The *Yang* of Nutrition . . . The *Yin* of Food

We live in a world of fears and phobias—good foods, bad foods; health foods, junk foods. Can't we be good to ourselves?

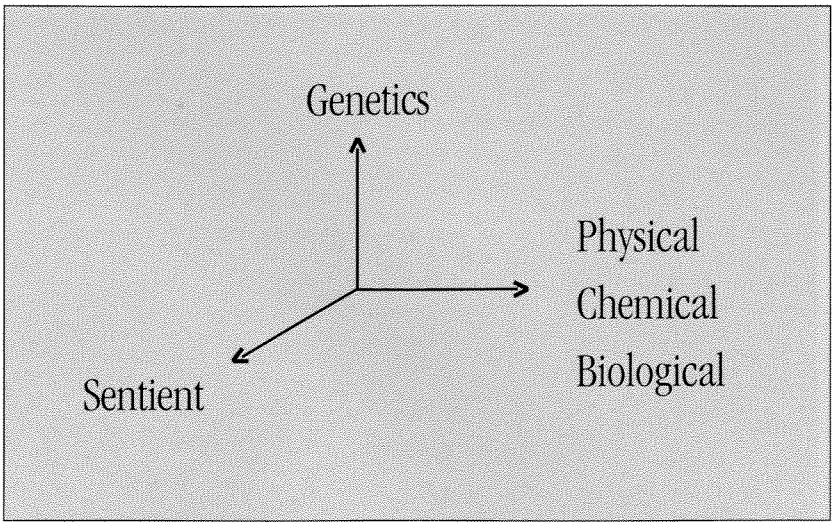
by Paul Saltman

To begin my talk about the science of nutrition and the metaphysics of food, I'll tell you a story. On graduation from Caltech in 1949 I had the opportunity to spend a year in graduate school in Paris. When I got this news I said to my girlfriend, "Barbara, when I get back from Paris, we'll work things out." She said, "Big boy, when you get back from Paris, you ain't going to find *me* here." So we figured out that night that we ought to get married, and I proudly came back to Caltech that evening, because I hadn't quite finished yet, and announced to my colleagues in Fleming House that Barbara and I were going to get married and go to Paris. Dennis Long, who was a great guard on the football team that year, looked at me and said, "Paul, you know, getting married and going to Paris is like taking a ham sandwich to a banquet." Well, as a Jewish kid who was a connoisseur of ham sandwiches, I have to say it was the best thing that ever happened to me.

Detail from *Still Life with Fruit and Vegetables*, Frans Snyders, Flemish (1579–1657); courtesy of the Norton Simon Foundation, Pasadena, California. Fiber isn't everything.

That story could fall into the category of the metaphysics of food. There's also a scientific basis of human nutrition. It's an exact science, almost as good as that of the physicists and the astrophysicists, better than that of the cosmologists. The title of this talk came to me recently when I was invited to the People's Republic of China to talk about national food policy for China. Their whole food policy has changed because of the enormous transformation in the productivity of agriculture and distribution of food in China, and they wanted me to talk about this in the context of nutrition and health. As I thought about what I would say, my mind focused on a symbol out of the Chinese culture, the symbol of *yang* and *yin*. It symbolizes so many concepts, but essentially it's the notion of the synergy of the wholeness of opposites. The *yang*, the black section of the symbol, is in a sense the "maleness" of it—the rigidity, the firmness, the strength, the unambiguous aspects of the universe in which we live. To me that constitutes the scientific dimension of our lives—the boundary conditions established by the laws of nature, which we need to bring into harmony with the *yin*, what the Chinese consider the "feminine," the mystical, the metaphysical, the emotional, the ambiguous, and, above all, the sensual aspects of our lives.

I like to think of all this in the sense of the dimensions of human potential. As I see it, we move in a three-dimensional space, each one of us being at the focus of the three coordinates in the diagram on the following page. You come out with a certain set of DNA; that's a crapshoot at T_0—not a lot you can do about it. We've got faculty here and at UCSD who are cutting genes to measure, and someday, perhaps, we can be fitted for whatever genes we want. But for now our genetics is a given. Then we all have a physical and biological and chemical potential, which we don't brood much about either. The physical forces that can affect the genetic consequences of our birth—the physical dimensions of our lives that compromise our DNA—include radiation of various kinds, various thermal gradients, if you want to think of it that way, and, of course, things like running Ferraris into cement walls. The biological dimension can also affect the potential we're born with. All sorts of



Of the three dimensions of the human potential, genetics is the one you can't do anything about. But you can affect the physical, biological, and, especially, the chemical dimensions (the *yang*), and the sentient aspect (the *yin*).

potentially cataclysmic biological phenomena can threaten us, from AIDS and the Ebola virus to the microorganisms that contaminate water and food.

