterized under the rubric of "adaption and nutrition" involve both genetic and physiological factors. For example, birth weight in chronically malnourished populations may involve both genetic and phsysiological processes (Haas 1980). Together with other types of investigators, nutritional anthropologists have undertaken studies of pregnancy outcome, growth, the development of obesity and other nutrition-related phenomena that may involve complex interactions of genetic and non-genetic physiological adaption.

CONCLUSIONS

The types of research questions that nutritional anthropologists have addressed illustrate the influence of general anthropological theory and method. In their investigations of nutrition-related behavior, researchers tend to utilize the same theoretical perspectives and methodological approaches as in other types of anthropological research. Thus, within the diverse content of studies, one finds a series of common features. One commonality is a research focus on specific communities, which enables analyses to be embedded in rich, empirically-grounded ethnographic description. Another typical feature is the selection of the household organization and dynamics. Moreover, anthropologists tend to use a holistic approach, analyzing multiple aspects of family characteristics, including material conditions (economic factors), social organization and cultural factors. Methodologically, a shared feature of research is the utilization of a wide variety of data collection methods, from informal, qualitative and open interviewing to highly structured interview formats and measurments that permit effective statistical analysis.

Beyond a basic core of shared theory and method there are, of course, many divergencies, reflecting the specific orientations from which investigators work. For example, some nutritional anthropologists rely heavily on the concept of "adaption" as a primary organizing principle, while others place a major emphasis on cognitive components as prime movers.

The extent to which researchers in nutritional anthropologists use standardized and structured research techniques is also quite variable, which, in turn, influences the amount and type of statistical analysis. There are an increasing number of investigators who seek to maximize the strengths of both

qualitative and quantitative data by using a mix of methods (cf Pelto and Pelto 1978).

Increasingly, anthropological work in nutrition is focusing on basic questions of how the major contemporary processes of social change — modernization, industrialization, urbanization and delocalization — are affecting health and nutrition. The following issues are emerging as main research topics: the transformation of rural societics; the process of marginalization; dramatic changes in women's roles in the face of labor migration (especially temporary male out-migration); increasing social stratification within rural communities; adaption to massive urban centers.

Research on health care systems and program evaluation is also increasing. Often this kind of applied research is carried out on contract — for a service delivery program or a funding agency. However, evaluative research is also pursued independently of requests from organizations. Within anthropology as an academic discipline there is growing respect for and understanding of the importance of research of this type.

One of the most pervasive and important features in emerging theoretical directions is the emphasis on integrating macro-level and micro-level analyses. In earlier decades anthropology developed micro-level studies to a high degree. Intensive, indepth studies at the local level revealed the dynamics of community and household level functioning, and a rich body of material was generated by these studies. However, the frequent failure to look beyond the community often lead to incomplete and sometimes distorted analyses.

The issue of macro-level versus micro-level studies has been a subject of heated, sometimes acrimonious debate within anthropology for a number of years. Out of this debate there is now emerging a new research style in which both macro-level and micro-level analyses are undertaken. In nutritional anthropology this integration will undoubtedly lead to new insights about the relationship of nutrition to social conditions. Moreover, a greater focus on larger system variables, in addition to the focus on communities, households and individuals should facilitate communication between anthropologists and health policy planners and administrators. Thus, the current research directions of nutritional anthropology can be expected to facilitate the development of multi-disciplinary applied research on human health and nutrition.

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