My talk mainly concerns the chemical dimensions of our lives, not in the sense of, say, smog, which is caused by a chemical reaction and certainly does affect our lives, but rather in the sense of the chemical environment that nourishes us from that moment when we were a single fertilized egg in our mother's womb. What essential nutrients did we receive—or not receive—that promoted or compromised our growth and development? And after we were born, what nutrients fed us, nourished us, and allowed us to manifest our human potential as originally given to us in our DNA?

Remember the first law of thermodynamics, which says, if you eat it and you don't burn it, you sit on it.

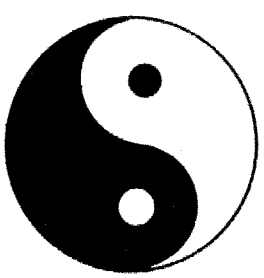
Last, but not least, is the sentient aspect of our lives. What kinds of images, what kinds of projections address our brain from the five senses of our body that shape us as human beings? What do we taste? What do we smell? What do we hear, see, feel? We are all potentially limited or unlimited by those sentient potentials.

I'll come back to the sentient—the *yin*—later, but first let me go back to the chemical dimension of the human potential and the notion of human nutrition. And I'm not going to give you the Saltman diet, but rather *your* own individual and unique diet in the sense that there is an infinite number of perfect diets for each of us. The most important issue in any diet is calories. I know a lot about calories; I got a D in thermodynamics from Stuart Bates [professor of physical chemistry]. God, that was a miserable course!

Actually, it wasn't from Stuart Bates that I really understood calories. It probably came more from a literature course—with Paul Eaton or Harvey Eagleson—when we were reading the poetry of Gertrude Stein and I suddenly realized the importance of her great poem about how a calorie is a calorie is a calorie. I'll bet in your heart of hearts you don't believe that for a minute. You believe that fat calories are bad and carbohydrate calories are good and protein calories are OK. But I'm going to try to convince you that all of them are equal, and that some are not Orwellianly more equal than others. We need a finite number of calories in our body—the number that it takes to maintain the body's energy at its basal metabolic rate, a few more to digest the food we eat, and the rest of the calories to run around, jump up and down, and go skiing and surfing and all those other metaphysical aspects of life. If you consume fewer calories than you are burning, you lose weight. If you consume more, you gain weight. Remember the first law of thermodynamics, which says, if you eat it and you don't burn it, you sit on it.

The number of calories you need is, of course, linked to genetics; we inherit our basal metabolic rate. There are fat rats and thin rats, and there are fat genes and thin genes. But don't wait for the gene fairy to come and give you a transplant. You can't control the situation, but you *can* recognize it. If you've got fat genes, that is, if your basal metabolic rate is very low, you have to eat less and run more. That's the first law revisited. I'm talking lifestyle here, *exercise*. I've done a lot of work with athletes, starting in my old jock

There is no such thing as an empty calorie.



days at Caltech. Some of the numbers freak me out—a Tour-de-France bike rider uses 10,000 calories a day in the mountain runs. You can't eat 10,000 calories a day. They have to go through laborious efforts to get 10,000 calories into their bodies every day, or their bodies start to waste away and burn their own muscle. Your metabolic rate is also dependent on your age (it slows down as you grow older), your sex, your size, and whether you're pregnant.

What does all this say about nutrients? You know, we're nothing more than applied biochemical systems (sounds like a corporation—Applied Biochemical Systems). We need 44—count 'em—44 chemicals. I can define every one of them, give you its structure, talk about its function, and tell you if it's synthetic or natural (it doesn't matter). You need them in finite amounts, which are partly a function of your age, sex, and lifestyle. Where are you going to get them? Well, you should be getting them from the food that has the calories and that is consonant with your lifestyle. This is the chemistry that Harry Gray should have taught you, or Linus Pauling, or Norm Davidson, or whoever taught you.

Let me tell you another story. One night in 1970, a woman named Judith Taylor came into a Toronto hospital with abdominal pains. They opened her up and found she had gangrene throughout her entire intestinal tract; the surgeon had to remove the whole thing. A young Indian physician, Dr. K. N. Jeejeebhoy, who was present that night, came up with an idea, and from then on, Judith Taylor and now tens of thousands of others of all ages have been sustained on an intravenous solution called total parenteral nutrition, or TPN, containing 44 chemicals in six major categories. All TPN bags are the same, in terms of having the same 44 chemicals, but the amounts are a function of the age, sex, and lifestyle of the individual who requires those nutrients.

First and foremost of the major categories is water. We are creatures in a biological world of water. I don't want to go into all the details of it as a solvent, as an ionizing material, as a heat-control mechanism, a chemical reactant—all sorts of beautiful things. You have to have water, eight glasses or its equivalent per day. What do I mean by "or its equivalent?" Does it have to be Evian or Perrier? Can it be Pasadena tap? Of course. Does it matter if it's coffee, beer, tea, or milk? No. How about Coke? Oh, but that's a junk food; won't it kill my kids, rot my brain? No; it's basically water and that's the important thing. The biggest problem with water as a nutrient is that frequently in underdeveloped nations of the world, it's the carrier of disease. But we have to have it.

The second component in the TPN bag is calories. Uh-oh; there's that dirty word again. Why, as the Jews would say, was that night in the Toronto hospital different from all other nights? That was the night that Dr. Jeejeebhoy figured out how to use the technology that the Swedes had developed of putting lecithin, a phospholipid, into a stable suspension. He realized that he could put that suspension in a bag, so that an individual could get adequate numbers of calories to sustain life. You cannot put enough glucose or amino acids to provide a day's ration of calories into human beings without upsetting their electrolyte balance and killing them. But when you put lipids—fats—into that bag, you can get adequate amounts of calories to sustain life and growth.

In most total parenteral nutrition bags, 55 percent of the calories come from fats. And what do the "croakers" tell you, the guys who wear the white coats with stethoscopes and little names over the pocket, the guys with the beards, the Dr. Koops? They tell you 30 percent, don't they? So how come all these people on TPN haven't dropped dead? The French get 45 percent of their calories from fat, and they have half the rate of coronary heart disease and half the rate of obesity that we have. But fat is bad, you say. We *know* that, don't we? There are guys running around up in San Francisco with bean sprouts in their ears telling us we have to get down to 10 percent.

Oh, you say, with the French it's the wine. No, it isn't, my friends; it's the total calories. You want to know what the curse of fat is? I'm going to tell you, even though I'm getting ahead of myself here. It's the metaphysics of the fat. Did you know fat had metaphysics? You bet your ass—literally and figuratively. Fat makes food taste good. Nobody has ever asked for seconds on total parenteral nutrition. Fat makes food taste good, and so we eat more food. And when we eat more food, we get more calories. Very simple. You don't have to have a PhD from Caltech. A simple bachelor's degree will do.

What else in the bag gives you calories? Glucose. My God, that's a sugar! Sugar's bad. We know that, don't we? Sugar rots your teeth; sugar causes hyperkinesis in little children; sugar causes homicidal tendencies in ex-city councilmen from San Francisco. Did you know that sugars—glucose (or sucrose if you, unlike people on TPN, have a gut to digest it)—or complex carbohydrates, are absolutely required for life? There is no such thing as an empty calorie. Sugar

is a precursor for pentose, and for oxaloacetic acid, which runs the Krebs cycle, the series of chemical reactions that oxidizes food to provide energy and release carbon dioxide and water as waste products. Diabetes is a fatal disease, in which the cells don't get adequate glucose. So don't talk to me about empty calories.

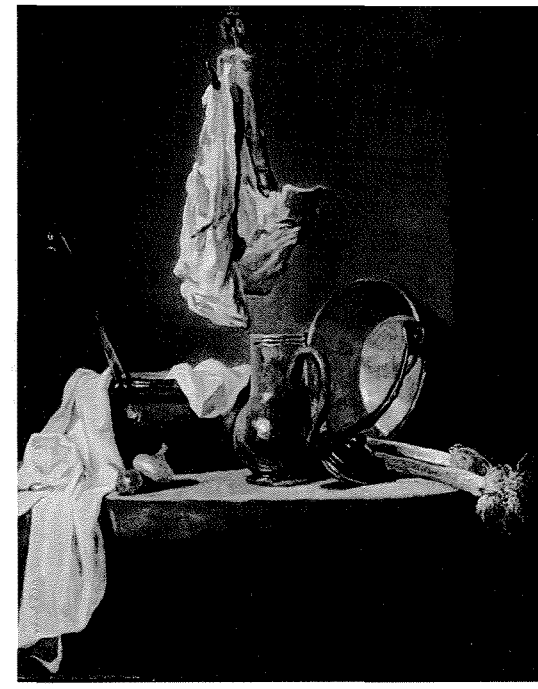
Next on the list come minerals: sodium, potassium, calcium, magnesium, sulfate, chloride, phosphate. Did I say sodium chloride? But we know that sodium chloride is bad for us, don't we? It causes hypertension. For everybody? No, only if your kidneys are rotten. If you've got lousy kidneys then the salt is very toxic. Fifteen percent of the population has lousy kidneys. So tell me, what the hell are the other 85 percent doing running around looking for pretzels without salt? Bad kidneys are caused by bad genes, obesity, stress, smoking, or excessive amounts of alcohol. But salt doesn't cause bad kidneys; salt causes hypertension if you have bad kidneys. If you've got a problem, deal with your problem.

Fifteen percent of the population has lousy kidneys. So tell me, what the hell are the other 85 percent doing running around looking for pretzels without salt?

Calcium is another mineral in the bag. I've published a lot of experiments on calcium; I'm a calcium guru. We were the first ones to show that bone loss in postmenopausal women can be reversed with 1,000 mg of calcium plus one RDA (recommended dietary allowance) of zinc, manganese, and copper. A thousand milligrams of calcium is a quart of milk. Even better is 1,500 mg—a quart and a half of milk, a quart of yoghurt, or a quarter of a pound of cheese. But, you say, you eat a lot of dark-green, leafy vegetables. Do you eat four and a half pounds a day? It's chemistry, folks. It's Dr. Ernie Swift's analytical chemistry revisited. Most women in America get 500 mg of calcium a day on average—half of what they need. Is it any wonder that 30 percent of postmenopausal American women have osteoporosis?

We need essential amino acids—I won't dwell on them. There are eight of them. We get them from the protein in our diets. Don't let people kid you that vegetarianism is God's own way. Maybe it is Her way, but if it is, you'd better be sure that you balance the grains and the legumes, because you're not going to get those eight essential aminos if you don't. Most people who are on strict vegetarian diets never get the amount of essential amino acids for proper growth.

Then come the 13 vitamins—4 fat soluble, 9 water soluble. We know the structure and function of all of them. Does it matter whether they're synthetic or natural? No. Are there any data that say that megadosing does anything? No. Here I'm saying it in Linus's own palace. I love Linus, but he was wrong about vitamin C.

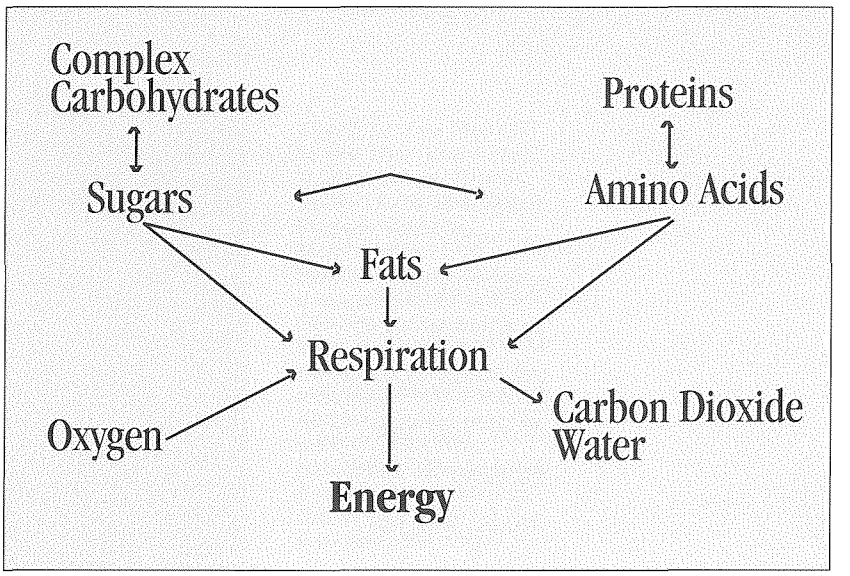


There are no data that support him on the claims that megadosing of any vitamin prevents or cures disease, antioxidants notwithstanding. (I work on antioxidants; I know about free radicals. In fact, I had to stop Angela Davis, then a student activist, from exploiting UCSD when I went there.) If you're having deficiency problems, that's something else. Or if you're pregnant. Birth defects and malnutrition among the poor are a big problem in this country. Too many young women give birth to premature babies because they don't have the vitamins and the minerals and the trace elements. Folic acid deficiency is directly linked to spina bifida, and any vitamin deficiency gives rise to malformations. It's damned tough to get 100 percent of the U.S. RDA if you're trying to do it in food off the shelf. Should you try to do it in food? Of course. But it makes no difference if you get what you need from vitamin supplements or fortified foods. It's in the bag. That's all that counts.

Last come my favorites: the trace elements, all 11 of them—including the iron, the copper, the zinc, the manganese, the fluoride, the iodine, the selenium. I got tenure on these elements. The biggest nutritional-deficiency disease in America is iron-deficiency anemia, and with it goes copper deficiency, and frequently manganese and zinc as well. In my classroom at UCSD I get very bright kids; the only kids brighter are the Caltech students. I ask these wonderful kids in my class, "How many women in this room eat meat four or five times a week?" No hands go up. "How many eat it twice a week?" One or two hands go

Left: *Still Life with Cooking Utensils*, Jean-Baptiste Simeon Chardin, French, 1699–1779; courtesy of the Norton Simon Foundation, Pasadena, California, estate of Robert Ellis Simon, 1969.
Red meat can be beautiful.

Right: In the body's biochemistry, complex carbohydrates are broken down into sugars and proteins into amino acids, which ultimately go into the respiration process or get stored as fat. Sugars and amino acids are interconvertible, but fat is a one-way street.



up. "How many don't eat meat?" All the rest of the hands go up. I say, "Where are you getting your iron?" "Oh, Dr. Saltman, don't worry about it," they say. "We love dark-green leafy vegetables." Do you know how much broccoli you have to eat to get one U.S. RDA of iron? Eight and a half pounds. You can get a lot of reading done on that kind of diet. Read my book; you'll get through it in one day.

Some of you will say, "Oh, not to worry, doc; I eat fish and chicken." Do you eat three times as much fish and chicken as you would if you ate red meat? That's the analytical chemistry of how much iron, how much copper, how much zinc is in fish and chicken compared to red meat. If you still insist that red meat ruins your karma, I suggest an iron supplement.

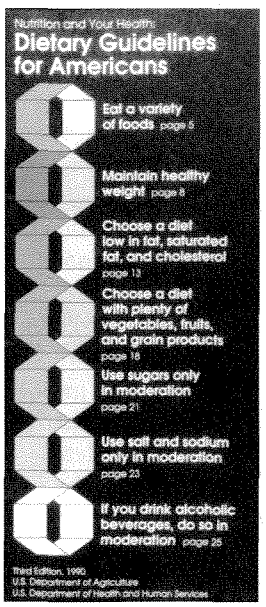
If you still insist that red meat ruins your karma, I suggest an iron supplement.

That's the bag—the 44 chemicals. Now, what happens to them when they get into your body? Let me review briefly the biochemistry that you have been studying lately as you get your children through their eighth-grade biology class (because if I don't take you through this, you're still going to believe that fats are different and all that other stuff). Complex carbohydrates (starches) are broken down in our intestine into sugars and then absorbed. Proteins are broken down to polypeptides and then to the amino acids. Sugars and amino acids are interrelated; they are interconvertible in our cells, and they can be built up or down depending upon how the body needs to store them. We store complex carbos as glycogen. You sometimes hear athletes talk about glycogen loading before a race. I'll tell you this: if you're not in the upper one half of one percent of world-class triathlon or marathon people, don't even think about it because it's trivial. Only about half of one percent of our dry body weight is complex carbohydrate as glycogen. Most of the carbos in your body circulate as glucose. Ultimately the sugars go into respiration in the Krebs cycle, and so do the amino acids. But fats, whether we eat the fat or make it by converting sugars or amino acids to fats, are our primary form of stored energy. Fats cannot be converted effectively to amino acids or sugars. And here's where we get into the first law: if you have excessive amounts of calories, which you eat but don't burn, whether it's from carbohydrates, amino acids, or fats, you store that excess as fat.

This is actually good news. Fat is a marvelous high-test aviation fuel that we can call up, break down, and burn. At optimal performance, great athletes can burn 70 percent fat and 30 percent carbos; that's the carburetion of a great athlete. If you're really in terrific shape, you've got the ability to metabolize the sugars to oxaloacetic acid, which is necessary to run the Krebs cycle and thus burn your fat, which is the best stored fuel that you can use, and be a champion. Thus fats metaphorically burn in the flame of sugars in all of our cells. The trained athlete is conditioned to have better oxygen delivery to muscle via better lung capacity, more red cells, and increased myoglobin. Further, athletes have more mitochondria, site of the Krebs cycle and the burning of the fat. The "couch potato" will rely primarily on carbohydrate for energy and thus be less efficient in burning the stored fat.

Remember how oxygen gets to your cells? It's

The greatest thing about a vegetarian diet is that you can't eat enough of it to make you fat.



transported in the blood's hemoglobin, which contains most of the body's iron. Then it dumps onto myoglobin, another iron protein, and then it goes on to the mitochondria. All the chemicals in the bag are part of this process—all of the coenzymes that are made from the vitamins, all the trace elements that are required as cofactors, all of the mineral salts that are required for electrolyte balance.

When the Dietary Guidelines for Americans —the McGovern Report (some of us are still Democrats despite Mr. McGovern)—came out in its first edition, it was considered government policy for a healthy America. They gave *that* up. Now, if the United States of America consulted with good scientists and physicians, and thought rationally about dietary matters, and then came up with this set of guidelines, is it any wonder that people go into the supermarkets wondering about the labels? Have you read the label on your favorite breakfast food lately? One of my students told me this one: she went into a supermarket and was going to buy a low-cal chocolate pudding. She compared it with the regular chocolate pudding of the same brand and discovered the low-cal was three times the price. But in reading the labels of the two packages she couldn't figure out how they were different. Then she discovered, in the directions for preparation, how the one becomes low-cal, low-fat chocolate pudding: you make the low-cal pudding with skim milk.

Let me go through our national guidelines one by one. "Eat a variety of foods." My grandmother knew that. But the variety my grandmother served, based on her childhood in her gabernya of Bessarabia, was a hell of a lot different from that in the supermarkets of America. If you talk to little children in this country, it's a question of which flavors of ice cream constitute the variety.

"Maintain a healthy weight." What's a healthy weight? Is the ideal weight that of a young woman who's anorexic? Ten percent of the women on my campus are anorexic or bulimic. Is it the weight in the Metropolitan Life Insurance tables? These height/weight tables tell you that if you're this age and this height and this sex, your chances of living one more year are enhanced if you're within this weight range. That's all. Another measure is body-mass index, which the National Institutes of Health advises using to assess health risks (you can read about it in my book). Assessing health risks is an important admonition, because obesity is a disease. Don't talk to me about fat in your diet; talk to me about fat on your body. Conditions correlated with obesity include coronary heart disease, stroke, late-onset diabetes, some forms of cancer, hypertension, and gall-bladder disease. About the only morbidity activities left are guns, drugs, and driving Ferraris into cement walls.

Getting back to our national guidelines, we come to: "Choose a diet low in fat, saturated fat, and cholesterol." Where did that come from? Why do you include cholesterol with fat? Well, it's a lipid, isn't it? And everyone knows that cholesterol is bad for you, don't they? Does Judith Taylor, the first person to derive all her nutrients from TPN, have cholesterol in her body? You bet. She has as much as you do; she makes it all herself. You make 85 percent of your cholesterol yourself; you can take or leave the other 15 percent. Some people make too much cholesterol because they've got lousy genes or are obese. And as for fat—is saturated fat different from unsaturated, monounsaturated, or polyunsaturated fat? Recent studies show them all coming out about the same. A calorie is a calorie is a calorie. A lipid is a lipid is a lipid. Polyunsaturated fatty acids are essential. That's what lecithin has in it. Why is the government telling us to avoid these things?

"Choose a diet with plenty of vegetables, fruits, and grain products." Why? An apple a day is supposed to keep the doctor away. But what's in the apple that's in the bag? Water, sugar, a little bit of potassium, sodium, 10 percent of the U.S. RDA of vitamin C. Where's the protein? Where's the calcium? Where's the iron? Where are the other vitamins? But it's got fiber! Did you see any fiber in the bag? Judith Taylor has no bowel. Judith Taylor has no bowel

***The Way You Hear It Is the Way You Sing It*, Jan Steen, Dutch, 1625–1679; The Royal Picture Gallery, Mauritshuis, The Hague. These three generations in one of Steen's many paintings of a "merry company" seem to be enjoying their wine and food quite merrily indeed. But the painting's title implies a warning not to lead the young into intemperate ways.**

Wine does reduce coronary heart disease, stroke, and stress. That's the good news. The bad news is that zinfandel has no calcium.

movements. But if you have a bowel, you'd better have bowel movements, and you'd better have fiber. The real good news about fiber is that you can't digest it; it fills you up so you don't eat so many calories and don't get fat. Do you want to know what's the most nutritious food in terms of its nutrient density that you can buy in a supermarket? Pizza. I'm serious. All the nutrients from the bag are in a well-made pizza. Of course everyone eats pizza because it's good for them, right? And as a matter of fact, it *is* good for you—if you don't take too many calories. So what is this "vegetables, fruits, and grains" stuff all about? The greatest thing about a vegetarian diet is that you can't eat enough of it to make you fat.

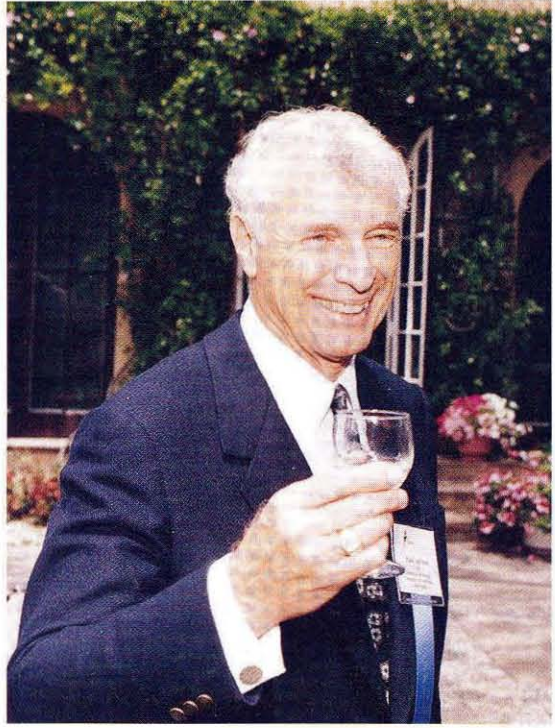
The next bit of policy tells us to use sugars moderately. Does that include polysaccharides and complex carbos? It doesn't say, but it implies that all sugars are bad. Do you know what food most promotes tooth decay? Dried fruits. They stick to your teeth and rot them. The next worst food is a "healthy" granola bar.

The next item—salt and sodium—I've already discussed, and that brings us to the last point: "If you drink alcoholic beverages, do so in moderation." Moderation in whose mind's eye? Actually, the statistics are pretty clear on this one, and I believe them and I practice them. I drink two glasses of wine a day—for medicinal reasons only, of course. Wine does reduce coronary heart disease, stroke, and stress. That's the good news. The bad news is that zinfandel has no calcium. I supplement calcium.

When I spoke to the Chinese, I told them: Don't follow the American principles. Listen to me instead. I believe that any national food policy must begin with an adequate food supply. In a day and age when we argue about school lunch programs and food stamps, just remember that although many of us are well fed and obese, there are a lot of people who are not well fed. And in China it's a hell of a lot worse. Any Chinese food policy, and any U.S. food policy, must ensure that there's adequate food to be supplied and distributed.

Second, we need to have adequate nutritional knowledge. Probably most of you didn't know about the bag, didn't fully appreciate the 44 chemical nutrients, and believed in the evils of fat and so on. But if you think *you're* ignorant, you should look at the middle school and high-school kids in America. The United States ranks 18th nation in the world in elementary- and secondary-school math and science education. I find that appalling. After the sixth grade, 70 percent of American children never take another math or science course. So we should get nutritional knowledge to the kids in elementary school, and they shouldn't be taught by some home economist running around with four basic food groups or pyramids. Teach them to understand chemistry and biology so they can make intelligent decisions about their lives based on that understanding.

Next we need to address the special needs of pregnant women, the special needs of children during growth, and the special needs of women as opposed to men, of young and old, and of people with diseases that need to be treated. Don't try



The author in 1949 (below) and in 1995.

to make one diet fit all. There is an infinite number of diets that can be tailored for each person.

We also need to exercise some personal responsibility. We've developed a doctor cult in America. Some of my best friends are physicians, but I think they've done a terrible thing for themselves. They have convinced the people of this country that when they lay on hands diseases go away, and thereby they absolve us of responsibility for our own health. We have come to believe that whatever dangerous excesses we indulge in, doctors and medical science will take care of us. Wrong. In the first place, doctors can't cure everything, and in the second place, with the HMO gatekeepers we'll never get near them in the future anyway.

And last: celebrate foods and culture. Here's where the *yin* comes in. We live in a world of fears and phobias—good foods, bad foods; health foods, junk foods. Can't we be good to ourselves? Before I went to China I saw a wonderful film called *Eat Drink Man Woman*. It's a celebration of food as life and love. And it was also very good nutrition—the best Cantonese you'll ever see, and if you don't salivate throughout the picture, you're insensitive. Food is love. The 1963 film *Tom Jones* contains three and a half minutes of the most erotic sex I've ever seen on film in my life. (I show the scene to my nutrition class, because they're too young to remember it.) The man and woman in the scene are fully clothed; they don't touch one another. The eroticism is all done through food. Food is life. The Catholics don't do wafers and wine for nutritional value. And if you think it's fun eating Pesach dinners, you're crazy.

When my book, *The University of California San Diego Nutrition Book*, first came out, I went on a book tour. I was in Cleveland, and there's this disc jockey, a real tough cookie, who was going to interview me. He'd read my book. I knew that because he'd underlined a lot of passages. (I get very nervous when I see that. It means the kid's been studying and I'm in trouble.) So he starts off by asking me what I think of some currently popular life-extension diet. I said, "My friend, the issue isn't extending life; as far as I'm concerned the issue is the quality of life." Then this rascal goes right for the jugular. He says, "Dr. Saltman, would you define the quality of life for me." So I blurted out the following definition, and I leave you with this:

I said that for me, personally, it's to be sound of mind and sound of body and free of pain. That's one quality. The second quality of life for me is to love and be loved. And the third quality is to share good wine and good food with people you love and who love you, and who are sound of mind, sound of body, and free of pain. May you be so blessed. □

On Caltech's 1945–46 basketball team, 6'5" freshman Paul ("The Goon") Saltman was the only civilian on an otherwise all-Navy squad. He played center for four years, and as team captain in his senior year was the league's third highest scorer. Playing basketball at Caltech taught him, he says, how to lose; "but I also learned that you play for the game (and the ones that you won were terrific), so I stayed in science." He received his BS in chemistry in 1949, and, after Paris, returned to Caltech to earn his PhD in biochemistry in 1953. After 14 years on the faculty of the USC School of Medicine, Saltman moved to UC San Diego in 1967, where he is professor of biology. Caltech's Distinguished Alumni Award of 1973 counts among his many awards. This article was adapted from his general-session speech at Seminar Day last May, which in turn was adapted from an address to the International Symposium on Nutrition and Fitness in Beijing in October 1994. His Seminar Day talk, which was extremely well received, precipitated an alumni run (on the way to lunch) on Saltman's book, The University of California San Diego Nutrition Book *(coauthors Joel Gurin and Ira Mothner; Little, Brown and Company, 1987, 1993). The Caltech Bookstore (Mail Code 1-51, Pasadena, CA 91125; phone: 800-514-BOOK) has since restocked, and is willing to fill orders. The book, which* Science *magazine called "accurate and authoritative . . . fun to read," costs $12.95; add $4.00 for handling and shipping.*